

Reg. No. :

Name :

Third Semester B.A./B.Sc. Degree Examination, March 2021

First Degree Programme Under CBCSS

English – (Language Course)

EN 1311.1/EN 1311.3 : ENGLISH FOR CAREER

(Common for B.A./B.Sc. and Career Related 2(a))

(2019 Admission, Regular)

Time : 3 Hours

Max. Marks : 80

I. Answer **all** the following questions. Follow the instructions given in the brackets wherever needed.

1. The correct spelling of the word 'exhibition' is _____
2. The word that is the antonym of "economical" is _____
3. 'Fragrance' is a word related to the sense of _____
4. _____ is the noun form of 'emigrate'.
5. It _____ (be) an honour for him to lead and serve the company.
(Use the correct tense form of the verb in brackets)
6. Do you know where is the church. (Correct the sentence)
7. What number of students are in this class? (Underline the error)
8. The term 'epidemiological' is related to the study of _____

9. How much costs it to buy a diamond necklace?

(Correct the sentence)

10. They had to _____ the meeting yesterday due to the sudden bus strike.

(Use the appropriate phrasal verb which means "cancel or stop")

(a) Call up

(b) Call for

(c) Call off

(d) None of these

(10 × 1 = 10 Marks)

II. Answer **any eight** of the following questions.

11. Provide one word substitutes for any two of the phrases

(a) Stood up and applauded

(b) A piece of writing about the writer's journeys to different places

(c) A person who collects stamps

(d) A person who walks in her/his sleep

12. Give the antonyms of two of the following words

(a) convergence

(b) sensibility

(c) unknown

13. Give the synonym of two of the following words

(a) hilarious

(b) outlook

(c) modify

14. Make sentences of your own with any two of the following phrasal verbs

- (a) ran into
- (b) turned up
- (c) to make light of
- (d) made off with

15. Choose the correct option from the brackets :

- (a) The Manager _____ all the claims of the employee and dismissed him. (reputed / refuted).
- (b) I suppose the headmaster himself will _____ the matter now. (look into / look out for)

16. Fill in the blanks using a collective noun from those given below (band, pride, herd, bunch, clutch) :

- (a) We saw a _____ of elephants moving across the river bed.
- (b) The rock _____ has been on tour for months.

17. Fill in the blanks using the suitable degree of the adjective given in brackets :

- (a) Lead is _____ than any other metal. (heavy)
- (b) He thinks he is _____ than his father. (wise)

Correct the error in the words / phrases given in italics :

- 18. (a) *Poorness* is not an enviable condition.
- (b) Here are the mangoes; please don't *take this* that are rotten.

19. (a) Suman studied in a *girls'* school till her tenth class.
- (b) Can you give me some *informations* on the uses of lasers?
20. (a) Environmental degradation is a *pereniel* problem for humans today.
- (b) My cousin likes fruits of *forin* countries.
21. (a) Your targets are *to achieving* before the end of this month.
- (b) The clothes *were* all washed and *hanged out* to dry.
22. Fill in the blanks with suitable words from those given in brackets.
(when, enough, leisurely, rather)
- (a) He is a _____ careless fellow.
- (b) These are days _____ no one can have a sense of security.
- (c) He was foolish _____ to believe her.
- (d) I had a _____ walk.
23. Fill in the blanks with suitable words from those given in brackets.
(medical, deliberate, grand, constant)
- (a) The battle of Waterloo ended in a _____ victory.
- (b) The injured man wants _____ advice.
- (c) _____ anxiety has undermined his health.
- (d) It is a _____ lie.

Read the paragraph and answer the question given below :

24. The global anti-ageing market is worth at least \$250 billion - an astonishing amount, and it's growing. Anti-ageing treatments are supposedly used to correct 'premature ageing'. But what does this really mean? Surely ageing is just ageing. It is a process that occurs over time- at the time that it's supposed to.

- (i) The word 'premature' is used in the passage to mean :
- (ii) What is meant by the 'anti-ageing market' and what is it worth?

25. We do not know how to manage our machines. Machines were made to be man's servants: yet he has grown so dependent on them that they are in a fair way to become his masters. Already most men spend most of their lives looking after and waiting upon machines. And machines are very stern masters. They must be fed with coal, and given petrol to drink, and oil to wash with, and must be kept at the right temperature, and if they do not get their meals when they expect them, they grow sulky and refuse to work, or burst with rage, and blow up and spread ruin and destruction all around them.

- (i) What has gone wrong in man's handling of machines?
- (ii) What does "stern masters" mean?

26. Bacon calls the riches, the baggage of virtue :

For, as the baggage is to an army, so riches are to virtue. They cannot be spread nor left behind. Yet only hinder the march. Wealth brings care in its train. Pride goes with it. And where there is pride, there can be no real virtue.

What did Christ say of a rich man? "Verily, I say unto you, it is easier for a camel to go through the eye of a needle, than for rich man to enter the Kingdom of God".

- (i) Riches are called the baggage of virtue. Why?
- (ii) It is difficult for a man of riches to get into the kingdom of God. Why?

(8 × 2 = 16 Marks)

II. Answer **any six** of the following questions.

27. Fill in the blanks with the correct option

(a) He was asked to take his aged mother to see a _____ physician.

(paediatric / geriatric)

(b) The server at the bank was _____ by cybercriminals.

(morphed / hacked)

(c) Prof. Harvey uses a lot of scientific _____ in his speeches.

(jokes / jargon)

(d) I'm just waiting for my father's nod of _____ so that I can go abroad to work.

(assent / asset)

28. Fill in the blanks with suitable phrases from those given in brackets

(make up, turned up, went off, ran out, called off, look into, look up, look for)

(a) The workers _____ the strike.

(b) The boys _____ at the stroke of the ball.

(c) Surprisingly, very few guests _____ for the wedding.

(d) A bomb _____ near the park yesterday.

29. Correct the error in **four** of the following sentences :

(a) More than one attempt were made to rush on to the stage.

(b) The Central Government not only provided the funds but the personnel also.

(c) His wife, as well as his children are ashamed of him.

(d) John thinks he is superior than everybody else.

30. Fill in the blanks with the correct option

- (a) All kinds of foreign consumer brands are now available at our store, because of the _____ policy (localisation / liberalisation)
- (b) His decision to relocate to his native town was a _____ one.
(judicious / judicial)
- (c) Why don't you _____ me instead of sending long e mails?
(next / text)
- (d) The story is about two families that have an ongoing _____ that goes back three generations. (food / feud)

31. Fill in the blanks with suitable phrases from those given in brackets :

(step down, held up, gave up, cut off, made up, found out)

- (a) The energy company _____ our electricity because we didn't pay.
- (b) I _____ playing football a long time ago because of a knee injury.
- (c) The Prime Minister has decided to _____ after 10 years in office.
- (d) The traffic on the motorway was _____ by construction work.

32. Correct the error, if any, in the section in italics in **four** of the following sentences :

- (a) I have spoken to him, but *what he could do* is another matter.
- (b) Dr. Shah will be leading the surgical team, *will he*?
- (c) I am supposed to join you at two in the afternoon, *aren't I*?
- (d) *Don't she know* that she has a seminar presentation tomorrow?
- (e) *You don't walk* on the grass, the signboard says.

33. Fill in the blanks with the suitable pronouns from those given in brackets :

(they, he, me, our, you, it, they, them, its, mine, him)

(a) You are stronger than _____

(b) I looked behind _____

(c) He said he had reported the incident to two constables but that none of _____ was willing to intervene.

(d) Nobody but _____ was present.

(e) There were doors all around the hall, but _____ were all locked.

(f) My parents like Latin music. The CD is for _____

(g) Here is another souvenir. I don't know what to do with _____

(h) Dad is coming with _____ to buy school supplies.

34. Correct the error in the sections in italics :

(a) She *must has been* on holiday.

(b) Vani is *as tall as* all other girls in her class.

(c) Your college is good, but mine *is best*.

(d) It rains heavily in Assam, *is'nt it?*

35. Fill in the blanks with suitable words from those given in brackets :

(failure, contact, agonisingly, crash-landed, probe, journeying, successfully)

Over the weekend, India attempted to make history by becoming just the fourth nation to _____ land a _____ on the Moon. It came _____ close, but after _____ millions of kilometres, Vikram lander lost _____ in the final few hundred metres and _____ on the lunar surface. But it would be both unfair and plain wrong to label the mission a _____

36. Fill in the blanks with suitable words from those given in brackets :

(alarmed, embodiment, ambitious, necessities, sceptical, melancholic, improved, revoked)

- (a) The Manager says that the order cannot be _____
- (b) We should use _____ varieties of seeds to increase production of grains.
- (c) Bruto was an unselfish worker. Yet people said that he was _____
- (d) His father is _____ about the son getting a top rank.
- (e) The residents were _____ by the fury of the storm.
- (f) The music had a _____ touch.
- (g) Many of the villages in India do not even have the bare _____ of life.
- (h) Mother Teresa is regarded as an _____ of kindness and love.

37. Read the passage and answer the questions given below :

Raman was a voracious reader and pored eagerly over all books in his father's collection, among which were original writings of great scientists. These books were to him like old friends, never to be forgotten. He once said, 'Out of this welter of subjects and books, can I pick anything really to mould my mental and spiritual outlook and determine my chosen path'?

(i) _____ in the passage means 'highly enthusiastic'.

(ii) 'Pored eagerly over' means _____

(a) read with great interest (b) studied carefully

(c) both (a) and (b) (d) skimmed through

(iii) In the given passage, 'mould' is related to

(a) the smithy (b) pottery

(c) baking (d) character

(iv) 'Welter' means _____

38. Read the passage and answer the questions given below :

There has never been conceived or made by man any instrument, machine or contrivance, capable of such diversity of usefulness as the human hand. Nothing has ever existed with such infinite adaptability to various need, or capable of being trained to such degrees of dexterity and versatility. Nor is it likely that as perfect a machine, will ever be produced by human skill, for the only thing, the human hand cannot do is, to create an instrument as perfect as itself.

(i) Why is the human hand so useful?

(ii) 'Adaptability' means _____

(iii) _____ in the passage means 'an apparatus using mechanical power and having several parts, each with a definite function and together performing a particular task'.

(iv) Can as perfect an instrument as the human hand be ever created by man?

(a) Can be created.

(b) There are similar instruments as useful as the human hand.

(c) Human hand or mind is incapable of making a similar machine as human hand.

(6 × 4 = 24 Marks)

IV. Answer **any two** of the following questions, choosing **one from each group**.

GROUP – A

39. Read the following passage and answer the questions given below :

Once the casting is done, I am ready to plunge headlong into the business of shooting. The studios of Calcutta show their hallowed past in every crevice in the wall, in every tatter on the canvas that covers the ceiling. Some of the families of rodents that inhabit the rafters have lived there ever since the foundation of the industry. The floor is pitted, the camera groans as it turns, the voltage begins to drop after sundown. The general air of shabbiness is unnerving. And yet I do not mind these at all. I do not think of these as hindrances. After all, we have the essentials to make a film, and it is within us to make it badly or well. It is the bareness of means that forces us to be economical and inventive, and prevents us from turning craftsmanship into an end in itself. And there is something about creating beauty in the circumstances of shoddiness and privation that is truly exciting...Yes, I am happy to be working where I am.

1. 'Plunge headlong into' means _____

(a) dive into water

(b) bang your head

(c) to get fully involved

(d) none of the above

2. 'Hallowed' is closest in meaning to _____

(a) holy

(b) hollow

(c) ancient

(d) unknown

3. _____ is a synonym for 'creative'.
4. Another word from the passage that is close in meaning to 'shabbiness' is _____
5. 'Privation' is a word related to _____
- (a) privatisation (b) privacy
- (c) piracy (d) deprivation
6. 'Tattered' is related _____
- (a) paper (b) cloth
- (c) noise (d) music
7. The word opposite in meaning to the word 'pitted' is
- (a) smooth (b) rough
- (c) full of holes (d) clean
8. The word that is spelt correctly is
- (a) privetisation (b) shoddiness
- (c) craftsmanship (d) crivice
9. The word that is spelt wrongly is : _____
- (a) ceiling (b) voltage
- (c) hinderance (d) business

Find the synonym of the words in Italics :

10. She cried *copious* tears when she lost her new shoes.

- (a) vast
- (b) copying
- (c) plentiful
- (d) messy

11. They burned the *effigy* of the despot in the town square.

- (a) dummy
- (b) poster
- (c) reflection
- (d) statue

Find the antonyms of the words in italics :

12. February 14 was set as a *tentative* date for the wedding.

- (a) temporary
- (b) final
- (c) casual
- (d) convenient

13. I must say you look very *urbane* in this suit.

- (a) elegant
- (b) slow
- (c) crude
- (d) foolish

Choose the most suitable one-word substitute for the phrase in italics :

14. Satyajit Ray is a world famous Bengali *film director who is involved in all the audio-visual elements of his films.*

- (a) producer
- (b) actor
- (c) author
- (d) auteur

15. Find the meaning of the word 'hindrance' from the passage given above and use it in a sentence of your own.

40. Spot the error in the underlined sections in the following sentences. If there is no error, the answer is 'd'

1. You may go to your classes now, The Teacher said. No error
a b c d

2. Ravi asked Megha whether she is submitted her assignment
a b
the class teacher. No error
c d

3. 'I will not go into the hall until Resmi comes', said Jyothi. No error.
a b c d

4. 'Where did you lose your purse', asked my mother. No error.
a b c d

5. The group promised that they would meet again next year. No error
a b c d

6. Twenty hundred weights make one ton. No Error.
a b c d

7. All the three commander-in chiefs are meeting the President today.
a b c
No error.
d

8. I who your leader will give the signal. No error.
a b c d

9. Nothing is given for nothing. No error.
a b c d

10. Let you and he go together. No error.
a b c d

11. He failed in he attempted. No error.
 a b c d
12. He knows better than to quarrel. No error.
 a b c d
13. Few Indian towns are so big as Madras. No error.
 a b c d
14. Why should I suspected by you. No error.
 a b c d
15. Either he or I are mistaken. No error.
 a b c d

41. Read the passage and answer the questions given below :

Monday morning found Tom Sawyer miserable. Monday morning always found him so- because it began another week's slow suffering in school. He generally began that day with wishing he had had no intervening holiday, it made the going into captivity and fetters again so much more odious. Tom lay thinking. Presently it occurred to him that he wished he was sick; then he could stay home from school. Here was a vague possibility. He canvassed his system. No ailment was found, and he investigated again. This time he thought he could detect colicky symptoms, and he began to encourage them with considerable hope. But hey soon grew feeble, and presently died wholly away. He reflected further. Suddenly he discovered something. One of his upper front teeth was loose. This was lucky; he was about to begin to groan as a 'starter', as he called it, when it occurred to him that if he came into court with that argument, his aunt would pull it out, and that would hurt. So he thought he would hold the tooth in reserve for the present, and seek further. Nothing offered for some little time, and then he remembered hearing the doctor tell about certain thing that laid up a patient for two or three weeks and threatened to make him lose a finger. So the boy eagerly drew his sore toe from under the sheet and held it up for inspection. But now he did not know the necessary symptoms. However, it seemed well worthwhile to chance it, so he fell to groaning with considerable spirit.

1. The word 'reflected' in the passage is closest in meaning to :
(a) consider (b) echoed
(c) returned (d) replicated
2. The phrase 'canvassing the system' in the passage means :
(a) appeal (b) campaign
(c) fight (d) check
3. The word in the passage which is the opposite of 'pleasing' is :
(a) suffering (b) intervening
(c) colicky (d) odious
4. Identify the statement which is true :
(a) Tom thought it was bad luck to have a shaky front tooth
(b) Tom hated being sick
(c) Tom began to encourage the colicky pain with hope
(d) None of the above
5. Monday morning found Tom Sawyer miserable. Why?
(a) Tom was feeling colicky
(b) Tom had a tooth ache
(c) Tom was scared of going to the doctor
(d) Tom did not like going to school
6. Why did Tom wish he had had no intervening holiday?
(a) It made going back to school so much more hateful
(b) Tom did not want to stay at home
(c) School was always great fun for Tom
(d) All of the above

7. "Ailment" means _____
8. The synonym for "fettlers" is
 - (a) fritters
 - (b) chains
 - (c) fight
 - (d) check
9. By which phrase does Tom describe his experience in school?
10. The word "sore" in the phrase "sore toe" means
 - (a) big
 - (b) broken
 - (c) letters
 - (d) none of the above
11. Why did Tom canvass his system?
12. Why did Tom hold up the sore toe for inspection?
13. What was the 'starter' for Tom Sawyer?
14. Based on the incident mentioned here, comment briefly on the character of Tom Sawyer?
15. Suggest a suitable title for the passage.

GROUP – B

42. Answer **all** the following questions :

Fill in the blanks with suitable **tense** forms of the verbs given in brackets :

1. Nadella _____ (choose) to join Microsoft because he _____ (want) to make a difference.
2. It _____ (be) an honour for him to lead and serve the company.
3. We _____ (go) for a movie yesterday. _____ (Do) you _____ (know) that my friend's daughter _____ (act) in that movie? She _____ (play) the role of the heroine's younger sister, but it _____ (be) an important role. None of us _____ (expect) her to do so well, but she _____ (do) a great job. I _____ (hear) that she even _____ (win) an award for her role. Our club _____ (host) a reception for her when she _____ (come) to our town next month.

Fill in the blanks with suitable prepositions :

4. He warned you _____ the danger, but you did not listen _____ him.
5. France is famous _____ its perfumes. You are looking _____ some _____ the most expensive brands available _____ this country.
6. This company deals _____ electronic goods. Ajay's been working here as Manager _____ two years now.
7. Rewrite the following sentence into active voice :
 - (a) Cricket is played in most countries today.
 - (b) Will you be supported by your friends in this venture?

43. Read the passage and answer the questions given below :

Muhammad Yunus, the founder of Grameen Bank, is a Bangladeshi banker, author and economist whose focus on microcredit and microfinance concepts led to him being awarded the Nobel Prize in 2006 for efforts to create economic and social development from below'. Yunus was born in 28 June 1940 in Chittagong. His father was jeweler and his mother was his role model; a women who helped anyone that knocked on their door. After high school and college, Yunus completed his PhD in Economics in the US and worked as an assistant professor of Economics till 1972, when he returned to Bangladesh. It was during this time that Yunus would stumble across an idea that lead to him helping millions of poverty people and would lead to him being awarded the Nobel Prize.

In 1974, Bangladesh suffered from a famine, resulting from rain and massive flooding that devastated crops. And the people of Bangladesh received no relief or aid from other countries. Yunus began to be actively involved in poverty reduction. He established a rural economic program as a research project and visited the poorest households in a village near Chittagong. He interviewed a woman who was making bamboo stools and learnt that she was being charged

exorbitant rates for her loans, and thus was barely making a profit. He realized the potential for recovery then and there and in an exhibition of practical economics, loaned the equivalent of twenty-seven US dollars to forty-two women in the village. It was his first loan. With more advantageous rates, these women were able to raise their profits and manage better than before. Without these new rates, the women would likely have been stuck in a rut for the rest of their lives. Yunus realized that on a smaller scale, microfinance and microcredit could really help Bangladesh's struggle with poverty.

1. The prefix _____ is used in the passage for 'small scale'
2. The word 'devasted' means _____
(A) Devoid (B) Desperate
(C) Destroyed (D) Deserted
3. The phrase that means 'without any change or improvement' is _____
4. The phrase 'from below' in the first sentence is used in the sense of _____
(A) Below sea level (B) From a disadvantaged country
(C) Below poverty line (D) None of the above
5. The word closest in meaning to "exorbitant" is _____
(A) Ineffective (B) Expected
(C) Easily available (D) Highly priced
6. The word 'rates' is related to _____
(A) Cost (B) Interest
(C) Profit (D) Loss

7. The word that is the antonym of 'urban' is _____
8. 'Exhibition of ' means _____
- (A) Display (B) Open Mindedness
(C) Expression (D) None of the above
9. The wrongly spelt word is :
- (A) Exorbitant (B) Advantageous
(C) Microcredit (D) Potential
10. The correctly spelt word is :
- (A) Povertystruck (B) Exhibition
(C) Famin (D) Poverty Stricken
11. I suppose the headmaster himself will _____ the matter now.
- (A) Look into (B) Look at
(C) Look out for (D) Look up
12. In spite of our best efforts at secrecy, my mother _____ our plans for a surprise party.
- (A) Turn up (B) Got wind of
(C) Caught up with (D) Wound up
13. A person who studies human cultures and societies is _____
- (A) A philologist (B) An archaeologist
(C) An anthropologist (D) A linguist
14. Correct the spelling of the following word and make a sentence of your own 'necessity'.

Find the antonyms of the words in italics :

15. *Escalating* prices cause hardship to the poor

- (A) Fixed (B) Falling
(C) Reasonable (D) Fluctuating

44. Answer **all** the following questions :

Fill in the blanks with suitable modal auxiliaries from the list given below :

(will, would, should, can, must, might, need, dare, used to)

1. Sara _____ to do some exercises for her shoulder, otherwise she _____ need a surgery.
2. You _____ have spoken rudely to her, otherwise she _____ not have left soon.
3. _____ you sing a song for Tara's birthday? You _____ sing so well when we were in school.
4. I _____ not climb up the hill, it _____ be slippery after such heavy rain.
5. _____ you be coming tomorrow? We really _____ complete that file.

Complete the following sentences with suitable verbs and corresponding question tags :

6. You aren't coming to college tomorrow, _____?
7. Rahman _____ the boy who stood first in class, isn't he?
8. Jaya goes to the library every Saturday, _____?
9. Let us all go for a movie next Sunday, _____?
10. _____ as tall as Rosy, aren't I?

Insert the adverb given in brackets in the correct position in the sentence :

11. She impressed him by her singing. (greatly)
12. There was nothing to do but wait for the next bus to arrive. (else)
13. He admires my clothes. (always)
14. This room is big enough for all of us to sleep in. (enough)
15. The new tax structure is tough on the middle classes. (rather)

(2 × 15 = 30 Marks)

St. Xavier's College

Reg. No. :

Name :

Third Semester B.A./B.Sc. Degree Examination, March 2021

First Degree Programme Under CBCSS

Hindi

Language Course — (Additional Language — III)

HN 1311.1 — POETRY AND GRAMMAR

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

- I. एक या दो वाक्यों में उत्तर लिखिए।
 1. सूरदास के गुरु कौन हैं?
 2. हिन्दी किस लिपि में लिखी जाती है?
 3. अष्टछाप की स्थापना किसने की?
 4. तुलसीदास के बचपन का नाम क्या है?
 5. तारसप्तक के सम्पादक कौन थे?
 6. राष्ट्रकवि की उपाधि से सम्मानित कवि कौन हैं?
 7. उजाला किसकी रचना है?
 8. 'लड़का' शब्द का भाववाचक संज्ञा लिखिए।

9. नागार्जुन ने मैथिली में किस नाम से लेखनी चलाई?

10. छायावाद के चार स्तंभ कौन-कौन हैं?

(10 × 1 = 10 Marks)

II. किन्हीं आठ प्रश्नों का उत्तर दो या तीन वाक्यों में लिखिए।

11. कबीरदास ईश्वर से भी अधिक महत्व किस को देते हैं? क्यों?

12. दूध पिलाने के लिए यशोदा कृष्ण को क्या प्रलोभन देती है?

13. तुलसीदास क्यों कहते हैं कि सन्त आम के पेड़ के समान हैं?

14. "जाति न पूछो साधु की, पूछि लीजिये ज्ञान।
मोल करो तलवार का, पड़ा रहन दो म्यान।"

- भाव समाझाइए।

15. "आवत ही हरषै नहीं नैनन नहीं स्नेह।
तुलसी तहाँ न जाइये कंचन बरसे मेघ।"

- भाव समाझाइए।

16. संज्ञा किसे कहते हैं? उसके भेद क्या-क्या हैं?

17. 'को' विभक्ति के विविध कारक रूपों का परिचय दीजिए।

18. भाववाचक संज्ञायें किस प्रकार के शब्दों से बनती हैं? उदाहरण सहित लिखिए।

19. विभक्ति और कारक में क्या भेद है?

20. आदिवासी नीजवान नदी को कैसे मलिन करता है?

21. उदयप्रकाश का लघु परिचय दीजिए।

22. यशोधरा क्यों दुखी है? स्पष्ट कीजिए।

23. सुमित्रानन्दन पंत क्यों कहते हैं कि वे चिर सुख और दुख नहीं चाहते?

24. मुरझाया फूल किसका प्रतीक है? स्पष्ट कीजिए।

25. "सुनो हमें अनहद की तरह
और समझो जैसे समझी जाती है
नयी-नयी सीखी हुई भाषा।"
— भाव समझाइए।

26. "शक्ति रहे तेरे हाथों में -
छूट न जाये यह चाह सृजन की
शक्ति रहे तेरे हाथों में
रुक न जाए यह गति जीवन की।"
— भाव समझाइए।

(8 × 2 = 16 Marks)

III. किन्हीं छः प्रश्नों का उत्तर लिखिए।

27. बाल कृष्ण अपनी माता से किस बात की शिकायत करता है?

28. 'सुख और दुख' कविता में कवि के दार्शनिक विचार क्या हैं?

29. नैरागी के अनुसार वर्तमान मथुरा की स्थिति कैसी है?

30. 'उड़ चल हारिल' कविता में चित्रित कर्मरत जीवन पर प्रकाश डालिए।

31. "गोधन, गज धन, बाजि धन और रतन धन खान।
जन आवत संतोष-धन सन धन धूरि समान।"
— सप्रसंग व्याख्या कीजिए।

32. "बुरा जो देखन मैं चला, बुरा न मिल्या कोय।
जो दिल खोजा अपना, मुझ से बुरा न कोय।"
— सप्रसंग व्याख्या कीजिए।

33. आदरसूचक 'आप' और निजवाचक 'आप' में क्या अन्तर है? उदाहरण सहित लिखिए।

34. संख्यावाचक विशेषण और परिमाण वाचक विशेषण में क्या अन्तर है ?

35. स्त्रीलिंग संज्ञाओं के पहचान के किन्हीं पाँच नियम लिखिए।

36. "विश्व में है फूल, तू सबके हृदय भाता रहा,

दान कर सर्वस्व भी तू हाथ हर्षाता रहा।

जन न तेरी दशा पर दुखा हुआ संसार को ?

कौन रोएगा सुमन, हम से मनुज निस्सार को।"

— सप्रसंग व्याख्या कीजिए।

37. स्वयं सुसज्जित करके क्षण में

प्रियतम को प्राणों के पण में,

हमें भेज देती है रण में —

क्षत्र धर्म के नाते।

— सप्रसंग व्याख्या कीजिए।

38. 'उजाला' कविता में कवि ने क्या व्यक्त किया है ?

(6 × 4 = 24 Marks)

IV. किन्हीं दो प्रश्नों के उत्तर लिखिए।

39. पटित पाठ के आधार पर कबीरदास के काव्य की विशेषताओं पर प्रकाश डालिए।

40. 'स्त्रियाँ' कविता का भाव समझाइए।

41. भिक्षुक कविता की समीक्षा कीजिए।

42. 'वह फिर जी उठी' कविता हमारे वर्तमान परिस्थिति से जुड़ी है। स्पष्ट कीजिए।

43. कारक की परिभाषा देकर उसके भेदों को उदाहरण सहित समझाइए।

44. सर्वनाम किसे कहते हैं उसके भेदों को उदाहरण सहित समझाइए।

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.A./B.Sc. Degree Examination, March 2021

First Degree Programme under CBCSS

Malayalam

Language Course – Additional Language III

ML 1311.1 : ഭൂശൃകലാസാഹിത്യം

(2019 Admission - Regular)

Time : 3 Hours

Max. Marks : 80

- I. ഒരു വാക്കിലോ ഒന്നോ രണ്ടോ വാക്യത്തിലോ എല്ലാ ചോദ്യത്തിനും ഉത്തരമെഴുതുക.
1. നളചരിതം ആട്ടക്കഥയ്ക്ക് കാനാരതാരകം എന്ന വ്യാഖ്യാനം രചിച്ചതാര്?
 2. തുള്ളല്പ്രസ്ഥാനത്തിന്റെ ഉപജ്ഞാതാവാര?
 3. 'ബൈസിക്സിൾ തീവ്സ്' സിനിമയുടെ സംവിധായകൻ ആര്?
 4. 'കനലാട്ടം' ആരുടെ കൃതിയാണ്?
 5. വറീത് ഏതു കൃതിയിലെ കഥാപാത്രമാണ്?
 6. ലോഷയാത്ര തുള്ളലിന്റെ കഥ അരങ്ങേറുന്ന വനപ്രദേശം ഏത്?
 7. 'നല്ലതു നല്ലതിനോടേ ചേരണം' - ആരുടെ വാക്കുകളാണിത്?

8. കാളിദാസന്റെ അഭിജ്ഞാനശാകുന്തളം നാടകത്തിന് ഏ.ആർ. തയ്യാറാക്കിയ പരിഭാഷയുടെ പേരെന്ത്?
9. നളന്റെ രാജ്യം ഏത്?
10. 'ഇവൾ തന്നെക്കൂടി അറിയുന്നില്ല. പിന്നെയെന്നോ അരിഥിയെ?' - ആരായിരുന്നു ആ അരിഥി?

(10 × 1 = 10 Marks)

II. ഒരു ഖണ്ഡികയിൽ കവിയാതെ എട്ടു ചോദ്യത്തിന് ഉത്തരം എഴുതുക.

11. 'പ്രാണനാ, മരിക്കാതെ, മരണമില്ലാതെ എവിടോ കഴിയൂ' - ആരെക്കുറിച്ചാണ് പരാമർശം? വ്യക്തമാക്കുക.
12. 'അഗ്നിയല്ലാതെ ദഹിപ്പിക്കുമോ?' - സന്ദർഭവും ആശയവും വ്യക്തമാക്കുക.
13. 'നിനക്കറിയാ, നാട്ടിലോരോ കമ്പിക്കാലിനും ഞാൻ കടക്കാരനാ' - സൂചിതമെന്ത്?
14. ഭർത്തൃശൃംഗത്തിലേക്കു പോകുന്ന ശകുന്തളയെ ആശ്രമവൃക്ഷങ്ങൾ അന്യഗ്രഹിച്ചതെങ്ങനെ?
15. 'വിധി മികവേറും നിന്നെ മമ സഖിയായിട്ടല്ല നല്ല നിധിയായിട്ടല്ലോ തന്നു' - സന്ദർഭം വ്യക്തമാക്കുക.
16. 'എനിക്കീ വേദാന്തമൊന്നും വേണ്ട' - ആരുടെ വാക്കുകൾ? സന്ദർഭം എഴുതുക.
17. 'ഭഗവാനേ, ഇതൊരാഴ്ചിനല്ല, വരം തന്നെയാണ്' - സൂചിതമെന്ത്?
18. സഖിമാരേ! നമുക്കു ജനകപാർശ്വേ ചെന്നാലല്ലീ കൗതുകം? വിവക്ഷിതമെന്ത്?
19. 'ഞങ്ങളെ നീ ആരുടെ കൈയിലാണ് ഏല്പിക്കുന്നത്?' - ആരുടെ വാക്കുകൾ? സന്ദർഭമെന്ത്?
20. തന്നെ പിടികൂടിയ നളമഹാരാജാവിനെ ഓരോ വൃക്ഷത്തെയും അങ്ങനെ?

21. 'ചേതമില്ലാത്തതാർക്കും ചെയ്തുകൊടുക്കണമത്രാ!' - ആരുടെ വാക്കുകൾ ? സന്ദർഭം എഴുതുക.
22. 'യൗവനം വന്നുദിച്ചിട്ടും ചെറുതായില്ല ചെറുപ്പം' - വക്താവർ ? സൂചിതമെന്ത് ?
23. 'കേട്ടാലും ദുരിതശാന്തി കേവലം നമുക്കുണ്ടാകും' - സൂചിതം വ്യക്തമാക്കുക.
24. വിറ്റോറിയോ ഡിസീക്കയെക്കുറിച്ച് കുറിപ്പെഴുതുക.
25. തുള്ളലിന്റെ ഉത്ഭവത്തെക്കുറിച്ചുള്ള ഐതിഹ്യമെന്ത് ?
26. 'ഒന്നിനയച്ചാലക്കമമാത്രം
വന്നു പറഞ്ഞീടുകിലതു പോരും'
- ആരുടെ വാക്കുകൾ ? വ്യക്തമാക്കുക.

(8 × 2 = 16 Marks)

- III. ഓരോന്നിനും ഒന്നരപ്പറത്തിൽ കവിയാതെ ആറു ചോദ്യത്തിന് ഉത്തരമെഴുതുക.
27. ഗൃഹിണീധർമ്മത്തെപ്പറ്റി കണ്യമഹർഷി ശകുന്തളയ്ക്കു നൽകുന്ന ഉപദേശമെന്ത്?
28. 'ഗുണവുമനവധി ദോഷമായിതു' - ആരുടെ വാക്കുകൾ ? സാരസ്യമെന്ത് ?
29. ശാകുന്തളത്തിലെ അനസൂയയും പ്രിയംവദയും സ്വഭാവം കൊണ്ട് വ്യത്യസ്തരാകുന്നതെങ്ങനെ ?
30. 'സബർമതി ദൂരെയാണ്. നവഖലിയാണ് സമീപം. നവഖലി !' - സന്ദർഭം എഴുതുക.
31. 'പുകകൊണ്ടുകണ്ണുമറഞ്ഞിരുന്നുവെങ്കിലും ഹോതാവ് ഹോമിച്ചത് ഭാഗ്യവശാൽ അഗ്നിയിൽത്തന്നെ പതിച്ചു' വക്താവർ ? വിവക്ഷിതമെന്ത് ?
32. 'നല്ലതു നല്ലതിനോടേ ചേരണം' - സന്ദർഭവും സാരസ്യവും വെളിപ്പെടുത്തുക.
33. കുഞ്ഞമ്പുവെന്ന കഥാപാത്രം 'രാവുണ്ണി' നാടകത്തിൽ വഹിക്കുന്ന പങ്കെന്ത് ?
34. 'മാറ്റാരിൽ കനിവേറ്റമതുളളൊരു
കുറ്റാരേക്കാൾ മാറ്റാർ നല്ല'
- ദുര്യോധനൻ ഇങ്ങനെ പറയാൻ കാരണമെന്ത് ?
35. ഉത്തമദൂതനെന്ന നിലയിൽ ഹംസത്തിന്റെ സ്വഭാവം നിരൂപിക്കുക.

36. 'ആ ഇക്കണ്ട നെലത്തിന് ഇങ്ങനെ എത്രയെത്ര കഥ പറയാൻ കാണും.' - രാവുണ്ണി ഇങ്ങനെ പറയാൻ കാരണമെന്ത്?
37. പാണ്ഡവരുടെ വനജീവിതത്തെക്കുറിച്ചറിയാൻ ദുര്യോധനൻ അയച്ച ദൂതൻ തിരികെയെത്തി പറഞ്ഞ കാര്യങ്ങളെന്തെല്ലാം?
38. ചലച്ചിത്രനിർമ്മിതിയിൽ തിരക്കഥ വഹിക്കുന്ന പങ്കെന്ത്?

(6 × 4 = 24 Marks)

IV. മൂന്നു പുറത്തിൽ കവിയാതെ രണ്ടു ചോദ്യത്തിന് ഉത്തരം എഴുതുക.

39. നളചരിതം ആട്ടക്കഥയുടെ ഭാഷാപരവും സാഹിത്യപരവുമായ സവിശേഷതകൾ വ്യക്തമാക്കുക.
40. ഘോഷയാത്രയെ ആധാരമാക്കി നമ്പ്യാർക്കവിതയുടെ സവിശേഷതകൾ വിശദമാക്കുക.
41. ശാകുന്തളത്തിലെ നാലാമങ്കത്തിന്റെ പ്രാധാന്യത്തെക്കുറിച്ച് ഉപന്യസിക്കുക.
42. രാവുണ്ണി നാടകത്തെ ആധാരമാക്കി, പി.എം. താജിന്റെ നാടകസങ്കല്പത്തെക്കുറിച്ച് പ്രതിപാദിക്കുക.
43. 'ബൈസിക്കിൾ തീവ്സ്' സിനിമയിൽ അവതരിപ്പിക്കുന്ന യാഥാർത്ഥ്യങ്ങളുടെ ആഴം വെളിപ്പെടുത്തുക.
44. ഗാന്ധിയൻദർശനങ്ങളുടെ ആവിഷ്കാരം 'സബർമതി ദൂരെയാണ്' നാടകത്തിൽ നിർവ്വഹിക്കപ്പെടുന്നതെങ്ങനെ?

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.A./B.Sc. Degree Examination, March 2021

First Degree Programme under CBCSS

LANGUAGE COURSE (ADDITIONAL LANGUAGE) — LATIN

LT 1311 : LITERATURE IN LATIN

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

PART – A

Responde omnibus

Scribe quod non aptum

1. Leo, Arbor. Canis, Lupus
2. Psalmus, Dominus, Baculus, Rursus.

Delige verbum aptissimum.

3. Cerberus intrat, Cerberus (circumspectant, circumspectamus, circumspectare, circumspectat).
4. Servus in atrio.....(lahorat. laboramus. laborant, laboravi).

Indica Verum (T) an falsum (F)

5. Amicus Caecilium visitat. Amicus est agricola.

6. Metella in atrio sedet.

Scribe titulum poematis:

7. Caetera rerum opifex animalia finxit ad usus

Quaeque suos, equus ad cunctos se accommdat unus:

8. Cum de fenestra corvus raptum caseum

Comesse vellet, celsa residens arbore,

Vulpes hunc vidit.

Corrige sententias sequentes :

9. Ego prima partis capio, quoniam nomimor leo.

10. Scribe sentiam utens 'salutare'.

(10 × 1 = 10 Marks)

PART – B

Responde Octo De datis

Explica :

11. Laborare est orare

12. Venus et Mars

13. Mercurius

14. Clement et Vincent

Expande et Explica:

15. Cu

16. Ra

17. R. I. P.

Converte in linguam Latinam

18. O what a brightness, crow, your feathers have.
19. Pater noster qui es in caelis,
20. Grumio sings in the kitchen.

Converte in linguam Anglicam

21. Roma copias bonas atque arma habebat.
22. Coquus est in culina. Coquus in culina dormit.

Responde et disserta breviter sequentes res

23. Amicus et Caecilius
24. "Italia"
25. Cincinnatus
26. Sosia versus Mercurius.

(8 × 2 = 16 Marks)

PART – C

Responde Sex De Datis

Explica sententias datas

27. Secundam habere cupio, quia sum vobis fortiori
28. Pacem amabat et populo erat gratus quod Romanis leges multas bonasque dedit.
29. Eo die tamen lupo gregem invaserat et multas oves cum ipso puero necavit.
30. Si vocem haberes. nulla prior ales foret.

31. Tum Horatius in ponte sine auxilio stat. Pro vita sua non timebat.
32. Urbi nomen Romam dedit. Romulus ob sapientiam urbem bene regnabat.
33. Salvus sum! me non vidit! nam nomen mihi non nescio quis sed Sosia est.

Redde in Latinam linguam

34. Now I am about to enter the house. and narrate the deeds at home., but who is this man? whom do I see in front of the house of my master? the lord? I pray by Hercules, how dare he is! I have never seen a more courageous man. It is not pleasing at all. Certainly my reception will be fisty. Most wretched I am!
35. Italy is a peninsular in Europe. The peninsular is long and wide. Many inhabitants are farmers and sailors. Italy is famous and ancient. Great is the fame of Italy. In Italy there are many roads and they are beautiful and long.
36. There were seven kings of the city of Rome. Romulus built a small city on the Palatine mount.

To the city he gave the name Rome. Romulus ruled the city well because of his wisdom.

He gave good advice to the people.

Because there were not women in the city, the Romans called their neighbours to games. Then they got women and girls by arms.

Redde in Anglicam linguam

37. Parasti in conspectus meo mensam

adversus eos qui tribulant me;

impinguasti in oleo caput meum:

et calix meus inebrians. quam praeclarus est!

Et misericordia tua subsequetur me

omnibus diebus vitae meae;

et ut inhabitem in domo Domini

in longitudinem dierum.

38. Multi in urbe habitabant. Multi erant agricolae et post colles et post flumen agros arabant. Tarquinius Superbus erat ultimus rex Romanus, sed bene diuque regnavit. Copiae Tarquini Superbi bene pugnabant et nationes proximas Romae superaverunt.

(6 × 4 = 24 Marks)

PART – D

RESPONDE DUO DE DATIS

39. Disserta et Scribe morum praecepta in 'Tres Venatores',

40. Scribe libellum in comoediam in Amphitruone Plauti.

41. Deus est pastor bonus. Disserta et scribe in base Scripturae Divinae.

Scribe fabulam verbis aptis

42. Quod Romulus et Remus filii ___1___ (ero. erat. erant) dei armorum et ___2___ (bellarum, belli, bellum) populus Romanus proelia ___3___ (amabat. amo. amamus). ___4___ (Ero, Eramus, Erant) etiam filii Rheae Silviae. Amulius ___5___ (ero, erat, eramus) avunculus Rheae Silviae et Albam Longam regnabat, sed pueros non ___6___ (amabat, amabo, amabunt). Amulius filios Rheae Silviae ___7___ (necavit, necare, necamus) parabat, sed servus in ___8___ (aqua, aquam, aquae) in acra ___9___ (Pueri, puer, pueros) locat et vitas puerorum ___10___ (servas, servat, servamus). Mars filios ___11___ (suos, suas, suos) ad ripam Tiberis ___12___ (portamus, porto, portat). Lupa pueros ibi ___13___ (curo, Curabat, curam). Tum Agricola ___14___ (bonus, bona, bonam) ad casam suam Romulum et Remum ___15___ (porto, portamus, portat).
43. Urbis Romae septem ___1___ reges (eram, erant, est). Romulus urbem ___2___ (parva, parvas, parvam) in monte Palatino aedificavit. Urbi ___3___ (nomen, nominis, nomini) Romam dedit. Romulus ob sapientiam ___4___ (urbs, urbi, urbem) bene ___5___ (Regnabam, Regnabas, Regnabat). Populo consilium ___6___ (bonum, bonus, bonis) ___7___ (dabam, dabat, dabamus). Quod in urbe non ___8___ (eram, erant, eras) mulieres Romani ___9___ (finitimos, finitimus, finitimis) suos ad ludos ___10___ (vocavisti, vocaveram, vocaverunt). Tum feminas ___11___ (puellaque, puellasque, puellaeque) armis obtinuerunt. Et sabini et ___12___ (socii, socios, sociis) contra Romanos ___13___ (pugnaveram, pugnavi, pugnaverunt), sed copiae romane hostes ___14___ (supervaisti, superaverunt, superavimus). Postea numa pompilius erat rex ___15___ (Graecae, Trojanorum, Romanorum).
44. Puer quidam oves ___1___ (pascebant, pascebamur, pascebat). Vidit procul ___2___ (agricolas, agricolum, agricolarum) in ___3___ (ager, agros, agris) arantes et ___4___ (magnus, magna, magnum) ___5___ (clamoris, clamor, clamorem) dedit "Heus, hues, amici! Venite, venite! Lupus, lupus!" ___6___ (Audierunt, audit, audis) agricolae, confestim ___7___ (laborem, labor, laboris) relinquunt, et ad ___8___ (puer, puerorum, puerum) contendunt ___9___ (hasta, hastarum, hastis) armati. ___10___ (Lupus, luporum, lupum) tamen non inveniunt, sed in ___11___ (arbores, arbore, arborem) puerum ridentem ___12___ (vides, videt, vident). Irati ad ___13___ (agros, agris, ager) redeunt. Paucos post dies puerum rursus clamantem et auxilium petentem audiunt, sed nunc laborem non reliquunt. ___14___ (Eo, ea, eis) die tamen lupus gregem invaserat et multas oves cum ipso puero necavit. Haec fuit ___15___ (poena, poenis, poenum) mendacii.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021

First Degree Programme Under CBCSS

History

Core Course III

HY 1341 – EVOLUTION OF EARLY INDIAN SOCIETY AND CULTURE

(2013, 2015-18 Admission)

Time : 3 Hours

Max. Marks : 80

PART – A

Answer **all ten** questions in one word as in one or two sentences each. Each question carries **1** mark.

1. In which Neolithic site, domestic dogs were buried with their masters grave?
2. What is the meaning of the word "Mohen jodaro"?
3. What was the main issue of the 'Battle of Ten kings'?
4. What was the name of river Saraswati in Punjab?
5. Who was the ruler associated with Allahabad Pillar inscription?
6. Which was the capital of Chera Kingdom?
7. Who was the author of Arthasastra?
8. What was the purpose of Dharma Mahamatras?

9. What is the ancient name of Kodungallus?
10. Which Upanishad contains the concept of 'Satyameva Jayate'?

(10 × 1 = 10 Marks)

PART – B

Answer **any eight** of the following in one paragraph each. Each question carries 2 marks.

11. Jorwe culture.
12. Pleistocene.
13. Bhimbetka.
14. Ochre coloured pottery.
15. Tamil Bhakti Movement.
16. Sabha, Samiti.
17. Pasupati Mahadeva.
18. Sangam literature.
19. Dasas and Dasyus.
20. Asokan Inscription.
21. Vardhamana Mahavira.
22. Roman Trade.

(8 × 2 = 16 Marks)

PART – C

Answer **any six** of the following in not more than 120 words each. Each question carries **4** marks.

23. Discuss the important features of Neolithic sites.
24. Discuss the different phases in the Paleolithic age.
25. 'Perhaps no other Bronze age civilization paid so much attention to health and cleanliness as did to be avoided the Harappan's'. Discuss.
26. Write a note on Rig Vedic Gods.
27. Discuss the Varna system.
28. Discuss the later Vedic political organisations.
29. Discuss the causes that led to the fall of Mauryan Empire.
30. Write a note on Buddhist literature.
31. Write a note on Harappan script.

(6 × 4 = 24 Marks)

PART – D

Answer **two** of the following. Each question carries **15** marks.

32. Analyze the contribution of the Gupta period to Indian culture.

OR

33. Explain the life in the Sangam Age.

34. Discuss the characteristics of the Copper stone phase or the Chalcolithic culture.

OR

35. Explain the material condition of Indian during the age of Buddha.

(2 × 15 = 30 Marks)

St. Xavier's College

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021

First Degree Programme under CBCSS

Mathematics

COMPLEMENTARY COURSE FOR ECONOMICS

MM 1331.5 : MATHEMATICS FOR ECONOMICS – III

(2013, 2015-2018 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – I

All the **first ten** questions are compulsory. They carry **1** mark each.

1. Find the anti derivative of e^{2x} .
2. If $\frac{d}{dx}f(x) = 4x^3 - \frac{3}{x^4}$, then what is $f(x)$?
3. Find $\int \sqrt{ax+b} \, dx$.
4. Evaluate $\int_0^1 \frac{dx}{x+4}$.
5. If $\int_{-2}^3 f(x)dx = 7$ and $\int_{-2}^0 f(x)dx = -9$ then what is $\int_0^3 f(x)dx$?

6. If $f(x)$ is an even function, what is the relation connecting $\int_{-a}^a f(x) dx$ and $\int_0^a f(x) dx$?
7. If the present population is a and it doubles every year, then what is the population after n years.
8. Find the sum of the series $1 + \frac{1}{4} + \frac{1}{16} + \frac{1}{64} + \dots$
9. When can we say that a series is convergent?
10. If the n^{th} term of a series is $\frac{n}{n^2+1}$, Write the series.

SECTION – II

Answer **any eight** questions from among the questions **11 to 22**. These questions carry **2** marks each.

11. Sketch the area represented by $y = 3$ above the x -axis and between $x = 4$ and $x = 6$ and evaluate it.
12. Evaluate $\int x^3 \sqrt{x^4 - 2} dx$.
13. Evaluate (a) $\int \frac{2x-2}{x^2-2x+7} dx$ (b) $\int \frac{\log x}{x} dx$.
14. Find $\int_0^2 x \sqrt{x+2} dx$.
15. The marginal cost function is $f'(x) = 10 - 2x$, find the total cost of $f(0) = 30$.

16. If Y is the constant stream of yield and γ is the rate of interest, prove that the capitalization is $\frac{Y}{\gamma}$.
17. Expand $(1-x)^{-2}$.
18. Find the Maclaurin's series for $\sin x$.
19. The sum of n terms of a series is $\frac{6n^3 - 5n^4}{n^4 - n - 2}$. Find the sum to infinity of the series.
20. Sum the series $\sum_{n=1}^{\infty} \frac{n^2}{(n+1)!}$.
21. Show that $\log 2 - \frac{1}{2}(\log 2)^2 + \frac{1}{3}(\log 2)^3 - \dots = \frac{1}{2}$.
22. Prove that $\frac{1}{1.2} - \frac{1}{3.4} + \frac{1}{5.6} - \dots = \log 2$.

SECTION - III

Answer **any six** questions from among the questions **23 to 31**. These questions carry **4** marks each.

23. Evaluate $\int \frac{5x-5}{x^2-5x+6} dx$.
24. Find $\int e^x \sin x dx$.
25. Evaluate $\int_0^1 \int_x^{x^2} (x-2) dy dx$.
26. Find the demand curve if the elasticity of demand curve is $x = a - bp$, where a and b are constants.

27. Find the coefficient of x^n in the expansion of $\sum_{n=0}^{\infty} \frac{(-1)^n (a+bx)^n}{n!}$.

28. Show that $1 + \frac{1+2}{2!} + \frac{1+2+2^2}{3!} + \frac{1+2+2^2+2^3}{4!} + \dots = e^2 - e$.

29. Show that $\log\left(\frac{n+1}{n}\right) = 2\left(\frac{1}{2n+1} + \frac{1}{3(2n+1)^3} + \frac{1}{5(2n+1)^5} + \dots\right)$.

30. Sum the series $1 + 2 \cdot \frac{1}{6} + \frac{2.5}{2!} \frac{1}{6^2} + \frac{2.5.8}{3!} \frac{1}{6^3} + \dots$.

31. Find the fraction corresponding to the repeating decimal 0.252525... by expressing it as an infinite geometric series.

SECTION – IV

Answer **any two** questions from among the questions 32 to 35. These questions carry **15** marks each.

32. Explain Domar's model of public debt and national income. Prove with usual notations that the ratio of debt to income approaches $\frac{a}{\gamma}$.

33. Evaluate using Simpson's rule $\int_0^1 \frac{dx}{1+x}$ taking $n = 8$ intervals.

34. Evaluate using trapezoidal rule $\int_1^2 \frac{dx}{x}$ by taking 5 intervals.

35. Expand $\frac{e^x}{\cos x}$ using Macluarin's series.

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021

First Degree Programme under CBCSS

Economics

Foundation Course II

EC 1321 : INFORMATICS

(2015-18 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – I

Answer **all** questions. Each question carries 1 mark.

1. Software
2. Plagiarism
3. Cyber ethics
4. NICNET
5. Animations
6. E-purse
7. Word processor
8. Educational software
9. Output devices
10. ROM.

(10 × 1 = 10 Marks)

SECTION – II

Answer **any eight** questions in not more than **one** paragraph. Each question carries **2** marks.

11. What is a search engine?
12. What is hardware?
13. Explain about cyber crimes.
14. What is IP address?
15. What is ergonomics?
16. What is computer ethics?
17. What is exporting of data?
18. Define malware.
19. What is primary storage of a computer?
20. What is INFLIBNET?
21. What is Phishing?
22. What are the output devices of a computer?

(8 × 2 = 16 Marks)

SECTION – III

Answer **any six** questions not exceeding **120** words each. Each question carries **4** marks.

23. What are the applications of MS-Excel??
24. What is cyber crime?

25. What is e-commerce?
26. What is World Wide Web?
27. What is a computer virus?
28. What is Internet protocol?
29. What is Internet security?
30. What is an operating system?
31. What is spread sheet?

(6 × 4 = 24 Marks)

SECTION – IV

Answer **any two** questions. Each question carries **15** marks.

32. What is Phishing? What can be done to prevent it?
33. What is Digital Divide? How it can be addressed?
34. What is internet? Explain its scope and importance.
35. What are Excel functions? Explain in brief the important mathematical and statistical calculations using Excel.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021

First Degree Programme under CBCSS

Economics

Core Course III

EC 1341 : MICRO ECONOMICS II

(2015-2018 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – I

Answer **all** questions. Each question carries **1** mark.

1. Speculative motive
2. Risk diversification
3. Pareto criterion
4. Feasible solution
5. Rent
6. Oligopoly
7. Producer's equilibrium
8. Normative economics

9. Non-price competition
10. Variable.

(10 × 1 = 10 Marks)

SECTION – II

Answer **any eight** questions not exceeding one paragraph. Each question carries **2** marks.

11. Define profit maximizing output in perfect competition.
12. How Ricardo defines Rent?
13. List out some benefits of linear programming.
14. Write down the reason behind the backward bending supply curve.
15. Describe monopsony market.
16. What is the difference between rent and quasi rent?
17. Distinguish the relation between AR and MR curve in a market.
18. "Collective bargaining feature is good for the smooth functioning of a market". Justify.
19. Discuss the risk-return trade off with an example
20. List out different market structures.
21. What is the essence of marginal productivity theory?
22. Explain price discrimination and its types.

(8 × 2 = 16 Marks)

SECTION – III

Answer **any six** questions not exceeding **120** words. Each question carries **4** marks.

23. Discuss about risk and uncertainty theory of profit.
24. Write a note on Scitovsky double criterion.
25. What is kinked demand curve? Explain the reason behind the kinkiness of demand.
26. Describe the Loanable fund theory of interest.
27. Write a note on Hicks-Kaldor criteria on welfare.
28. Discusses the price output determination in perfect competition.
29. Give an account on dynamic theory of profit.
30. Write a note on Pareto's concept of welfare with illustration.
31. Discusses innovation theory of profit.

(6 × 4 = 24 Marks)

SECTION – IV

Answer **any two** questions, not exceeding **4** pages. Each question carries **15** marks.

32. Explain briefly the price and output determination under perfect competition.
33. Give a brief account on different theories of interest.
34. Discuss theories on New welfare economics.
35. Give an account on price output determination in monopoly market.

(2 × 15 = 30 Marks)

(Pages : 3)

K – 2234

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021

First Degree Programme Under CBCSS

Political Science

Complementary Course V

PS 1331 – PUBLIC ADMINISTRATION

**(Common for Philosophy, Economics, History, English, Islamic History,
Sociology)**

(2017, and 2018 Admission)

Time : 3 Hours

Max. Marks : 80

1. Answer in one or two sentences. Each question carries 1 mark. Answer all questions.

1. Public Administration.
2. Centralisation.
3. Woodrow Wilson.
4. Independent Regulatory Commission.
5. Co-ordination.
6. Budget.
7. Scalar process.
8. Personnel Administration.

9. Bases of departmentalization.
10. Delegation.

(10 × 1 = 10 Marks)

II. Answer in a paragraph. Answer **any eight** questions. Each question carries **2** marks.

11. Discuss Unity of command.
12. What is Hierarchy?
13. New Public Administration.
14. Bureaucracy.
15. Line and Staff Agencies.
16. Audit.
17. Performance Appraisal.
18. Panchayat Raj.
19. Direct Recruitment.
20. Discuss Good governance.
21. Co-ordination.
22. Union Public Service Commission.

(8 × 2 = 16 Marks)

III. Short Essay Questions (not to exceed 120 words). Answer **any six** questions. Each question carries **4** marks.

23. Write a note on growth of Public Administration.
24. Auxiliary agencies.
25. Explain the different types of Recruitment.

26. Write a note on Departments.
27. Write a note on Span of Control.
28. Discuss the importance of Public Relations in administration.
29. What is Development Administration? Explain the role of District Collector.
30. Discuss Politics - Administration Dichotomy.
31. Explain the significance of finance administration.

(6 × 4 = 24 Marks)

IV. Essay Questions. Answer **any two** questions. Each question carries **15** marks.

32. Describe the Nature and Scope of Public Administration.
33. Write a note on the powers and functions of the Chief Executive.
34. Explain the role of Public Corporation in Welfare State.
35. Write an essay on training.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021

First Degree Programme under CBCSS

Economics

Foundation Course II

EC 1321 : INFORMATICS FOR APPLIED ECONOMETRICS

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION - I

- I. Answer **all** questions in **one** to maximum **two** sentences. Each question carries **1** mark.
1. Econometrics
 2. Panel data
 3. Blog
 4. Regressand
 5. Population regression line
 6. Estimator
 7. Independent variable
 8. Gretl

9. Homoscedasticity
10. P value.

(10 × 1 = 10 Marks)

SECTION – II

- II. Answer **any eight** questions not exceeding one paragraph. Each Question carries 2 marks.
11. Distinguish between Theoretical Econometrics and Applied Econometrics.
12. What are the sources of data for econometric analysis?
13. Distinguish between Two - tailed and One -tailed test.
14. Distinguish between endogenous and exogenous variable.
15. Explain SPSS.
16. Explain type II error.
17. Explain Applied Econometrics.
18. Explain pooled data.
19. What is information networks?
20. Write a short note on stochastic disturbance terms.
21. Define informatics.
22. Explain E books.
23. Explain coefficient of determination.
24. What do you mean by the term 'linear' in linear regression model?
25. Write a short note on Ubuntu.
26. Explain sample regression function.

(8 × 2 = 16 Marks)

SECTION – III

III. Answer **any six** questions not exceeding **120** words. Each question carries **4** marks.

27. Describe the methodology of Econometrics.
28. What is Gauss Markov theorem? Explain.
29. Write a note on IFLIBNET.
30. Explain the simple regression model with an example.
31. Distinguish between time series and Cross-sectional data.
32. Elucidate the significance of the stochastic regression disturbance term in regression model.
33. Elucidate the features of Massive Open Online Courses.
34. What is spread sheet?
35. Explain goodness of fit. How will you test goodness of fit?
36. Explain r^2 .
37. Write a note on Heteroscedasticity.
38. Distinguish between panel data and pooled data.

(6 × 4 = 24 Marks)

SECTION – IV

IV. Answer **any two** questions not exceeding **4** pages. Each question carries **15** marks.

39. Explain the structure and types of economic data.
40. Explain Testing of Hypothesis. Discuss different steps involved in it.

41. Explain the meaning and scope of informatics. Discuss its role in Economics.
42. State and explain the assumptions of Classical linear Regression model.
43. Explain nature and scope of Econometrics. Discuss the steps involved in the traditional econometric methodology with an example.
44. What is Gretl? How it is useful to practical econometric analysis?

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4)

K – 2257

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021

First Degree Programme Under CBCSS

Economics

Core Course III

EC 1341 – INTRODUCTORY MACRO ECONOMICS

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – I

Answer **all** questions. Each question carries **1** mark.

1. Stagflation.
2. Aggregate supply.
3. Dear money policy.
4. LM curve.
5. Legal tender.
6. Commercial banks.
7. Stock variable.
8. Liquidity trap.
9. Multiplier.
10. Boom.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – II

Answer **any eight** questions not exceeding **one** paragraph. Each question carries **2** marks.

11. Explain the paradox of thrift.
12. What is consumer price index?
13. Explain structural unemployment.
14. Distinguish between crowding out and crowding in effects.
15. What is built in stabilizer?
16. Distinguish between autonomous and induced investment.
17. The sum of MPC and MPS is unity. Elucidate.
18. Write a note on open market operations.
19. What is financial crisis?
20. What are the objectives of fiscal policy?
21. Explain the concept of Keynes effect.
22. What are collateral securities?
23. Define double entry book keeping system.
24. Define incomes policy.
25. Explain Okun's law.
26. Explain financial stimulus.

(8 × 2 = 16 Marks)

SECTION – III

Answer **any six** questions not exceeding **120** words. Each question carries **4** marks.

27. Explain the various types of inflation.
28. Point out the IS- LM equilibrium.
29. What is investment multiplier?
30. What are the determinants of the consumption?
31. Write a note on quantitative credit control methods.
32. Explain the features of money market.
33. Explain the theory of liquidity preference.
34. Explain the scope of macro economics.
35. What are the methods to control inflation?
36. Explain the components of aggregate demand.
37. Distinguish between consumer price index and GDP deflator.
38. Examine the factors affecting investment.

(6 × 4 = 24 Marks)

SECTION – IV

Answer **any two** questions, not exceeding **4** pages. Each question carries **15** marks.

39. Explain briefly the fiscal and monetary policy multipliers.
40. Discuss the effectiveness of fiscal and monetary policy on IS-LM equilibrium.
41. Explain the Keynesian model of income determination.

42. What is the principal-agent problem you notice in the relationship between lender and borrower?
43. How can you measure the aggregate economy from the expenditure side? State the limitations of GDP as a measure.
44. Define central bank's policy rate. In what way it can affect economic spending.

(2 × 15 = 30 Marks)

St. Xavier's College

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021

First Degree Programme Under CBCSS

Political Science

Complementary Course – III

PS 1331 : PUBLIC ADMINISTRATION

**(Common for Philosophy, Economics, History, English,
Islamic History, Sociology)**

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

I. Answer **all** questions in **one** or **two** sentences. **Each** question carries **1** mark.

1. Conduct
2. E-governance
3. Luther Gullick
4. Organization
5. Administrative Accountability
6. Mixed corporation
7. Inter-State Commerce Commission
8. Direct recruitment
9. Delegation
10. Patronage Bureaucracy

(10 × 1 = 10 Marks)

II. Answer **any eight** questions in one paragraph. **Each** question carries **2** marks.

11. Evaluate the importance of public Administration.
12. What is meant by Appropriation Bill?
13. Note down the major defects pinpointed against the functioning of modern bureaucracy.
14. Comment on Politics-Administration Dichotomy.
15. Find out the importance of political neutrality of Indian Administrative Service.
16. Write a note on Performance Appraisal.
17. What are the objectives of Financial Administration?
18. Write a note on the different kinds of Corporations.
19. Explain the advantages of hierarchy in an organization.
20. Make a distinction between Line agency and Auxiliary agency.
21. Explain the major functions of UPSC.
22. Bring forth the importance of Promotion.
23. Write a note on Political Development.
24. Differentiate singular and plural budget.
25. Differentiate centralization and decentralization.
26. Explain the need of discipline in an organization.

(8 × 2 = 16 Marks)

III. **Short Essay.** Answer **any six** questions. **Each** question carries **4** marks.

27. Explain the factors determining Span of Control.
28. What are the functions of Staff agencies?

29. Distinguish between department and public corporation
30. Write down the features of New Public Administration.
31. Explain the need of coordination in an organization.
32. What are the major differences between Public Administration and Private Administration?
33. Explain the Bases of Departmental organization.
34. Compare and contrast Integration and Disintegration.
35. Explain the features of public corporations.
36. What is meant by development administration and what are the features of development administration?
37. Explain the different methods of training.
38. Write a note on Unity of Command.

(6 × 4 = 24 Marks)

IV. **Essay**, Answer **any two**. Each question carries **15** marks.

39. Write an essay on the Nature and Scope of Public Administration.
40. Explain the functions of the chief executive in Public Administration.
41. What are the different methods of recruitment? Analyze the major problems of recruitment.
42. Elucidate the budgetary process in India.
43. Explain the role performed by the District Collector in District Administration.
44. Explain Max Weber's theory of bureaucracy.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021

First Degree Programme Under CBCSS

Philosophy

Complementary Course

PL 1332 : ECO PHILOSOPHY

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions in **one** word or sentences. Each question carries **1** mark.

1. Who is the centre of the moral universe in Hebrew and Greek tradition?
2. Who said that humans are only "Plain members and citizens of the biotic community"?
3. The view that the whole is greater than the sum of the parts.
4. Ecosophy T.
5. Name the ethical position based on the view respect for life.
6. Non-anthropocentrism.
7. Who wrote the book *Ecology, Community and Lifestyle*?
8. Shallow ecology.

9. Who is the author of *A Sand Country Almanac*?
10. The School of ecophilosophy which refutes androcentrism.

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions in a paragraph each. Each question carries **2** marks.

11. The content of *Prthvi Sukta*.
12. Instrumental value.
13. As expansive a sense of self as possible.
14. Transpersonal ecology.
15. First two principles of deep ecology platform.
16. Intrinsic value.
17. Ecosystem.
18. Holism.
19. Extended family of all beings.
20. Misplaced misanthropy.
21. Sentientist ethics.
22. Eco-centrism.
23. Anthropocentric ecophilosophy.
24. "Integrity, stability and beauty of the biotic community".

25. Ecofeminist criticism against deep ecology.
26. "Human beings have no right to reduce this richness and diversity except to satisfy vital needs". Explain.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions in about **120** words each. Each question carries **4** marks.

27. Give an account of ecological conservation.
28. How would you relate the biodiversity with the idea of reverence for life?
29. Distinguish between metaphysical holism and ontological holism.
30. Explain the difference between anthropocentrism and androcentrism.
31. How intrinsic value theory of deep ecology is problematic, according to Peter Singer?
32. Examine the ecofeminist argument that environmental issue is a feminist issue.
33. Give an account of Warwick Fox's concept of intuition of deep ecology.
34. Explain the differences between biocentrism and ecocentrism.
35. State the notion of 'ecological self' proposed by Arne Naess'.
36. Explain the difference between ecophilosophy and ecosophy.
37. Explain the ecophilosophical message of *Vasudaiva Kutumbakam*.
38. Summarize Tom Regan's criticism against land ethic.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions in **600** words each. Each question carries **15** marks.

39. What are the principles of ecological platform? Explain.
40. Explain the uniqueness of Indian concept of nature.
41. Write an essay on Leopold's concept of land ethic.
42. What are the criticisms levelled against the principle of sustainability?
43. Distinguish between anthropocentrism and non-anthropocentrism with examples.
44. What are the significant features of Eco Philosophy?

(2 × 15 = 30 Marks)

(Pages : 4)

K – 2316

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021.

First Degree Programme under CBCSS

History

Foundation Course – II

HY 1321 – INFORMATICS

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

PART – A

Answer **all** questions in one sentence or two each, each carrying **1** mark :

1. Printer
2. Joystick
3. LAN
4. Software
5. Blog
6. Modem
7. Cyber world
8. Operating System

P.T.O.

9. Excel
10. EDUSAT

(10 × 1 = 10 Marks)

PART – B

Answer **any eight** of the following in one paragraph each. Each carries **2 Marks**

11. Google mapping
12. INFLIBNET
13. E-books
14. Input and Output device
15. Bookmark
16. WAN
17. Cyber Addiction
18. BRNET
19. Intranet
20. Digital divide
21. Wikipedia
22. Search Engines
23. Power Point
24. NICNET

- 25. Application Software
- 26. Free Software movement

(8 × 2 = 16 Marks)

PART – C

Answer **any six** of the following in not more than 120 words, each carrying **4** marks.

- 27. Discuss briefly about cyber laws in India.
- 28. Write a short note on the operating systems.
- 29. What do you mean by academic search engines?
- 30. Analyze the role of educational software.
- 31. Explain the introduction to the use of IT in Teaching.
- 32. Briefly explain cyber ethics.
- 33. Characteristic features of modern personal computer.
- 34. Write a short note on the computer network.
- 35. Distinguish between patent and plagiarism.
- 36. Assess the importance of cyber threat.
- 37. What is the significance of Internet in the world of teaching learning process?
- 38. Examine the health hazards of e-waste.

(6 × 4 = 24 Marks)

PART – D

Answer **any two** of the following in not more than 350 words.

Each question carries **15** marks

39. Assess the role of social media to creating awareness among the society.
40. Discuss the difference between Copy Right and Patents.
41. Critically examine the impact of IT on the society.
42. What are the important Cyber crimes and Cyber ethics? Discuss.
43. Trace the significance of social networking sites.
44. Write an essay on the history of computers.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021

First Degree Programme Under CBCSS

History

Core Course III

HY 1341 — EVOLUTION OF EARLY INDIAN SOCIETY AND CULTURE

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

PART – A

Answer **all** questions in **one** sentence or **two** each. Each carrying **1** mark.

1. Mohenjodaro
2. Kali Bangan
3. Budha Charita
4. Rig-Veda
5. Smriti Texts
6. Samiti
7. Chilapathikaram
8. Puranas
9. Asramas
10. Arthasastra

(10 × 1 = 10 Marks)

PART – B

Answer **any eight** of the following in **one** paragraph each. **Each** carries **2** marks.

11. Kalinga War
12. Niyoga
13. Gahapati
14. Dasakarmakara
15. Harappan Script
16. Mahavira
17. Tripitikas
18. Mahayana Buddhism
19. Gandhara- art
20. Akam songs
21. Muventar
22. Sati
23. Samudra Gupta
24. Chandra Gupta Maurya
25. Alwars
26. PGW culture

(8 × 2 = 16 Marks)

PART – C

Answer **any six** of the following in not more than **120** words. **Each** carrying **4** marks.

27. Discuss the Features of Neolithic Culture.
28. Give an Account of Harappan Trade.

29. Write a brief note on Dharmasastras.
30. Give an account of edicts of Asoka.
31. How far the study of coins help us to Reconstruct the History of Ancient India?
32. Trace the causes for the emergence of Mahajanapadhas.
33. Write a short essay on Jainism.
34. Discuss the features of Gupta Polity.
35. What are the important sources for the study of Mauryan Period.
36. Narrate the features of megalithic culture in South India.
37. Write a brief note on Theri-Gathas.
38. Narrate the features of Indo-Roman trade.

(6 × 4 = 24 Marks)

PART – D

Answer **any two** of the following. **Each** carries **15** marks.

39. Discuss the various Theories about the Decline of Harappan Civilization.
40. Critically examine the Position of Women in Vedic Period.
41. Sixth B.C. is known as a period of Second Urbanisation. Elucidate.
42. Assess the Role of Women in South India *Bhakti* Movement.
43. Sketch Briefly the Legacy Of King Harsha.
44. Critically examine the concept of 'Dhamma' by Asoka.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021

First Degree Programme under CBCSS

Mathematics

Complementary Course for Economics

MM 1331.5 MATHEMATICS FOR ECONOMICS – III

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

PART – A

Answer **all** questions. Each question carries **1** marks.

1. Evaluate $\int x^{10} dx$.
2. Find the value of $\int_0^2 x(x+2) dx$.
3. Define marginal cost function if the total cost is given as $f(x)$.
4. Define Discounting.
5. Give the equation for Y_t , the income at time t , if Y_t grows continuously at a constant rate r .
6. Define a series.
7. Define the convergence of a series.

8. Give the sum to n terms of the series, $a + ar + ar^2 + \dots$.
9. What can we say about the general term of a convergent series?
10. Give the Taylor series for $f(x) = ax^2 + bx + c$ about $x = 0$.

PART – B

Answer **any eight** questions. Each question carries 2 marks.

11. Evaluate $\int_0^{2\pi} \cos 2x \, dx$.
12. Find the value of $\int \frac{x^3 - 2x}{x} \, dx$.
13. What is the integral of $\sec x$?
14. Define an even function and evaluate $\int_{-a}^a f(x) \, dx$ for an even function.
15. If $\int_0^1 2f(x) \, dx = 2$ and $\int_1^3 f(x) \, dx = \frac{1}{2}$, evaluate $\int_0^3 f(x) \, dx$.
16. $\int_0^5 (x^2 + x) \, dx = a$ and $\int_0^5 (x^2 - x) \, dx = b$, find $\int_0^5 x^2 \, dx$.
17. State the generalised Exponential Law.
18. Find the total cost if the marginal cost is $2 + \frac{5}{x}$.
19. Write the series with sum up to n terms is $\frac{n}{n+1}$.
20. Find the multiplier in Economics for income propagation process if the marginal propensity to consume, $\alpha = 0.8$.
21. Show that $\frac{1}{9}$ can be expressed as the sum of a series with first term, $\frac{1}{10}$.

22. State the binomial series.
23. What is the Taylor Series for the function $f(x)$ about a point a .
24. Express e as a series.
25. Give the Maclaurin's series expansion for $f(x)$.
26. State the Taylors Theorem for several variables.

PART – C

Answer **any six** questions. Each question carries **4** marks.

27. Integrate $\frac{1}{x(x^5 + 1)}$.
28. State integration by parts and evaluate $\int x \sec^2 x \, dx$.
29. Derive the present value of capital assuming that $y_t = y$, a constant, using $c = y_t e^{-rt} \, dt$.
30. Find the total cost if the marginal cost is $3 + 8x + 15x^2$ and $f(0) = 10$.
31. Define the term Capitalization.
32. State the Simpsons Rule for approximate integration.
33. Evaluate $\frac{1}{2} + \frac{1}{4} + \dots + \frac{1}{2n}$.
34. Using the series for $\frac{1}{1-x}$, expand $\frac{30}{29}$ and find its value up to 4 decimals.
35. Write the series for e^x and e^{-x} and using $\cos x = \frac{(e^x + e^{-x})}{2}$, find the series for $\cos x$.

36. State the exponential series and evaluate $1 + 2x + \frac{4x^2}{2!} + \frac{8x^3}{3!} + \dots$ at $x = 1$.
37. Write the Taylor series for $f(x) = 5 + 3x + 8x^2$.
38. Express $\sqrt{1+x}$ as a series.

PART – D

Answer **any two** questions. Each question carries **15** marks.

39. Evaluate :

(a) $\int x^2 e^x dx$

(b) $\int \frac{2x+3}{(2x+1)(1-3x)} dx$.

40. State Trapezoidal rule of approximation and find the approximate value of $\log 2 = \int_0^1 \frac{dx}{1+x}$.

41. Explain Domars' Model of Public Debt and National Income. Also prove that $\lim_{t \rightarrow \infty} \frac{D_t}{Y_t} = \frac{\alpha}{r}$.

42. Derive the Taylor Series for e^{x+h} , $\ln(1+x)$ and $\ln \cos(x+h)$.

43. Using Taylor method, derive the series for

(a) e^x about $x = 1$ and for

(b) $\sin x$ about $x = \frac{\pi}{2}$.

44. Find the Taylor series expansion of (a) $(1+x)^n$ (b) $\frac{1}{1-x}$.

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021.

First Degree Programme under CBCSS

Chemistry

Complementary Course for Physics

CH 1331.1 – PHYSICAL AND INORGANIC CHEMISTRY

(2013, 2015 and 2016 Admn)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions. Each question carries **1** mark.

1. Why real gas deviate from ideal behavior?
2. Define the term average velocity of a gas.
3. Define an axis of symmetry with regards to crystals.
4. Calculate the number of atoms in a body centered cubic unit cell of a metallic crystal.
5. Define K_c .
6. What is the pH of pure water at 298 K?
7. Write the conjugate base of HNO_3 .
8. Give an example for an acidic buffer.

9. What is flux?
10. What are nano particles?

(10 × 1 = 10 Marks)

SECTION – B

Answer **any eight** questions. Each question carries **2** marks

11. Explain mean free path. How is it related to average velocity?
12. Calculate the RMS velocity of O₂ molecule at 25°C
13. List the elements of symmetry for a perfect cube.
14. What are Weiss indices?
15. Give the Van't Hoff equation and its integrated form.
16. Give the Henderson's equation for a basic buffer.
17. Define Lewis acid and bases.
18. Why an aqueous solution of FeCl₃ is acidic?
19. Name two ores of Cobalt and Nickel.
20. What is Van-Arkel method?
21. Name any four tools for measuring nano structures.
22. Define critical temperature and pressure.

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions. Each question carries **4** marks

23. Calculate the mean free path of a gas at STP. Collision diameter = 2×10^{-10} m
24. Derive the Bragg equation.
25. Define K_p and K_c. Derive the relation between them.
26. Explain Arrhenius theory and Lowry-Bronsted theory of acids and bases.

27. Discuss electrolytic refining of metals.
28. Explain calcination and roasting.
29. Differentiate between top-down and bottom up approach in the synthesis of nano particles.
30. Explain briefly the mechanical and magnetic properties of nano particles.
31. What is Lycurgus cup?

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions. Each question carries **15** marks

32. What is Joule Thomson effect? How is it applied in the liquefaction of gases by Linde's process and Claude's process?
33. Discuss the powder method for the X-ray diffraction studies of crystals and the analysis of the diffraction pattern for the cubic lattices.
34. How Titanium is extracted from its important ores?
35. Explain any three methods for the synthesis of nano particles.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021

First Degree Programme under CBCSS

Physics

Complementary Course for Chemistry and Polymer Chemistry

PY 1331.2 : OPTICS, MAGNETISM AND ELECTRICITY

(2013, 2015 – 17 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** the questions. Answer should not exceed two sentences. Each question carries **1** mark.

1. What are coherent sources? Give one example.
2. What is the condition for constructive interference?
3. Distinguish between Fresnel diffraction and Fraunhofer diffraction.
4. Define resolving power of a grating.
5. What is meant by polarization of light?
6. What is a negative crystal? Give two examples.
7. What is meant by RMS value of an alternating current?
8. What is population inversion?

P.T.O.

9. What is a step index fibre?
10. Give two properties of diamagnetic substances.

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. Answer should not exceed one small paragraph. Each question carries **2** marks.

11. Explain the phenomenon of colour of thin films.
12. Explain why the centre of Newton's ring is dark for reflected light.
13. What are Fresnel's half period zones? Why are they called so?
14. Distinguish between e-rays and o-rays.
15. Define dextrorotatory and laevorotatory substances. Give two examples for each.
16. Give any four applications of LASER.
17. Give the advantages of optical fibre communication system.
18. Obtain the relation between relative permeability and susceptibility.
19. What is a choke coil? What is the advantage of using choke instead of a resistor?
20. Write and explain Faraday's law.
21. What is meant by peak factor and form factor of alternating current?
22. Draw the intensity distribution curve for the Fraunhofer diffraction pattern due to a single slit.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. Each question carries **4** marks.

23. Light of wavelength $5880 \text{ \AA}$ is incident on a thin film of glass of refractive index 1.5 such that the angle of refraction in the plate is 60° . Calculate the smallest thickness of the plate, which will make it dark by reflection.
24. In the Newton's ring arrangement, the radius of curvature of the curved surface is 50 cm. The radii of 9th and 16th dark rings are 0.18 cm and 0.2235 cm respectively. Calculate the wavelength of light used.
25. Light of wavelength $6000 \text{ \AA}$ is incident normally on a grating 5 cm wide. The first order spectrum is formed at 30° from the normal to the grating. Find the total number of lines on the grating.
26. A quarter wave plate is constructed from quartz crystal whose refractive indices are $\mu_e = 1.553$ and $\mu_o = 1.544$. Calculate the thickness of the plate for a wavelength of $6500 \text{ \AA}$.
27. When sun light is incident on water surface at a glancing angle of 37° , the reflected light is found to be completely plane polarized. Determine the refractive index of water and angle of refraction.
28. In a ruby laser, the energy level difference between two laser level is 0.3 eV. Determine the wavelength of radiation.
29. A series resonant circuit has $L = 1.01 \text{ H}$, $C = 20 \text{ }\mu\text{F}$ and $R = 70 \text{ }\Omega$ to which an e.m.f. 100 V (r.m.s) is applied. At what frequency of the applied e.m.f. will it resonate with maximum response.
30. An AC circuit has a resistance of $2 \text{ }\Omega$ and inductance of 10 mH. If the frequency of the AC is 50 Hz, what is the power factor?
31. An iron ring having mean diameter 10 cm is wound with 400 turns of wire. A current of 0.5 A is passed through the windings. The relative permeability of iron is 600. Calculate (a) the magnetising field developed and (b) the flux density in the core.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. Each question carries **15** marks.

32. What are Newton's rings? With a neat diagram, explain how can these be used to determine the wavelength of monochromatic light.
33. Give the theory of plane diffraction grating and explain how, it is used to measure the wavelength of given source of light.
34. Derive an expression for the instantaneous current in a series LCR circuit when an alternating current is passed through it. Obtain the condition for resonance.
35. Explain with theory the production of circularly polarized and elliptically polarized light waves.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021

First Degree Programme under CBCSS

Mathematics

Complementary Course for Physics

MM 1331.1 – MATHEMATICS III DIFFERENTIAL EQUATIONS, THEORY OF
EQUATIONS AND THEORY OF MATRICES

(2015 – 2017 Admissions)

Time : 3 Hours

Max. Marks : 80

SECTION - I

All the first **ten** questions are compulsory. Each question carries **1** mark.

1. Solve the initial value problem $\frac{dy}{dx} = 2e^{3x-2y}$, $y(0) = 0$.
2. Verify whether the function $x^2 - y^2 = 1$ is a solution of the differential equation $x + yy' = 0$.
3. Find the particular integral of $y'' + 5y' + 6y = e^x$.
4. State the elementary row operations on a matrix.
5. Find the product of the eigen values of the matrix $\begin{pmatrix} 1 & -2 \\ 2 & 0 \end{pmatrix}$.
6. Find the characteristics polynomial of the matrix $\begin{bmatrix} 1 & 1 & 2 \\ 0 & 2 & 2 \\ -1 & 1 & 3 \end{bmatrix}$.

7. Diagonalize $A = \begin{pmatrix} 3 & 4 \\ -1 & 7 \end{pmatrix}$, if possible.
8. Find the least possible number of imaginary roots of the equation $x^9 - x^5 + x^4 + x^2 + 1 = 0$.
9. Find the product of all the roots of the equation $3x^4 + 2x^3 + 5x^2 + 7x - 4 = 0$.
10. Find the equation whose roots are 0, 0, 2, 2, -3, -3.

(10 × 1 = 10 Marks)

SECTION – II

Answer any **eight** questions from among the questions 11 to 22. Each question carries **2** mark.

11. Solve $x^2 - 3y^2 + 2xy \frac{dy}{dx} = 0, y(1) = 3$.
12. Solve $y' = \frac{1 - 2y - 4x}{1 + y + 2x}$.
13. Solve the initial value problem $xy' + 4y = 8x^3, y(1) = 2$.
14. Solve $[1 + 2xy \cos(x^2) - 2xy]dx + [\sin(x^2) - x^2]dy = 0$.
15. Find the rank of the matrix $\begin{pmatrix} 1 & 1 & -1 & 3 \\ 2 & -2 & 6 & 8 \\ 3 & 5 & -7 & 8 \end{pmatrix}$.

16. Solve :

$$x + 2y + z = 4$$

$$x + y + 2z = 0$$

$$2x + y + z = 4$$

$$3y + 5z = 1$$

17. Find the eigen values of the matrix $\begin{bmatrix} 2 & 3 & -2 \\ 1 & 4 & -2 \\ 2 & 10 & -5 \end{bmatrix}$.

18. Find the solution set of the homogeneous system of equations with coefficient matrix given by $A = \begin{bmatrix} 1 & 3 & 2 \\ 2 & 1 & 0 \\ 1 & 2 & 0 \end{bmatrix}$.
19. Use Descartes's rule of signs to show that if q is positive, $x^3 + qx + r = 0$ has only one real root.
20. Solve the equation $x^3 - 5x^2 - 8x + 12 = 0$, given that the sum of two of the roots is 7.
21. Solve $x^4 - 4x^2 + 8x + 35 = 0$, given $2 + \sqrt{3}i$ is a root.
22. Solve the equation $x^4 - 16x^3 + 86x^2 - 176x + 105 = 0$, two roots being 1 and 7.

(8 × 2 = 16 Marks)

SECTION – III

Answer any **six** questions from among the questions **23** to **31**. Each question carries **4** marks.

23. Find an integrating factor and solve the differential equation $(2\cos y + 4x^2)dx = x \sin y \, dy$.
24. Find the orthogonal trajectories of the family of curves $x^2 + y^2 = cx^3$.
25. Solve the initial value problem $9y'' - 6y' + y = 0$, $y(0) = 3$, $y'(0) = -1$.
26. Test the consistency and solve
- $$\begin{aligned} 2x + 6y + z &= 7 \\ x + 2y - z &= -1 \\ 5x + 7y - 4z &= 9 \end{aligned}$$
27. Reduce the given matrix $A = \begin{bmatrix} 2 & 3 & 1 & 0 \\ 1 & 3 & 1 & 4 \\ 6 & 9 & 4 & 8 \end{bmatrix}$ to its row-reduced echelon form.
28. Construct an orthogonal diagonalizing matrix for the real-symmetric matrix
- $$A = \begin{pmatrix} 3 & 0 & 0 \\ 0 & 3 & 1 \\ 0 & 1 & 3 \end{pmatrix}.$$

29. Solve the equation $x^3 - 7x^2 - 21x + 27 = 0$, given that the roots form a geometric sequence.
30. Form the equation of the fourth degree with rational coefficients, one of whose roots is $\sqrt{2} + \sqrt{-3}$.
31. The equation $2x^3 - 7x^2 - x + 12 = 0$ has a root near to $x = 1.5$. Use the Newton-Raphson method to find the root to six decimal places.

(6 × 4 = 24 Marks)

SECTION – IV

Answer any **two** questions from among the questions 32 to 35. Each question carries **15** marks.

32. (a) Solve $x^2 y'' - 2xy' + 2y = x^3$.

(b) Solve $y''' + 3y'' + 3y' + y = e^{-x} \sin x$.

33. (a) Solve the equations

$$4x + 2y + z + 3w = 0$$

$$6x + 3y + 4z + 7w = 0$$

$$2x + y + w = 0$$

(b) Diagonalize the matrix $A = \begin{pmatrix} 1 & 1 \\ 2 & 0 \end{pmatrix}$ and use the result to find A^5 .

34. (a) Solve $(2x - 1)^2 y'' + (2x + 1)y' - 2y = 8x^2 - 2x + 3$.

(b) Solve $24x^3 + 46x^2 + 9x - 9 = 0$, one root being double another of the roots.

35. Find the root of the equation $x^3 - 4x - 9 = 0$, using the bisection method correct to three decimal places.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021.

First Degree Programme under CBCSS

Chemistry

Core Course – II

CH 1341 – INORGANIC CHEMISTRY – II

(2017 and 2018 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions. Each question carries **1** mark

1. Calculate the bond order in N_2 molecule.
2. Define lattice energy.
3. Give rate equation for radioactive decay.
4. Define nanomaterials.
5. Define ionic bond?
6. What is carborundum chemically?
7. Give the structure of B_4H_{10} .
8. What is Bond-Lande equation?

9. Which material is used for absorbing neutrons in nuclear reactor?
10. Name the inter halogen compound having electropositive Iodine

(10 × 1 = 10 Marks)

SECTION – B

Answer **any eight** questions. Each question carries **2** marks

11. Define solvation energy.
12. Give the importance of n/p ratio in nuclear stability.
13. What are different modes of decay of nucleus?
14. What are carbides? Give some applications of carbides.
15. Write a note on borides.
16. What are carboranes? Give its classification.
17. How are Chalcogenic glasses prepared?
18. Write a note on pseudo halogens.
19. What are limitations of VBT?
20. What are Fajan's rules?
21. Define artificial transmutation. Give one example.
22. Give two applications of nanomaterials in medicine.

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions. Each question carries **4** marks

23. Explain the shape of Ammonia by using VSEPR theory.
24. Write a note on secondary forces in chemical bonding.

25. Write a note on compounds of xenon with Fluorine.
26. Write a note on carbon dating.
27. Draw the MO diagram of NO molecule.
28. Explain the bonding in diborane.
29. Explain the hybridization in PCl_5 .
30. Write a note on nuclear fusion.
31. Write a note on carbon nanotubes.

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions. Each question carries **15** marks

- | | | |
|---------|---|----|
| 32. (a) | Explain any three methods for the synthesis of nanomaterials. | 10 |
| (b) | Write a note on different type of glasses. | 5 |
| 33. (a) | Explain the important properties of nanomaterials. | 10 |
| (b) | What are silicones? Explain. | 5 |
| 34. (a) | Briefly compare VBT and MOT. | 8 |
| (b) | Write a note on band theory in metallic bonding. | 7 |
| 35. (a) | Briefly discuss about various nuclear models. | 10 |
| (b) | Write shortly on structure of oxyacids of chlorine. | 5 |

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021

First Degree Programme under CBCSS

Mathematics

Core Course — II

MM 1341 : ELEMENTARY NUMBER THEORY AND CALCULUS — I

(2018 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION I

All the questions are compulsory. Each question carries 1 mark.

1. State the Inclusion-Exclusion Principle for 3 finite sets A , B and C .
2. Define a Linear Diophantine Equation in two variables.
3. Define Derivative of a vector-valued function $r(t)$.
4. Evaluate the definite integral, $\int_0^2 2ti + 3t^2 j dt$.
5. Define Unit Normal Vector.
6. Give the formula for a_N , the normal component of acceleration for a moving particle in terms of the velocity v and the acceleration a .

7. Find the natural domain of $f(x, y, z) = \sqrt{1 - x^2 - y^2 - z^2}$.
8. Define an Open set.
9. Define Gradient of a function $f(x, y, z)$.
10. State the Extreme value theorem.

SECTION II

Answer **any eight** questions. Each question carries **2** marks.

11. State and prove the Pigeonhole Principle.
12. Express $3ABC_{\text{sixteen}}$ in base 10.
13. Find $(4076, 1024)$.
14. Prove that two integers a and b are relatively prime if and only if $[a, b] = ab$.
15. Let $r(t) = t^2 i + e^t j - (2 \cos \pi t) k$. Find $\lim_{t \rightarrow 0} r(t)$.
16. Define a tangent vector and tangent line through the point P on the graph of a vector-valued function $r(t)$.
17. State the chain rule for differentiation of vector functions.
18. A particle moves through 3-space in such a way that its velocity is $v(t) = i + t j + t^2 k$. Find the coordinates of the particle at time t .
19. Define Level surfaces and find the level surfaces of $f(x, y, z) = z^2 - x^2 - y^2$.
20. Define local linear approximation to $f(x, y)$ at (x_0, y_0) .
21. Consider the ellipsoid $x^2 + 4y^2 + z^2 = 18$. Find an equation of the tangent plane to the ellipsoid at the point $(1, 2, 1)$.
22. Explain the steps to find the absolute extrema of a continuous function f of two variables on a closed and bounded set R .

SECTION III

Answer **any six** questions. Each question carries **4** marks.

23. Find the number of integers ≤ 3000 and divisible by 3, 5 or 7.
24. Prove that if a and b are positive integers, then $[a, b] = \frac{ab}{(a, b)}$.
25. Using canonical decomposition, find the LCM of 1050 and 2574.
26. Find parametric equations of the tangent line to the circular helix $x = \cos t, y = \sin t, z = t$ where $t = t_0$, and use that result to find parametric equations for the tangent line at the point where $t = \pi$.
27. If $r_1(t)$ and $r_2(t)$ are two vector functions of t , derive the expression for $\frac{d}{dt}(r_1 \times r_2)$.
28. Find $r(t)$ given that $r'(t) = (3, 2t)$ and $r(1) = (2, 5)$.
29. Assuming that polynomials in one variable and cosine function are continuous, show that $f(x, y) = \cos(3x^3 y^4)$ is continuous everywhere. State the results used for the proof.
30. Differentiability of function $f(x, y)$ at a point implies continuity at that point. Justify the statement.
31. Suppose that $w = x^2 + y^2 - z^2$ and $x = \rho \sin \phi \cos \theta, y = \rho \sin \phi \sin \theta, z = \rho \cos \phi$ use appropriate forms of the chain rule to find $\frac{\partial w}{\partial \rho}$ and $\frac{\partial w}{\partial \theta}$.

SECTION IV

Answer **any two** questions. Each question carries **15** marks.

32. (a) State and Prove the Fundamental Theorem of Arithmetic.
- (b) Let $b \geq 2$ be an integer and $b+1$ integers are randomly selected. Prove that the difference of two of them is divisible by b .

33. (a) If a circle is parameterised by arc length as

$$r(s) = a \cos\left(\frac{s}{a}\right) i + a \sin\left(\frac{s}{a}\right) j \quad (0 \leq s \leq 2\pi a). \text{ Find } T(s) \text{ and } N(s).$$

- (b) Find the curvature $k(t)$ for the circular helix $x = a \cos t, y = a \sin t, z = ct$ where $a > 0$.

34. Given $f(x, y) = \frac{xy}{x^2 + y^2}$, find the limit of $f(x, y)$ as $(x, y) \rightarrow (0, 0)$ along

- (a) The x-axis
- (b) The y-axis
- (c) The line $y = x$
- (d) The line $y = -x$
- (e) The parabola $y = x^2$.

35. Explain Lagrange multipliers Method and use it to determine the dimensions of a rectangular box, open at the top, having a volume of 32 ft^3 , and requiring the least amount of material for its construction. Given the surface area being $S = xy + 2xz + 2yz$.
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Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021

First Degree Programme under CBCSS

Statistics

Complementary Course For Mathematics

ST 1331.1 – STATISTICAL DISTRIBUTIONS

(2018 Admission)

Time : 3 Hours

Max. Marks : 80

Use of statistical table and scientific calculator are permitted.

SECTION – A

Answer **all** questions. Each question carries 1 mark.

1. What are the parameters of a binomial random variable with mean 4 and variance 3?
2. Find the coefficient of variation of Poisson distribution with mean 9.
3. If X is a Poisson variable such that $P(X = 1) = P(X = 2)$, obtain $P(X = 0)$.
4. If X and Y are independent uniform random variables over $[0, 2]$, determine $P(X < Y)$.
5. State the distribution of $Z = X + Y$, where X and Y are independent standard normal variables.

6. Define exponential distribution.
7. Define type II beta distribution.
8. What do you mean by sampling distribution?
9. State the distribution of the ratio of two independent standard normal variables.
10. Define statistic.

(10 × 1 = 10 Marks)

SECTION – B

Answer **any eight** questions. Each question carries **2** marks.

11. Define Bernoulli random variable.
12. Define hypergeometric distribution.
13. The ratio to 3 successes and 4 successes among seven independent Bernoullian trials is $\frac{1}{4}$. Find the probability of success.
14. If X follow uniform distribution with mean 1 and variance $\frac{4}{3}$, find $P(X < 0)$.
15. If $X \sim N(6, 2)$, find $P(1 < X < 3)$
16. A horizontal line of length 5 units is divided by a point chosen at random into two parts. If the length of the first part is X , find $E[X(5 - X)]$.
17. What are the advantages of Chebychev's inequality?
18. What are the conditions for Lindberg-Levy form of central limit theorem?
19. Find the mean of a random variable following chi-square distribution with n degrees of freedom.

20. A random sample of size 25 is taken from $N(1, 9)$. What is the probability that the sample mean is negative?
21. State Bernoulli's weak law of large numbers.
22. Let $X_1, X_2, \dots, X_n$ are independent exponential random variables with parameter λ . Show that $X = X_1 + X_2 + \dots + X_n$ follows gamma distribution.

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions. Each question carries **4** marks.

23. If $X \sim B(n, p)$, show that $\text{Cov}\left(\frac{X}{n}, \frac{n-X}{n}\right) = \frac{-pq}{n}$.
24. If X follows Poisson distribution with parameter unity, show that mean deviation about mean is $\frac{2}{e}$ times the standard deviation.
25. If X and Y are independent geometric variables with same parameter, find the conditional distribution of $X|X+Y$.
26. In a normal distribution 30% of the items are above 42 and 30% of the items are below 28. What are the mean and standard deviation of the distribution?
27. Derive the moment generating function of normal distribution.
28. If X follows beta distribution of the first kind with parameters p and q , show that $Y = \frac{X}{1-X}$ follow beta distribution of the second kind.
29. In a die throwing experiment using an unbiased die, X denotes the number shown by the die. Using Chebychev's inequality, prove that $P(|X - \mu| > 2.5) < 0.47$.

30. For a random sample of size 16 from $N(\mu, \sigma^2)$ population the sample variance is 16. Find a and b such that $P(a < \sigma^2 < b) = 0.6$.
31. If $X \sim N(0, 1)$, prove that $Y = X^2$ follow chi-square distribution with one degree of freedom.

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions. Each question carries **15** marks.

32. The numbers of printing errors per page reported in a book with 1000 pages published by a good publisher were noted.

No. of mistakes	0	1	2	3	4	5	6	7	8
No. of pages	626	285	65	15	6	2	1	0	0

Fit a Poisson distribution and calculate the theoretical frequencies.

33. State and prove the recurrence relation for central moments of a binomial distribution.
34. Derive the expression for central moments of a normal distribution.
35. If X is a random variable following F -distribution with (n_1, n_2) degrees of freedom. Show that $Y = \frac{1}{X}$ follows F -distribution with (n_2, n_1) degrees of freedom.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021

First Degree Programme under CBCSS

Mathematics

Complementary Course for Physics

MM 1331.1 - MATHEMATICS III : CALCULUS AND LINEAR ALGEBRA

(2018 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – I

All the **ten** questions are compulsory. They carry **1** mark each.

1. Define Wronskian of 2 functions $y_1(x)$ and $y_2(x)$.
2. Give an example for a Clairaut's equation.
3. State Green's theorem in a plane.
4. Give an example for an Odd function.
5. Define Periodic function.
6. What is the average value of $\sin^2 x$ over a period on $[0, \pi]$?
7. Solve : $y' = -1.5y$.

8. Define a scalar potential function.
9. Give the integral form for gradient.
10. Define average value of a function.

(10 × 1 = 10 Marks)

SECTION – II

Answer any **eight** questions from among the questions 11 to 22. These questions carry **2** mark each.

11. Find a vector perpendicular to both $\vec{A} = 2\hat{i} + \hat{j} - \hat{k}$ and $\vec{B} = \hat{i} + 3\hat{j} - 2\hat{k}$.
12. Find the complementary function of the equation $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = e^x$.
13. Write the general form of Legendre and Euler linear equations.
14. Solve : $y' = y$.
15. State Green's theorem in a plane.
16. Find the amplitude and frequency of the function $S = 2\sin(4t - 1)$
17. What is the average value of $\sin mx \sin nx$ (over a period)?
18. Write the function $\ln |1 - x|$ as the sum of an even function and an odd function.
19. When is a plane region R said to be simply connected. Give example.
20. Define Linear independence of two vectors. Give examples of two vectors that are linearly independent.
21. Find the characteristic equation corresponding to the matrix $\begin{pmatrix} 1 & 3 \\ 2 & 2 \end{pmatrix}$.
22. Define eigen vector of a linear transformation. Give example.

(8 × 2 = 16 Marks)

SECTION – III

Answer any **six** questions from among the following questions 23 to 31. These questions carry **4** marks each.

23. Solve : $2xy \frac{dy}{dx} - y^2 + x^2 = 0$.

24. Solve : $\frac{dy}{dx} + y \tan x = \cos^3 x$.

25. Show that $(2xy + y - \tan y) dx + (x^2 - x \tan^2 y + \sec^2 y + 2) dy = 0$ is exact and solve it.

26. Find the volume enclosed between a sphere of radius 'a' and centred at the origin and a circular cone of half angle α with its vertex at the origin.

27. Use Stoke's theorem to show that

$$\int_S d\vec{s} \times \nabla \phi = \oint_C \phi d\vec{r}$$

28. Expand $f(x) = \begin{cases} 0, & 0 < x < l \\ 1, & l < x < 2l \end{cases}$ in an exponential Fourier series of period $2l$.

29. Define the Fourier sine Transforms and Fourier cosine transforms.

30. Write an row reduce the augmented matrix for the equations

$$x - y + 4z = 5$$

$$2x - 3y + 8z = 4$$

$$x - 2y + 4z = 9$$

31. Find the cosine of the angle between the planes $x - 2y + 3z = 4$ and $2x + y - z = 5$.

(6 × 4 = 24 Marks)

SECTION – IV

Answer any **two** questions from among the questions 32 to 35. These questions carry **15** marks each.

32. Evaluate the surface integral $I = \int_S \vec{a} \cdot d\vec{s}$ where $\vec{a} = x\hat{i}$ and S is the surface of the hemisphere $x^2 + y^2 + z^2 = a^2$ with $z \geq 0$.

33. Find the Fourier sine series and Fourier cosine series for the function $f(x) = \pi - x$ in $0 < x < \pi$.

34. (a) For $M = \begin{pmatrix} 1 & 0 & -1 \\ -2 & 3 & 0 \\ 1 & -3 & 2 \end{pmatrix}$, find M^{-1} . Use M^{-1} to solve the equations $x - y = 5$, $-2x + 3y = 1$, $x - 3y + 2z = -10$.

(b) Give examples of 2 matrices A and B such that neither A nor B is the zero matrix, but $AB = 0$.

35. (a) Solve $\frac{d^2y}{dx^2} - 3\frac{dy}{dx} + 2y = 2e^{-x}$ subject to the boundary conditions $y(0) = 2$, $y'(0) = 1$, using Laplace transform method.

(b) Solve : $\frac{dy}{dx} = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021

First Degree Programme Under CBCSS

Physics

Core Course – I

PY 1341 — ELECTRODYNAMICS

(2018 Admission)

Time : 3 Hours

Max. Marks : 80

PART – A

Answer **all** questions. Answer should not exceed **two** sentences. **Each** question carries **1** mark.

1. State Ampere's law.
2. Define equipotential surfaces.
3. Define the term atomic polarizability.
4. What happens when polar molecules are placed in a uniform electric field?
5. Define electric displacement.
6. Give any two applications of electrostatic shielding.
7. What is the power factor of an LCR circuit?

- 8 Discuss the advantage of using a choke coil instead of a resistor
- 9 What is half life of RC circuit?
- 10 What is meant by RC time constant?

(10 × 1 = 10 Marks)

PART – B

Answer **any eight** questions. Answer should not exceed **one small** paragraph. Each question carries **2** marks.

- 11 Describe the principle behind the leakage method in the measurement of high resistance.
- 12 Discuss the physical significance of Maxwell's equations.
- 13 Discuss the electrostatic properties of conductors.
- 14 Discuss about cyclotron motion.
- 15 Complex representation of wave function has a good advantage. Why?
- 16 Show that sharpness of resonance is equal to Q-factor.
- 17 Compare series and parallel resonance circuit.
- 18 Define the terms impedance, reactance and admittance.
- 19 A dielectric is always an insulator. But an insulator is not necessarily a dielectric. Why?
- 20 Explain Biot-Savart Law.
- 21 Obtain Poisson's equation. From Poisson's equation obtain Laplace equation.
- 22 Obtain the expression for the potential of a localized charge distribution.

(8 × 2 = 16 Marks)

PART – C

Answer **any six** questions. **Each** question carries **4** marks.

23. An emf 10 volt is applied to a circuit having a resistance of 10 ohms and an inductance of 0.5 henry. Find the time required by the current to attain 63.2% of its final value. What is the time constant of the circuit?
24. Find the vector potential of an infinite solenoid with n turns per unit length, radius R , and current I .
25. Find the electric field applied on a system with electrons having a velocity 5 m/s subjected to a magnetic flux of 3.6 units.
26. Find the current element of the solenoid of turns 100, length 2m and current 0.5A.
27. Find the emf induced in a coil of 60 turns with a flux rate of 3 units.
28. A single-turn wire loop is 2.0 cm in diameter and carries a 650-mA current. Find the magnetic field strength
 - (a) at the loop center and
 - (b) on the loop axis, 20 cm from the center.
29. An electron is moving at 3.1×10^6 m/s parallel to a 1.0-mm-diameter wire carrying 20 A. If the electron is 2.0 mm from the center of the wire, with its velocity in the same direction as the current, what are the magnitude and direction of the force it experiences?
30. A solid wire 2.1 mm in diameter carries a 10-A current with uniform current density. What is the magnetic field strength
 - (a) at the axis of the wire,
 - (b) 0.20 mm from the axis,
 - (c) at the surface of the wire, and
 - (d) 4.0 mm from the wire axis.

31. A solenoid used in a plasma physics experiment is 10 cm in diameter, 1.0 m long, and carries a 35-A current to produce a 100-mT magnetic field.

(a) How many turns are in the solenoid?

(b) If the solenoid resistance is 2.7Ω , how much power does it dissipate?
(6 × 4 = 24 Marks)

PART – D

Answer **any two** questions. **Each** question carries **15** marks.

32. Derive the expression for :

(a) The energy of a continuous charge distribution.

(b) Electrostatic energy density.

33. (a) Derive boundary conditions in magnetostatics and compare them with electrostatic boundary conditions.

(b) Compare electrostatics and magnetostatics.

34. What do you mean by polarizability tensor? Obtain an expression for torque acting on a dipole in a uniform electric field.

35. (a) State and prove Gauss's law in the presence of dielectric.

(b) What are the three electric vectors? Derive the relation connecting them.
(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021.

First Degree Programme under CBCSS

Statistics

Complementary Course for Mathematics

ST 1331.1 – STATISTICAL DISTRIBUTIONS

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions. Each question carries **1** mark :

1. What is the mean and variance of a Binomial random variable with $n=10$ and $p=0.2$.
2. What is characteristic function. Write down the characteristic function of a Poisson distribution.
3. Write down the pmf of Geometric distribution.
4. Which continuous distribution has lack of memory property?
5. What is the use of MGF?
6. Give the mean and variance of Gamma distribution.
7. State WLLN.

8. What is the limiting distribution in Central limit theorem?
9. Define raw moment.
10. Characteristic function always exist. True or False?

(10 × 1 = 10 Marks)

SECTION – B

Answer **any eight** questions. Each question carries 2 marks.

11. Define Hypergeometric distribution.
12. Obtain the mean and variance of Exponential distribution?
13. If $X \sim N(0,1)$, what is $P(X < 1.96)$?
14. What is the cdf of a Exponential distributions?
15. Prove the additive property of Binomial distributions.
16. Obtain the expression for central moment in terms of raw moments.
17. State and prove Bernoulli Law of Large numbers.
18. Show that for iid random variables, sample mean converges in probability to population mean.
19. What is Chebyshev's inequality?
20. If X is a Normal random variable with mean 2 and variance 2. Find $P(|X_n - 2| > \sqrt{21.96})$.
21. What is the pdf of Standard Normal distribution. Give mean and variance.
22. If X is a random variable with distribution function $F(x)$, what are the properties of $F(x)$.
23. Obtain the moment generating function of Exponential distribution.

24. What are the first and second raw moment of Hyper-geometric distribution?
25. Show that sum of Exponential distribution follows Gamma distribution.
26. X follows $N(0,1)$, Find the distribution of $Y = \frac{x-5}{2}$.

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions. Each question carries **4** marks.

27. Derive variance of Normal distribution.
28. Find mean and variance of Poisson distribution using MGF
29. Derive the distribution of sum of two Normal distribution.
30. Find the mode of the Normal distribution.
31. Explain the fitting of Binomial distributions.
32. Find the coefficient of variation of a Exponential distribution.
33. If X is a continuous random variable with pdf $f(x) = \begin{cases} 3e^{-3x}, & x > 0 \\ 0, & \text{elsewhere} \end{cases}$, then $P(X < 3) = \underline{\hspace{2cm}}$
34. If $X \sim \text{Poisson}(6)$, then find the distribution of $X + a$
35. State and prove memory less property of Exponential distribution.
36. Obtain the Poisson distribution as a limiting form of Binomial distribution.
37. Find the mean and variance of Beta distribution of first kind.
38. If $\{X_i\}$ is a sequence of i.i.d random variables with mean 0 and variance 1. Show that sample mean converges in probability to 0.

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions. Each question carries **15** marks

39. Fit the Poisson distribution for the following data.

X	0	1	2	3	4	5	6	7
Frequency	7	6	19	35	30	23	7	1

40. Show that Binomial distribution converges to Normal distribution.

41. (a) Prove the additive property of Gamma distribution.

(b) Derive the first two central moments of Normal distribution using MGF.

42. (a) What is the probability of obtaining more than 1499 heads in 1500 tosses of a fair coin.

(b) Derive the mgf of Binomial distribution and hence obtain the first three central moments.

43. (a) Show that sum and difference of two Normal random variables are Normal.

(b) Obtain the mean and variance of Geometric distribution.

44. (a) Define Uniform distribution. Derive the mean and variance.

(b) Derive the recurrence relation for probabilities of Binomial distribution.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021

First Degree Programme under CBCSS

Physics

Complementary Course for Mathematics

PY 1331.1 : OPTICS, MAGNETISM AND ELECTRICITY

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

PART – A

Answer **all** the questions. Answer should not exceed **2** sentences. Each question carries **1** mark.

- 1.. What is interference?
2. Explain the phenomenon behind diffraction.
3. How is Newton's ring formed?
4. What is the principle behind the working of a LASER?
5. What is an optical pumping? give example
6. Name four elements which exhibit paramagnetism.
7. Define the term magnetic permeability.
8. What do you mean by resonant frequency?

9. What is the practical application of a series LCR circuit?
10. What do you mean by power factor?

(10 × 1 = 10 Marks)

PART – B

Answer **any eight** questions. Answer should not exceed one small paragraph. Each question carries **2** marks.

11. Write note on the comparison of prism spectra and grating spectra.
12. What is Fraunhofer diffraction?
13. State the principle of superposition of waves.
14. What do you understand by
 - (a) fringes of equal thickness
 - (b) fringes of equal inclination?
15. Explain briefly about spontaneous emission.
16. Write a short note on magnetic susceptibility.
17. Compare the magnetic properties of diamagnetic, paramagnetic and ferromagnetic materials.
18. Write note on population inversion.
19. Write note on ferromagnetism.
20. Briefly explain about choke coil and its applications.
21. Write note on stimulated emission.
22. Explain about the resolving power of a plane diffraction grating.

23. What do you mean by the dispersive power of a grating? On what factors does it depend.
24. What do you mean by fringe width of interference? On what factors does it depend on?
25. With a neat diagram explain about the series RC circuit.
26. Mention the uses of transformers.

(8 × 2 = 16 Marks)

PART – C

Answer **any six** questions. Each question carries **4** marks.

27. In a Newton's rings experiment with air film the diameter of the m^{th} dark ring is 0.577 cm. With a liquid film the same arrangement gives similar rings but the diameter of the m^{th} ring becomes 0.434 cm. Find the refractive index of the liquid.
28. A parallel beam of light of wavelength 4500Å is incident at an angle of 30° on a plane transmission grating which has 9000 lines / cm. find the highest order spectrum that can be observed.
29. Light of wavelength 6000Å is incident on a narrow slit of width 0.30mm. The screen is placed 2m away from the slit. Find (a) the position of the first dark fringe and (b) the width of the central bright fringe.
30. Two coherent sources are 0.15mm apart and the fringes are observed on a screen 50cm away. It is found that with a certain monochromatic source of light, the fourth bright fringe is situated at a distance of 10.5 mm from the central fringe. Calculate the wavelength of light.
31. If the number of lines per millimetre of a grating is 589, how many orders of spectra are possible for light of wavelength 6.00×10^{-7} m?
32. A soft iron ring has a mean diameter of 0.2m and an area of cross section of $5 \times 10^{-4} \text{ m}^2$. It is uniformly wound with a coil of 2000 turns and a current of 2A is passed through it. The magnetic flux produced in the iron ring is $8 \times 10^{-3} \text{ Wb}$. Calculate the relative permeability of iron.

33. A step down transformer is connected to a mains supply of 220 volts is made to operate a 12 volt 40 watt bulb. Ignoring the energy losses, calculate (a) current in the primary coil (b) transformation ratio, assuming that there is no loss of power.
34. Find the natural frequency of a circuit containing an inductance of $50 \mu\text{H}$ and capacitor of capacity $0.001 \mu\text{F}$.
35. An AC of 180 volts and 100Hz is fed to a circuit containing a resistance R and capacitance C connected in series. Calculate the values of R and C when the maximum current is 5 A and active power is 300 watts.
36. Find the numerical aperture and acceptance angle of a core index 1.5 and $\Delta=0.05$.
37. A step-index fiber has a core index of refraction of $n_1 = 1.425$. The cut-off angle for light entering the fiber from air is found to be 8.50° . Calculate (a) numerical aperture (b) index of refraction of the cladding (c) If the fiber were submersed in water, what would be the new numerical aperture and cut-off angle? [given $n_{\text{air}} = 1.0003$]
38. In a series RLC, circuit $R = 30 \Omega$, $L = 15 \text{ mH}$, and $C = 51 \mu\text{F}$. If the source voltage and frequency are 12 V and 60 Hz, respectively, what is the current in the circuit?

(6 × 4 = 24 Marks)

PART – D

Answer **any two** questions. Each question carries **15** marks.

39. Describe briefly about the light propagation in optical fibre and mention its applications.
40. Explain the electron theory of magnetism and the explanation of ferromagnetism.
41. Explain with the neat diagram the series LCR circuit and its resonance.
42. Explain the theory of interference and conditions for maximum and minimum intensities with equations.
43. Explain the Fresnel's diffraction at straight edge and discuss the pattern.
44. Comment on the long distance power transmission, transformers and its uses.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021

First Degree Programme Under CBCSS

Mathematics

Core Course

MM 1341 — ELEMENTARY NUMBER THEORY AND CALCULUS – I

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

PART – A

Answer **all** questions from **1** to **10**. Each question carries **1** mark.

1. State the division algorithm.
2. State the pigeonhole principle.
3. If $r(t) = t^2 i + e^t j - (2 \cos \pi t k)$, find $r'(t)$.
4. Evaluate the definite integral $\int_0^2 (2t i + 3t^2 j) dt$.
5. Write the formula for finding the arc length of a parametric curve $x = x(t)$, $y = y(t)$, $a \leq t \leq b$.
6. Find a parametrization of the cone $z = \sqrt{x^2 + y^2}$, $0 \leq z \leq 1$.

7. Let $f(x, y) = \sqrt{y+1} + \ln(x^2 - y)$. Find $f(e, 0)$.

8. Evaluate $\lim_{(x, y) \rightarrow (-1, 2)} \frac{xy}{x^2 + y^2}$.

9. Find $\frac{\partial w}{\partial x}$ if $w = 2ye^z \sin xz$.

10. Define the gradient of the function $f(x, y, z)$.

PART – B

Answer **any eight** questions from 11 to 26. **Each** question carries **2** marks.

11. Let b be an integer ≥ 2 . Suppose $b+1$ integers are randomly selected. Prove that the difference of two of them is divisible by b .
12. State the Inclusion Exclusion principle.
13. If $a \mid c$ and $b \mid c$, and $(a, b) = 1$, show that $ab \mid c$.
14. If p is a prime and $p \mid ab$, show that $p \mid a$ or $p \mid b$.
15. Sketch the graph and a radius vector of $r(t) = \cos t \, i + \sin t \, j$, $0 \leq t \leq 2\pi$.
16. Find the arc length of that portion of the circular helix $x = \cos t$, $y = \sin t$, $z = t$ from $t = 0$ to $t = \pi$.
17. Determine whether $r(t) = t^3 \, i + (3t^2 - 2t) \, j + 5t^2 \, k$ is smooth or not.
18. Find the unit tangent vector to the graph of $r(t) = t^2 \, i + t^3 \, j$ at the point $t = 2$.
19. Find the instantaneous velocity and speed of a particle that moves in a circular path such that its x and y coordinates at time t are $x = 2 \cos t$, and $y = 2 \sin t$.
20. Find the curvature of a circle of radius a .

21. Evaluate $\lim_{(x,y) \rightarrow (0,0)} \frac{-xy}{x^2 + y^2}$ along the parabola $y = x^2$.
22. Find f_x and f_y for $y(x,y) = 2x^3y^2 + 2y + 4x$.
23. Show that $f(x,y) = x^2 + y^2$ is differentiable at $(0, 0)$.
24. Using the chain rule find dz/dt if $z = x^2y, x = t^2, y = t^3$.
25. Let $f(x,y) = x^2e^y$. Find the maximum value of a directional derivative at $(-2, 0)$ and find the unit vector in the direction in which the maximum value occurs.
26. Find the equation of the tangent plane to the ellipsoid $x^2 + 4y^2 + z^2 = 18$ at the point $(1, 2, 1)$.

PART - C

Answer **any six** questions from 27 to 38. **Each** question carries **4** marks.

27. Let a and b be any positive integers. Show that the number of positive integers $\leq a$ and divisible by b is $[a/b]$.
28. Find the primes such that the digits in their decimal values alternate between 0's and 1's, beginning with 1 and ending in 1.
29. Let f_i denote the i -th Fermat number. Show that $f_0 f_1 \dots f_{n-1} = f_n - 2$, where $n \geq 1$.
30. Show that there are infinitely many primes of the form $4n + 3$.
31. The graphs of $r_1(t) = (\tan^{-1} t)i + (\sin t)j + t^2k$ and $r_2(t) = (t^2 - t)i + (2t - 2)j + \ln t k$ intersect at the origin. Find the degree measure of the acute angle between the tangent lines to the graphs of $r_1(t)$ and $r_2(t)$ at the origin.

32. Find $T(t)$ and $N(t)$ for the circular helix $x = a \cos t$, $y = a \sin t$, $z = ct$, where $a > 0$.
33. Find the curvature and radius of curvature of $r(t) = 5 \cos t i + 12 \sin t j + t k$ at $t = \pi/2$.
34. Find the arc length parametrization of the circular helix $r = \cos t i + \sin t j + t k$ that has reference point $r(0) = (1, 0, 0)$ and the same orientation as the given helix.
35. Confirm that the mixed partial derivatives of $f(x, y) = 4x^2 - 8xy^4 + 7y^4 - 3$ are equal.
36. Suppose that $w = \sqrt{x^2 + y^2 + z^2}$, $x = \cos \theta$, $y = \sin \theta$, $z = \tan \theta$. Use the chain rule to find $dw/d\theta$ when $\theta = \pi/4$.
37. Find the directional derivative of $f(x, y) = e^{xy}$ at $(-2, 0)$ in the direction of the unit vector that makes an angle $\pi/3$ with the positive axis.
38. Find the parametric equations of the tangent line to the curve of intersection of the paraboloid $z = x^2 + y^2$ and the ellipsoid $3x^2 + 2y^2 + z^2 = 9$ at the point $(1, 1, 2)$.

PART – D

Answer **any two** question from 39 to 44. **Each** question carries **15** marks.

39. (a) State and prove the fundamental theorem of arithmetic.
- (b) Show that the linear Diophantine equation (LDE) $ax + by = c$ is solvable if and only if $d \mid c$, where $d = (a, b)$. Also show that If x_0, y_0 is a particular solution of the LDE, then all its solutions are given by $x = x_0 + \left(\frac{b}{d}\right)t$, $y = y_0 - \left(\frac{a}{d}\right)t$ where t is an arbitrary integer.

40. (a) Let $\alpha = \frac{1+\sqrt{5}}{2}$. Show that $\alpha^{n-2} < F_n < \alpha^{n-1}$, where $n \geq 3$ and F_n denotes the n -th Fibonacci number.
- (b) Show that the number of divisions needed to compute (a, b) by the euclidean algorithm is at most five times the number of decimal digits in b , where $a \geq b \geq 2$.
41. (a) The length, width and height of a rectangular box are measured with an error of at most 5%. Use a total differential to estimate the maximum percentage error that results if these quantities are used to calculate the diagonal of the box.
- (b) Let $L(x, y)$ denote the local linear approximation to $f(x, y) = \sqrt{x^2 + y^2}$ at the point $(3, 4)$. Compare the error in approximating $f(3.04, 3.98)$ by $L(3.04, 3.98)$ with the distance between the points $(3, 4)$ and $(3.04, 3.98)$.
42. Suppose that a particle moves through 3-space so that its position vector at time t is $r(t) = ti + t^2j + t^3k$.
- (a) Find the scalar tangential and normal components of acceleration at time t .
- (b) Find the scalar tangential and normal components of acceleration at time $t = 1$.
- (c) Find the vector tangential and normal components of acceleration at time $t = 1$.
- (d) Find the curvature at the point where the particle is located at time $t = 1$.

43. (a) Find the absolute maximum and minimum values of $f(x, y) = 3xy - 6x - 3y + 7$ on the closed triangular region R with vertices $(0, 0)$, $(3, 0)$ and $(0, 5)$.
- (b) Consider the ellipsoid $x^2 + 4y^2 + z^2 = 18$.
- (i) Find an equation of the tangent plane to the ellipsoid at the point $(1, 2, 1)$.
- (ii) Find parametric equations of the line that is normal to the ellipsoid at the point $(1, 2, 1)$.
- (iii) Find the acute angle that the tangent plane at the point $(1, 2, 1)$ makes with the xy -plane.
44. (a) Locate all relative extrema and saddle points of $f(x, y) = 4xy - x^4 - y^4$.
- (b) Find the points on the sphere $x^2 + y^2 + z^2 = 36$ that are closest to and farthest from the point $(1, 2, 2)$.
-

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021

First Degree Programme under CBCSS

Mathematics

Complementary Course for Physics

MM 1331.1 : MATHEMATICS III — CALCULUS AND LINEAR ALGEBRA

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION — I

All the **ten** questions are compulsory. They carry **1** mark each.

1. Write the differential equation of all straight lines in a plane.
2. What is the general form of Clairaut's equation?
3. Solve $\frac{d^2x}{dt^2} - 2\frac{dx}{dt} + 1 = 0$.
4. What is the electrostatic potential energy gained by moving a charge q along a path C in an electric field $\vec{E}$?
5. Define a conservative vector field.

6. $f(t) = \sin 2\pi t$ is periodic with period _____
7. If $f(x) = \sum_{n=-\infty}^{\infty} c_n e^{inx}$, then what is the average of $|f(x)|^2$ over a period?
8. Define rank of a matrix.
9. If A is an invertible matrix of order n and b is an $n \times 1$ matrix, then the number of solutions of $Ax = b$ is _____.
10. Wronskian of $\{\sin x, \cos x\}$ is _____.

SECTION — II

Answer **any eight** questions. Each question carries **2** marks.

11. Solve $\frac{dy}{dx} = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$.
12. Solve $\frac{dy}{dx} = (x + y + 1)^2$.
13. Solve $(1 - x^2)y' + 2xy = (1 - x^2)^{3/2}$.
14. Solve $(y - px)(p - 1) = p$.
15. Solve $\frac{d^3y}{dx^3} - 3\frac{d^2y}{dx^2} + 3\frac{dy}{dx} - y = 0$.
16. Compute the work done by the force

$\vec{F} = xy^2 \hat{i} + 2\hat{j} + x\hat{k}$ over a path C parameterized by $x = ct, y = c/t, z = d; 1 \leq t \leq 2$.

17. If $\vec{r} = x\hat{i} + y\hat{j} + 3\hat{k}$, show that (a) $\nabla \cdot \vec{r} = 3$ (b) $\nabla \times \vec{r} = \vec{0}$.
18. Prove that for any scalar valued function $\phi(x, y, z)$ whose second order partial derivatives are continuous, $\text{Curl}(\text{grad}\phi) = \vec{0}$.
19. Find the vector area of the surface of the Hemisphere $x^2 + y^2 = a^2, z \geq 0$, by evaluating the line integral $S = \frac{1}{2} \oint_C \vec{r} \times d\vec{r}$ around its perimeter.
20. State Dirichlet's conditions for a Fourier series.
21. Find the coefficients in the Fourier series of the function $f(x) = x, -\pi \leq x \leq \pi$ where $f(x + 2\pi) = f(x)$.
22. If A and B are symmetric matrices, prove that $AB - BA$ is an antisymmetric matrix.
23. Determine the rank of the matrix $\begin{bmatrix} 0 & 1 & -3 & -1 \\ 1 & 0 & 1 & 1 \\ 3 & 1 & 0 & 2 \\ 1 & 1 & -2 & 0 \end{bmatrix}$.
24. Find a unit vector perpendicular to both $\hat{i} + \hat{j}$ and $\hat{i} - 2\hat{k}$.
25. Show that the vectors $(1, 1, 1), (0, 1, 1)$ and $(0, 0, 1)$ are linearly independent.
26. Find the equation of the line through $(3, 4, -1)$ and parallel to $2\hat{i} - 3\hat{j} + 6\hat{k}$.

SECTION — III

Answer **any six** questions. Each question carries **4** marks.

27. Solve $xdy - ydx = \sqrt{x^2 + y^2} dx$.

28. Solve $x \frac{dy}{dx} + y - \frac{y^2}{x^{3/2}} = 0$, subject to $y(1) = 1$.

29. Solve $\frac{dy^2}{dx^2} - 2 \frac{dy}{dx} + y = e^x$.

30. Solve $\frac{d^2y}{dx^2} - 3 \frac{dy}{dx} + 2y = 2e^{-x}$, subject to the boundary conditions $y(0) = 2, y'(0) = 1$.

31. Show that the area of a region R enclosed by a simple closed curve C is given by $A = \frac{1}{2} \oint_C x dy - y dx$. Hence prove that the area of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is πab .

32. Find the volume enclosed between a sphere of radius a centred on the origin and a circular cone of half angle α with its vertex at the origin.

33. Show that the vector field $\vec{Q} = (x^2 + xy^2)\hat{i} + (y^2 + x^2y)\hat{j}$ is conservative and find ϕ such that $\vec{Q} = \nabla \phi$.

34. A periodic function $f(t)$ with period 2π is defined within the period $-\pi < t < \pi$ by

$$f(t) = \begin{cases} -1, & -\pi < t < 0 \\ 1, & 0 < t < \pi \end{cases}$$

Find its Fourier series expansion.

35. Find the Fourier transform of $f(x) = \begin{cases} 1 - x^2, & |x| \leq 1 \\ 0, & |x| > 1 \end{cases}$.

36. Find the distance from $P(1, 2, -1)$ to the line joining $P_1(0, 0, 0)$ and $P_2(-1, 0, 2)$.

37. Solve the equations $x + y + z = 6$, $x - y + 2z = 5$, $3x + y + z = 8$.

38. Find what transformation corresponds to the matrix

$$A = \frac{1}{2} \begin{bmatrix} -1 & \sqrt{3} \\ -\sqrt{3} & -1 \end{bmatrix}.$$

SECTION — IV

Answer **any two** questions. Each question carries **15** marks.

39. (a) Solve $(1 + y^2)dx = (\tan^{-1} y - x)dy$

(b) Solve $(1 - x^2)\frac{d^2y}{dx^2} - 3x\frac{dy}{dx} - y = 1$.

40. (a) Use Green's functions to solve $\frac{d^2y}{dx^2} + y = \operatorname{cosec} x$, subject to the boundary conditions $y(0) = y(\pi/2) = 0$.

(b) Solve $4x^2 \frac{d^2y}{dx^2} + 4x \frac{dy}{dx} + (x^2 - 1)y = 0$.

41. (a) Evaluate the surface integral $\int_S \vec{a} \cdot d\vec{s}$, where $\vec{a} = (y - x)\hat{i} + x^2z\hat{j} + (z + x^2)\hat{k}$ and

S is the open surface of the hemisphere $x^2 + y^2 + z^2 = a^2$, $z \geq 0$.

(b) Verify Stoke's theorem for the vector field $\vec{a} = (2x - y)\hat{i} - yz^2\hat{j} - y^2z\hat{k}$ over the upper half surface of the unit sphere $x^2 + y^2 + z^2 = 1$, $z \geq 0$.

42. A periodic function $f(t)$ of period 2π is defined within the period $0 < t < 2\pi$ by

$$f(t) = \begin{cases} t, & 0 \leq t \leq \frac{\pi}{2} \\ \frac{\pi}{2}, & \frac{\pi}{2} \leq t \leq \pi \\ \pi - \frac{t}{2}, & \pi \leq t \leq 2\pi \end{cases}$$

find a Fourier series expansion of it.

43. Represent $f(x) = \begin{cases} 1, & 0 < x < 1/2 \\ 0, & 1/2 < x < 1 \end{cases}$ by

(a) A Fourier sine series

(b) A Fourier cosine series

(c) A Fourier series.

44. (a) Diagonalize the matrix $\begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$.

(b) Find the equation relative to the principal axes of the quadric surface

$$x^2 + 5y^2 + z^2 + 2xy + 2yz + 6xz = 48.$$

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021

First Degree Programme under CBCSS

Chemistry

Complementary Course for Physics

CH 1331.1 : PHYSICAL CHEMISTRY II

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions. Each question carries **1** mark.

1. Under what conditions does a real gas approach ideal behaviour?
2. X-ray crystallography uses which characteristic of light.
3. When the rate of the reaction is equal to the rate constant, the order of the reaction is _____.
4. The resistance of the conductor in the electrolytic cell _____ with an increase in temperature.
5. Give the electrode reaction of calomel electrode.
6. NH_3 belongs to which point group.
7. A substance 'A' decomposes by a first-order reaction starting initially with $[\text{A}] = 2.00 \text{ M}$ and after 200 min, $[\text{A}]$ becomes 0.15 M. For this reaction $t_{1/2}$ is _____.

8. In the Haber process for the manufacture of ammonia _____ is used as the catalyst.
9. Copper crystalline in FCC with a unit cell length of 361pm. What is the radius of a copper atom?
10. Medicine bottles are often made with darkened glass to prevent _____.

(10 × 1 = 10 Marks)

SECTION – B

Answer **any eight** questions. Each question carries **2** marks.

11. At 0°C and 1 atm pressure, molecular diameter of a gas is 4×10^{-8} cm. Calculate the mean free path of its molecules.
12. What is meant by reduced equation of state?
13. Briefly explain the Linde's process for liquefaction of gases.
14. Why is it said that crystalline solids are anisotropic?
15. What is meant by a space lattice?
16. What do the following stand for in crystal chemistry: (i) fcc; (ii) bcc?
17. Define molecularity of a reaction.
18. The time taken for 50% of a reaction to be complete is 13.86 hours. Calculate its specific reaction rate.
19. Define activation energy of a reaction.
20. What is meant by degree of dissociation of an electrolyte?
21. What are strong electrolytes? Give two examples.
22. What is electrochemical series? Briefly explain two of its uses.

23. How many mirror planes does a water molecule have? What kind are they?
24. Define point group.
25. Explain photochemical equivalence and quantum efficiency.
26. "Finely divided catalysts are more effective than their bulk forms." Justify this statement.

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions. Each question carries **4** marks.

27. Obtain equations for critical constants from van der Waals equation.
28. What are the causes for the deviations of real gases from ideal behavior?
29. What are lattice planes and Miller indices? Explain how the Miller indices of a lattice plane are calculated.
30. X-rays of wavelength $1.54 \text{ \AA}$ are diffracted at an angle of 20° for the second order in Bragg's spectrometer. Find the distance between the planes.
31. Derive Arrhenius equation and explain its significance.
32. Explain the influence of temperature on reaction rate on the basis of collision theory.
33. Give a brief description of a Fuel cell.
34. Derive the Nernst equation for the emf of a cell.
35. Explain the term improper rotation with a suitable example.
36. Explain the terms symmetry operation and elements of symmetry with suitable examples.
37. Explain the adsorption theory of heterogeneous catalysis.
38. Calculate the energy available on absorption of 1.5 Einstein of a radiation of wavelength $5560 \text{ \AA}$.

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions. Each question carries **15** marks.

39. Derive the Van der Waals equation of state. State the law of corresponding states and explain its significance.
40. (a) Derive the Bragg's equation.
(b) Explain the rotating crystal method for the X-ray diffraction studies of crystals.
41. (a) Derive the integrated rate equation for a first order reaction.
(b) A first order reaction has a specific reaction rate of 10^{-3} s^{-1} . How long will it take for 10 g of the reactant to reduce to 1.5 g? Also calculate the half-life of the reaction.
42. Explain the principle of conductometric titrations with a suitable example. What are the advantages of the method?
43. (a) Assign the point groups of the molecules: BE_3 and H_2O .
(b) A cadmium rod is placed in 0.01 M CdSO_4 solution at 298 K. Calculate the potential of this electrode at 298 K. Given: $E^\circ_{\text{Cd}^{2+}/\text{Cd}} = -0.402\text{V}$.
44. (a) Write a short note on enzyme catalysis.
(b) Derive Beer-Lambert law. Beer-Lambert law.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021

First Degree Programme under CBCSS

Physics

Core Course

PY 1341 — ELECTRODYNAMICS

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions in **1** or **2** sentences. Each carries **1** mark.

1. Write down the boundary conditions for electric field.
2. Write down wave equation in one dimension.
3. Give an example for a equipotential surface.
4. Express Amperes circuital theorem in differential form.
5. A charge Q is place the center of a cube. The flux coming out from any surface is _____.
6. The power factor of a CR circuit is _____.
7. Write the electric potential for localized charge distribution.
8. Write relation between RMS value and peak value of alternating current.
9. In free space the electromagnetic waves propagate at with velocity in terms of permeability (μ_0) and permittivity (ϵ_0) is _____.

10. An Electromagnetic wave in free space radiating system the maximum value of radiated electric field is 500 V/m, the peak value of Magnetic field is _____.

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions, not exceeding a paragraph. Each question carries 2 marks.

11. State and explain Faraday's law of electromagnetic induction.
12. Explain Lenz's law.
13. Show that magnetic field does no work.
14. Prove that electrostatic field is conservative.
15. Explain Poisson's and Laplace's equation.
16. What is atomic polarizability? Explain the polarizability tensor.
17. What are Polar and Non Polar molecules? Give an examples for each.
18. Define Q factor of series resonant circuit.
19. Write physical meaning of $\nabla \cdot B = 0$.
20. Differentiate between conduction current and displacement current.
21. State Gauss's theorem for dielectrics.
22. Show graphically the decay of charge in a series LCR circuit corresponding to over damped, critically damped and damped oscillatory.
23. Give an expression for the growth of charge in a series CR circuit. Sketch the variation.
24. Define magnetic vector potential.
25. Show that electric potential obeys super position principle.
26. What are the two fundamental equations of electrostatic fields?

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. **Each** carries **4** marks.

27. Calculate atomic polarizability of hydrogen atom. Assuming hydrogen atom consist of a point nucleus (+q) surrounded by a uniformly charged spherical cloud (–q) of radius $a = 0.53 \text{ \AA}$.
28. A coil having $R = 120 \Omega$ and $L = 24 \text{ H}$ is connected to a 12 V battery. Determine (i) the time constant of the circuit. (ii) current after 0.2 second (iii) current after 1 second .
29. A plane electromagnetic wave traveling in vacuum has electric field is given by $E(x, t) = (500 \text{ V/m}) \cos\left(\frac{2\pi x}{3} - 10^6 t\right) \hat{z}$. (a) What is the amplitude of the magnetic field component? (b) Parallel to which axis does the magnetic field oscillate? (c) When the electric field component is in the positive direction of the z axis at a certain point P , what is the direction of the magnetic field component there?
30. A coil with 25 turns of wire is wrapped on a frame with a square cross section 1.80 cm on a side. Each turn has the same area, equal to that of the frame, and the total resistance of the coil is 0.350Ω . An applied uniform magnetic field is perpendicular to the plane of the coil. If the field changes uniformly from 0.00 T to 0.500 T in 0.800 s , what is the induced emf in the coil while the field is changing? Find (a) the magnitude and (b) the direction of the induced current in the coil while the field is changing.
31. A circular wire loop of radius 1.00 m is placed in a uniform magnetic field of magnitude 0.500 T . The normal to the plane of the loop makes an angle of 30.0° with the magnetic field. The current in the loop is 2.00 A in the counter clockwise direction. Find the magnetic moment of the loop and the magnitude of the torque at this instant.
32. Find the vector potential inside and outside of an infinite solenoid with n turns per unit length, radius R , and current I .
33. A sphere of radius R carries a polarization $P(r) = kr$, where k is a constant and r is the vector from the center. Calculate the bound charges σ_b and ρ_b .
34. A resistance of $10 \text{ k}\Omega$ is joined in series with an inductance of 0.5 Henry . What capacitance must be put in series with the combination to attain maximum current? What will be the potential drop across each element of the circuit, if it is connected to 200 V , 50 Hz mains?

35. A wire of length '4a' is first bent to form a circle and then a square. What is the magnetic field produced at the center of circle to the center of a square when a current I is passed through it.
36. Three charges $20\ \mu\text{C}$, $30\ \mu\text{C}$ and $40\ \mu\text{C}$ are placed at the corners of an equilateral triangle of side length 10 cm. How much work has to be done in assembling all three charges.
37. Obtain the expression for energy stored for a continuous charge distribution.
38. Explain how Maxwell fixed Ampere's law.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. **Each** question carries **15** marks.

39. Explain bound charges and physical significance. Show that the potential due to a polarized dielectric is the same as that produced by a volume charge density and surface charged density.
40. How magnetic materials were classified. Explain briefly.
41. State and explain Gauss's law. Find electric field inside and outside of a uniformly charged solid sphere of radius R having total charge Q . Sketch the variation of electric field with distance.
42. Discuss the growth of current in a circuit containing inductance L and resistance R in series with a cell of steady emf E . Define time constant. Sketch the growth of current for different time constant.
43. Obtain the wave equations for electric and magnetic field vectors E and B in free space. Discuss the term polarization and prove that electromagnetic waves are transverse in nature.
44. Discuss theory of series and parallel LCR circuit.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021.

First Degree Programme under CBCSS

Mathematics

Complementary Course for Chemistry and Polymer Chemistry

MM 1331.2 – Mathematics – III – LINEAR ALGEBRA, PROBABILITY
THEORY AND NUMERICAL METHODS

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – I

All the **first ten** questions are compulsory. They carry **1** mark each.

1. Define equivalent matrices.
2. If A is an invertible matrix of order 3, then rank of A = _____
3. Trace of the matrix $\begin{bmatrix} 1 & -1 & 2 \\ 2 & -1 & 6 \\ 4 & -4 & 5 \end{bmatrix}$ is _____
4. Define wronskian of a set of functions.
5. If a three digit number is selected at random, what is the probability that the hundreds digit is 6?
6. What is probability density function?

7. There are 10 questions on a test and you are to do 8 of them. In how many ways can you choose them?
8. When do the Poisson distribution gives a good approximation to the binomial distribution?
9. What is the order of convergence of the solution in Newton-Raphson method?
10. Give an example of a functions which is not analytically integrable over some range.

SECTION – II

Answer **any eight** question form among the questions 11 to 26. These questions carry **2** marks each

11. If $\vec{a} = 4\vec{i} - 3\vec{k}$ and $\vec{b} = -2\vec{i} + 2\vec{j} - \vec{k}$, find the

(a) Scalar projection of $\vec{a}$ and $\vec{b}$

(b) Scalar projection of $\vec{b}$ onto $\vec{a}$

12. Find the rank of the matrix $\begin{bmatrix} 1 & -1 & 2 & 3 \\ -2 & 2 & -1 & 0 \\ 4 & -4 & 5 & 6 \end{bmatrix}$.

13. If C is orthogonal and M is antisymmetric, show that the matrix $C^{-1}MC$ is antisymmetric.

14. Show that the functions $x, \sin x, 2x - 3 \sin x$ are linearly dependent.

15. Find the equation of the line through $(3, 0, -5)$ and parallel to the line $\vec{r} = (2, 1, -5) + (0, -3, 1)t$.

16. Find the direction of the line of intersection of the planes $x - 2y + 3z = 4$ and $2x + y - z = 5$

17. Given a family of two children (assume boys and girls are equally likely), what is the probability that at least one is a girl? Given that the first two are girls, What is the probability that an expected third child will be a boy?
18. Two dice are thrown. What is the probability of being able to form a two-digit number greater than or equal to 42 with the two numbers on the dice?
19. Find the probability of getting 4 heads in 6 tosses of a fair coin.
20. An urn contains 10 black and 10 white balls. Find the probability of drawing two balls of the same colour.
21. Find the number of ways in which 15 balls can be put into 6 boxes in such a manner that the boxes contains 4, 3, 3, 2, 2, 1 balls respectively.
22. If a random variable x follows Poisson distribution such that $p(x=1) = p(x=2)$, then find the mean and variance of the distribution.
23. Find a real root of the equation $x^3 + x^2 - 1 = 0$, lying between 0 and 1 by the method of rearrangement.
24. Using gauss elimination method, solve the equations
- $$\begin{aligned}x + 4y - 3z &= -5, \\x + y - 6z &= -12, \\3x - y - z &= 4.\end{aligned}$$
25. Given a random number η uniformly distributed on $(0,1)$, determine the function $\xi = \xi(\eta)$ that would generate a random number ξ distributed as 2ξ on $0 \leq \xi < 1$.
26. Evaluate $\int_0^2 (x^2 - 3x + 4) dx$ using trapezium rule with $h = 0.5$.

SECTION – III

Answer **any six** questions from among the questions 27 to 38 then questions carry **4** marks each.

27. Determine the value of k such that the equations

$$x + ky + 3z = 0,$$

$$4x + 3y + kz = 0,$$

$$2x + y + 2z = 0$$

have a non-trivial solution.

28. Find the equation of the plane through the points

$$(-1, 1, 1), (2, 3, 0) \text{ and } (0, 1, -2).$$

29. Find the angle between

(a) the space diagonals of a cube

(b) space diagonal and an edge

(c) a space diagonal and a diagonal of a face.

30. Find the dimension and a basis of the vector space spanned by the vectors $(0, 1, 0, 6, -3)$, $(1, 0, 1, 5, -2)$, $(2, -1, 2, 4, 1)$ and $(3, 0, 3, 15, -6)$.

31. What is the probability that a number n , $1 \leq n \leq 99$,

(a) is divisible by both 6 and 10?

(b) is divisible by either 6 or 10 or both?

32. A club consists of 50 members. In how many ways can a president, vice president, secretary and treasurer be chosen? In how many ways can a committee of 4 members be chosen?
33. A problem in chemistry is given to three students A, B, C whose chances of solving of are $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$ respectively. What is the probability that the problem will be solved?
34. Suppose 3% of bolts made by a machine are defective, the defects occurring at random during production of bolts are packaged 50 per box, find
- exact probability and
 - Poisson approximation to it, that a given box will contain 5 defectives.
35. Using Newton-Raphson procedure find, correct to three decimal places, the root nearest to 2 of the equation $x^4 + x^3 - 7x^2 - x + 5 = 0$.
36. Show that the iteration scheme
- $$x_{n+1} = \frac{1}{2} \left(x_n + \frac{x}{x_n} \right),$$
- for finding the square root of x has second order convergence. Using this evaluate $\sqrt{18}$ correct to four decimal places.
37. Use a Taylor series to solve the initial value problem $\frac{dy}{dx} + xy = 0$, $y(0) = 1$ evaluating $y(x)$ for $x = 0.0$ to 0.5 in steps of 0.1 .
38. Apply gauss-seidal method to solve the equations
- $$\begin{aligned} 5x + 2y + z &= 12 \\ x + 4y + 2z &= 15 \\ x + 2y + 5z &= 20 \end{aligned}$$

SECTION – IV

Answer **any two** questions from among the questions 39 to 44.

These questions carry **15** marks each.

39. (a) Let $M = \begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$. Find a matrix C such that $C^{-1}MC$ is a diagonal matrix.

- (b) Find the equation relative to the principal axes of the quadric surface $6x^2 + 3y^2 + 3z^2 - 4xy + 4xz + 2yz = 60$. Also find the matrix of transformation.

40. Find the eigen values and corresponding independent eigen vectors of the matrix

$$A = \begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{bmatrix}$$

41. Suppose that boxes of a certain kind of cereal have an average weight of 16 ounces and it is known that 70% of the boxes weigh within 1 ounce of the average. What is the probability that the box you buy weighs less than 14 ounces?

42. A loaded die has probabilities $\frac{1}{21}, \frac{2}{21}, \frac{3}{21}, \frac{4}{21}, \frac{5}{21}, \frac{6}{21}$ of showing 1, 2, 3, 4, 5, 6.

- (a) What is the probability of throwing two 3's in succession?
- (b) What is the probability of throwing a 4 the first time and not a 4 the second time?
- (c) If two such dice are thrown and the sum of the numbers on the faces is greater than or equal to 10. what is the probability that both are 5's?

- (d) How many times must we throw loaded die to have probability greater than $\frac{1}{2}$ of getting an ace?
- (e) The loaded die is thrown twice. What is the probability that the number on the die is even the first time > 4 the second time?
43. Show the following results about rearrangement schemes for polynomial equations.
- (a) If a polynomial equation $g(x) = x^m - f(x) = 0$ where $f(x)$ is a polynomial of degree less than m and for which $f(0) \neq 0$, is solved using a rearrangement scheme $x_{n+1} = (f(x_n))^{1/m}$, then in general the scheme will have only first order convergence.
- (b) The same iteration scheme can give second or higher order convergence to the cubic equation $x^3 - ax^2 + 2abx - (b^3 + ab^2) = 0$, where $a \neq 0$ $b \neq 0$ in special cases.
44. Use the Runge-Kutta method of order four to solve for $y(0.1), y(0.2)$ and $y(0.3)$ given that $y' = ty + y^2$, $y(0) = 1$.

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021

First Degree Programme under CBCSS

Physics

Complementary Course for Chemistry

PY 1331.2 : OPTICS, MAGNETISM AND ELECTRICITY

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

PART – A

Answer **all** questions in **one** or **two** sentences; each question carries **1** mark :

1. The ratio of intensities of two waves is given by 4:1. What will be the ratio of amplitudes of these two waves?
2. What will be the central point appears in Newton's ring in a reflected light?
3. What type of wave is obtained when a source of light is allowed to pass through a narrow slit?
4. What is a grating?
5. When white light is incident on the straight edge, what will be the colour of the center of the diffraction pattern?
6. What is meant by plane polarized light?

7. Distinguish between ordinary and polarized light.
8. What are the properties of Lasers?
9. Write down the properties of magnetic field lines.
10. What is a choke coil? Give some of its uses?

(10 × 1 = 10 Marks)

PART – B

Answer **any eight** questions, not exceeding a paragraph. Each question carries 2 marks.

11. Explain the condition for producing sustained interference.
12. State and explain superposition principle.
13. How Newton's rings are formed?
14. Why a thick film cannot produce interference when illuminated with white light?
15. What would happen when the circular aperture in Fresnel diffraction pattern is replaced by a circular disc of the same radius?
16. Distinguish between Fresnel and Fraunhofer diffraction.
17. Why the diffraction of sound is more common than light?
18. Draw the intensity distribution curve in Fraunhofer single slit diffraction pattern.
19. What are the characteristics of grating spectra?
20. State and explain Brewster's law.
21. Distinguish between ordinary ray and extra ordinary ray.
22. What is a half wave plate? What is its use?

23. Describe how a Nicol prism can be used as an analyzer.
24. What is population inversion?
25. Draw the energy level diagram of ruby laser.
26. What are paramagnetic materials? Give one example.

(8 × 2 = 16 Marks)

PART – C

Answer **any six**, each question carries **4** marks.

27. Two monochromatic beams meeting at a point have a path difference of 8 wavelengths. A mica sheet of thickness 2.4 microns is introduced in the path of one of the beams. If $\lambda = 600$ nm and $n = 1.5$, calculate the path difference now.
28. A transparent plate of thickness 10^{-5} m is placed in the path of the interfering beam of a biprism experiment using light of wavelength 500 nm. If the central fringe shifts by a distance equal to the width of ten fringes, calculate the refractive index of the material of the plate?
29. Two coherent sources are placed 0.2 mm apart and interference fringes are observed on a screen 1.2 m away. The fringe width produced by a certain monochromatic source of light is found to be 0.3 cm. Calculate the wavelength of light used in the experiment.
30. How many half period elements are there in a circular portion of 10^{-2} m radius of a plane wave front given that the wavelength is 6×10^{-7} m and the distance of the point of observation of the wave front is 1 meter?
31. A narrow slit is illuminated by monochromatic light of wavelength 6×10^{-7} m. It is placed at a distance of 0.1 m from a straight edge. If measurements are carried out at distance equal to 1 m from the edge, what is the distance between the first and second dark bands?
32. A light of wavelength 500 nm is incident normally on a plane transmission grating. A second order spectral lines is observed at an angle 30° . Calculate the number of lines per meter on the grating surface?
33. A polarizer analyzer are oriented so that the amount of light transmitted is maximum. To what fraction of its maximum value is the intensity of the transmitted light reduced when the analyzer is rotated through 30° , 45° , 60° and 90° .

34. Calculate the thickness of a half wave plate for light of wavelength 580 nm. Principal refractive indices are 1.544 and 1.553.
35. Quartz plate of thickness 0.03 mm works as a phase retardation plate for light of wave length $6000 \text{ \AA}$. Calculate the value of retardation in phase. Given $n_o = 1.55$ and $n_e = 1.54$.
36. The core and cladding of a silica optical fiber have refractive indices of $n_1 = 1.5$ and $n_2 = 1.4$ respectively. Calculate the acceptance angle of the fiber?
37. A bar magnet place with its axis at 30° with a uniform magnetic field of 0.25 T experiences a torque of magnitude equal to $4.5 \times 10^{-2} \text{ J}$. What is the magnitude of magnetic moment of the magnet?
38. An ac voltage of peak value 283 V and frequency 50 Hz is applied to a series LCR circuit in which $L = 25.48 \text{ mH}$, $C = 796 \mu\text{F}$, and $R = 3 \Omega$. Find the Impedance of the circuit.

(6 × 4 = 24 Marks)

PART - D

Answer **any two** questions; Each question carries **15** marks.

39. Derive an expression for the conditions of bright and darkness produced by light incident on a plane film creating interference due to reflected light.
40. Discuss the Fraunhofer diffraction due to a double slit in detail. Draw intensity diagram.
41. Explain the production and analysis of plane and circularly polarized light.
42. Explain the principle of propagation of light through fiber optics materials. What are the advantages and disadvantages of optical fiber cable over conventional communications system?
43. What do you mean by magnetic susceptibility and permeability? Explain the classical theory of diamagnetism?
44. Obtain an expression for a current in a series LCR circuit? Deduce an expression for impedance in the circuit.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021

First Degree Programme under CBCSS

Chemistry

Core Course II

CH 1341 : INORGANIC CHEMISTRY – II

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions. Each question carries **1** mark.

1. What is the geometry of ClF_3 molecule?
2. Which is the compound formed when PCl_5 is hydrolysed with excess of H_2O ?
3. How are the nuclides ^{40}Ar and ^{40}K related; explain?
4. Give an example for radioisotope used as tracer.
5. What is meant by nanotechnology?
6. Write a note on SWCNT's.
7. What is the artificial radioactive disintegration series?
8. Name one inorganic polymers.

9. Which compound is known as inorganic graphite?
10. Give an example for interhalogen compound.

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions from the followings. Each question carries **2** marks.

11. Draw the structure of polymeric Boron nitride.
12. Write Born-Landé equation.
13. Draw the structure of Diborane.
14. Mention any one method for preparation of carbon nanotubes.
15. Explain the reaction responsible for formation of ^{14}C in atmosphere.
16. What are carboranes?
17. Write any two uses of noble gases.
18. Give one method for preparation of Borazole.
19. Explain the uses of silicon.
20. What is meant by artificial transmutation?
21. Explain dipole-dipole interactions with example.
22. The amount of radioactive substance decreases 20% of the initial value after 200 minutes. Calculate the disintegration constant.
23. State Geiger-Nuttall rule.
24. What is meant by dipole moment of a molecule?

25. Explain the boiling points of o, p-isomers of nitro phenol.
26. List out the compounds of Xenon.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions from the following. Each question carries **4** marks.

27. Explain the Top-down approaches and Bottom to top approaches in nanosynthesis.
28. Write a note on secondary forces.
29. Predict the structure of IF_5 and IF_7 .
30. Write a note on nuclear stability.
31. Discuss SP_2 hybridization with suitable example.
32. Draw the molecular orbital diagram for CO and calculate its bond order.
33. Explain Valence bond theory.
34. Explain colloidal precipitation method for nano synthesis.
35. Write a note on interhalogen compounds?
36. Discuss the applications of neutron activation analysis.
37. Using the VSEPR theory explain shapes of NH_4^+ and NH_3 .
38. What are Zeolites? Explain their uses.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions from the following. Each question carries **15** marks.

39. (a) Write a note on nuclear fission.
- (b) Discuss the uses of radioactive isotopes in diagnosis and therapy.
- (c) Explain radio carbon dating. 15
40. Discuss the Born-Haber cycle for ionic compound. Comment on its applications. 15
41. (a) Write a note on classification of silicates. 10
- (b) Write a note on band theory. 5
42. How will you prepare nanomaterial using : 15
- (a) High energy Ball milling
- (b) Sol-gel synthesis
- (c) Hydrothermal technique.
43. (a) Explain LCAO-MO theory with example. 5
- (b) Compare VBT and MOT. 10
44. (a) Briefly explain inorganic polymers their structure and uses. 10
- (b) Discuss the structure and bonding in B_2H_6 . 5

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Com. Degree Examination, March 2021

First Degree Programme Under CBCSS

**(Common for CO 1361.1 (2013, 2015 – 17 Admission/CC 1342
(2013 Admission))**

FINANCIAL MANAGEMENT

(Common for Commerce/Commerce with Computer Application)

Time : 3 Hours

Max. Marks : 80

PART – A

Answer **all** questions. Each question carries **1** mark.

1. Define financial management.
2. What is time value of money?
3. What is dividend?
4. What is gross working capital?
5. What is NPV?
6. Define cost of capital.
7. What is financial leverage?
8. What is capital structure?

9. What is EOQ?
10. What is payback period?

(10 × 1 = 10 Marks)

PART – B

Not to exceed one paragraph, Answer **any eight** questions. Each question carries **2** marks.

11. What are aims of finance function?
12. What are the reasons for time preference of money?
13. What is weighted average cost of capital?
14. Distinguish between composite cost and specific cost.
15. What are the motives of holding cash?
16. What are the different types of financial decisions?
17. What is ABC analysis?
18. Explain Walter's model of dividend theory.
19. What is cost of equity capital?
20. What is receivables management?
21. What are the various types of investment proposals?
22. Define IRR.

(8 × 2 = 16 Marks)

PART – C

Not to exceed 120 words, answer **any six** questions. Each question carries **4** marks.

23. Explain the scope of finance function.
24. Discuss the objectives of inventory management.
25. State the significance of cost of capital.
26. What are the various steps in capital budgeting process?
27. Distinguish between NPV and IRR.
28. How working capital is relevant for the smooth functioning of a firm?
29. What are the functions of a finance manager?
30. Determine the payback period for a project which requires a cash outlay of Rs. 10,000 and generates cash inflows of Rs. 2,000, Rs. 4,000, Rs. 3,000 and Rs. 2,000 in the first, second, third and fourth year respectively.
31. A company issues Rs. 10,00,000, 10% redeemable debentures at a discount of 5%. The cost of flotation is Rs. 30,000. The debentures are redeemable after 5 years. Calculate cost of debentures by assuming 50% tax rate.

(6 × 4 = 24 Marks)

PART – D

Answer **any two** questions. Each question carries **15** marks.

32. Explain the objectives of financial management.
33. What is dividend policy? Discuss the factors influencing dividend policy.

34. What are the factors influencing working capital?
35. A firm has the following capital structure with respective after tax costs

Sources	Amount	After tax cost
Debt	15,00,000	5%
Preference shares	12,00,000	10%
Equity shares	18,00,000	12%
Retained earnings	15,00,000	11%

Calculate weighted average cost of capital.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Com. Degree Examination, March 2021

First Degree Programme under CBCSS

Complementary Course : CO 1331 / CX 1331

INFORMATION TECHNOLOGY IN BUSINESS

(Common for Commerce / Commerce & Tax Procedure and Practice)

(2015 – 2017 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions in **one** word or to a maximum of **two** sentences each.
Each question carries **one** mark.

1. What is a computer?
2. What is CPU?
3. What is ROM?
4. What do mean by Software?
5. What is Network?
6. Who is a www?
7. What is E-mail?
8. What is Spoofing?
9. What is E-commerce?
10. What is EDI?

(10 × 1 = 10 Marks)

SECTION – B

Answer **any eight** questions in not exceeding **one** paragraph each.
Each question carries **2** marks.

11. What is TCP/IP?
12. What is meant by firewall?
13. What is a search engine?
14. Give the advantages of E-Commerce.
15. What are EDI standards?
16. What is e-banking?
17. Explain EFT.
18. What is WWW?
19. What are viruses?
20. What is ECS?
21. What is E-Governance?
22. What is virtual banking?

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions in about **120** words each.
Each question carries **4** marks.

23. Explain Importance of Internet in Business Applications.
24. Distinguish between Encryption and Decryption.

25. Distinguish between Internet and intranet.
26. What are credit and debit cards?
27. Explain the working of NEFT.
28. What is IFSC?
29. Explain the role of e-governance in India.
30. Explain the advantages of e-governance.
31. What is Real Time Gross Settlement?

(6 × 4 = 24 Marks)

SECTION - D

Answer **any two** questions in not exceeding **4** pages each.
Each question carries **15** marks.

32. 'Internet can provide as many security risks as opportunities'. Comment.
33. Explain the types of e-commerce.
34. Explain the Advantages and barriers of EDI.
35. Enumerate the Features of E-Banking.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Com. Degree Examination, March 2021

First Degree Programme Under CBCSS

**Core Course : CO 1343/CC 1344 (2015-17 Admission)/CO 1342/CX 1342/TT
1342/HM 1342/CC 1343 (2018 Admission)**

ADVANCED FINANCIAL ACCOUNTING

**(Common for Commerce, Commerce and Tax Procedure and
Practice/Commerce and Hotel Management and Catering/Commerce and
Computer Application, Commerce and Tourism and Travel Management)**

Time : 3 Hours

Max. Marks : 80

PART – A

Answer **all** questions in one or two sentences each. Each question carries **1** mark.

1. What do you mean by dissolution of partnership?
2. What do you understand by unrecorded assets?
3. What is fluctuating capital?
4. Who is an active partner?
5. What do you understand by account sales?
6. Who is a consignor?
7. What do you understand by fixed capital accounts?

8. What are inter-departmental transfers?
9. What do you mean by remittance-in-transit?
10. What do you understand by branches?

(10 × 1 = 10 Marks)

PART – B

Answer **any eight** questions in not exceeding one paragraph each. Each question carries **2** marks.

11. What are the advantages of registration of a partnership firm?
12. What are the different kinds of partners?
13. What is the need for consignment?
14. What is *proforma* invoice?
15. Briefly explain abnormal loss in consignment.
16. What do you understand by *del-credere* Commission? How it is calculated?
17. What do you mean by "Debtors" method?
18. What are the main types of branches from accounting point of view?
19. Give two examples of businesses in which joint venture is generally used.
20. On 20th January 2020, Martin and Co., Kochi consigned 200 computer tables to Sea Land Furniture Mart, Kozhikode. On 30th June 2020, Sea Land Furniture Mart forwarded an Account Sales, with a bank draft for the balance, showing the following transactions:
 - (a) 150 computer tables sold @ Rs. 1,300 and 30 @ Rs. 1,400 each.
 - (b) Unloading charges Rs. 700.

- (c) Storage and insurance Rs. 600.
- (d) Commission @ 12%.
- (e) Advance given to Martin and Co. Rs. 1,00,000.

You are required to prepare Account Sales.

21. 100 tonnes of coal are consigned @ Rs. 150 per tonne, non-recurring expenses being Rs. 4,000. Loss due to loading and unloading is 5 tonnes. The quantity sold by the consignee is 85 tonnes. Calculate the value of unsold stock.
22. Calculate the value of abnormal loss from the following details.
- (a) 10,000 kg. of oil was consigned at Rs. 32 per kg.
 - (b) Freight Rs. 8,000, packing Rs. 10,000 and insurance Rs. 2,000 were paid by the consignor.
 - (c) Consignee's expenses were: advertisement Rs. 2,800, godown rent Rs. 800.
 - (d) 1,500 kg of oil was lost in transit and the insurance company paid Rs. 40,000 as compensation.
 - (e) 6,000 kg of oil was sold at Rs. 38 per kg.
 - (f) Stock with consignee was 2,000 kg; there being a normal loss of 500 kg.

(8 × 2 = 16 Marks)

PART – C

Answer **any six** questions in not exceeding 120 words. Each question carries 4 marks.

23. Enumerate the contents of Partnership Deed.
24. What are the conditions for compulsory dissolution of a partnership firm?

25. Distinguish between joint venture and consignment.
26. What are the advantages of departmental accounts?
27. How would you allocate the following indirect expenses among different departments of departmental organization?
- Sales Manager's salary
 - Bad debts
 - Rent, rates and taxes
 - Lighting.
28. The partnership firm of X, Y and Z was dissolved. Their balance sheet as at 31st December, 2019 was as under:

	Rs.		Rs.
X's capital	18,000	Plant and machinery	20,000
Y's capital	15,000	Stock	17,000
Z's capital	10,000	Debtors	15,000
Sundry creditors	8,000	Cash at bank	2,000
Outstanding expenses	1,000		
Reserve	2,000		
	<u>54,000.</u>		<u>54,000</u>

X, Y and Z were sharing profits and losses as 5:3:2. Plant is sold for Rs. 15,000 and stock for Rs. 18,000. In addition, stock worth Rs. 2,000 was taken over by X. Debtors realized Rs. 11,000. Creditors were paid Rs. 7,000 in full settlement. Rs. 1,000 was spent for realization expenses.

Prepare realisation Account.

29. Mr. Vasanth of Thiruvananthapuram consigned goods worth Rs. 10,000 to Mr. Varrior of Kochi, on 2nd January 2020. At the time of despatching goods he has incurred Rs. 1,000 towards expenses. After receiving goods Mr. Varrior sold all the goods for Rs. 15,000 and remitted the proceeds to Mr. Vasanth after deducting expenses incurred by him and his commission amounting to Rs. 2,000. Pass the necessary entries in the books of Mr. Vasanth.

30. Salem Garments Ltd. opened a branch at Kozhikode on 1st April, 2019. Prepare Kozhikode Branch Account for the year ended 31st March 2020, from the following information.

	Rs.
Goods sent to Kozhikode Branch	3,25,000
Cash sent to branch for	
Salaries	35,000
Rent	32,000
Sundry expenses	10,000
Cash remitted by the branch	4,32,000
Closing stock at branch	60,500
Petty cash in branch (31.3.2020)	1,400

31. Department R sells goods to Department S at a profit of 25% on cost and Department T at 10% profit on cost. Department S sells goods to R and T at a profit of 15% and 20% profit on sales respectively. Department T charges 20% and 25% profit on cost to Department R and S respectively.

Department managers are entitled to 10% commission on net profit subject to unrealized profit on departmental sales being eliminated. Departmental profits after charging manager's commission, but before adjustment of unrealized profit, are as under :

	Rs.
Department R	54,000
Department S	40,500
Department T	27,000

Stock lying at different departments at the end of the year are as under:

	Department R	Department S	Department T
	(Rs.)	(Rs.)	(Rs.)
Transfer from department R	–	22,500	16,500
Transfer from department S	21,000	–	18,000
Transfer from department T	9,000	7,500	–

Find out the correct departmental profits after charging manager's commission.

(6 × 4 = 24 Marks)

PART – D

Answer **any two** questions in not exceeding **four** pages. Each question carries **15** marks.

32. What is piecemeal distribution? Discuss the two methods of piecemeal distribution.
33. Neptune, Jupiter, Venus and Pluto had been carrying on business in partnership, sharing profits and losses in the ratio of 3: 2: 1: 1. They decide to dissolve the partnership on the basis of the following Balance Sheet as on April 30, 2020:

Liabilities	Rs.	Assets	Rs.
Capital accounts :		Premises	1,20,000
Neptune	1,00,000	Furniture	40,000
Jupiter	<u>60,000</u>	Stock	1,00,000
	1,60,000	Debtors	40,000
General reserve	56,000	Cash	8,000
Capital reserve	14,000	Capital overdrawn :	
Sundry creditors	20,000	Venus	10,000
Mortgage loan	80,000	Pluto	<u>12,000</u>
			22,000
	<u>3,30,000</u>		<u>3,30,000</u>

- (a) Assets were realized as follows: debtors Rs. 24,000, stock Rs. 60,000; furniture Rs. 16,000; and premises Rs. 90,000.
- (b) Expenses of dissolution amounted to Rs. 4,000.
- (c) Further creditors of Rs. 12,000 had to be met.
- (d) General reserve, unlike capital reserve, was built up by appropriation of profits.

Draw up Realization Account, Partners' Capital Accounts and Cash Account assuming that Venus became insolvent and nothing was realized from his private estate. Apply the principles laid down in *Gamer vs. Murray*.

- 34. Kay sent 500 articles to his agent Jay at an invoice price (cost to Kay) of Rs. 25 per article and paid freight and cartage Rs. 460. Jay sold 300 articles @ Rs. 30 per article and sent an account sales deducting Rs. 200 for storage charges and Rs. 300 for selling expenses. He charged 10% commission on the gross sale proceeds and remitted the amount due to Kay. Jay also informed Kay that 50 articles had been damaged in transit and they fetched only total 70% of their cost. Prepare necessary ledger accounts in Kay's books of accounts showing the profit earned by the consignor.
- 35. X, Y and Z enter into a joint venture to share profits in the ratio of 3:2:1 respectively. X, Y and Z contributed Rs. 3,000, Rs. 4,000 and 5,000 respectively, which amounts were deposited in a Joint Bank Account. They purchased goods worth Rs. 10,000 from N, and made him the payment by cheque. They incurred Rs. 250 as expenses on the goods purchased. A part of the goods was sold for Rs. 9,000 and the amount was received in cash. The remaining goods were sold to P on credit for Rs. 6,000, who accepted a bill, which was discounted for Rs. 5,900.

X was allowed commission @ 5% on sales for his extra services.

Prepare Joint Venture Account, Joint Bank Account and Personal Accounts.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Com. Degree Examination, March 2021

First Degree Programme Under CBCSS

Core Course

ENTREPRENEURSHIP DEVELOPMENT

(Common for CO 1341/CC 1342)

(2018 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions in a word or maximum of two sentences. Each question carries one mark.

1. What is MSME?
2. What are industrial clusters?
3. Who are women entrepreneurs?
4. List out the qualities of a good project report.
5. What are Techno parks?
6. What is product layout?
7. What is seed capital?
8. What is NIESBUD?

9. What product launching?
10. What are ED Clubs?

(10 × 1 = 10 Marks)

SECTION – B

Answer **any eight** questions (Not to exceed one paragraph each). Each question carries **2** marks.

11. What are the objectives of a project report?
12. What is SWOT analysis?
13. What are project profiles?
14. What do you mean by a fabian entrepreneur?
15. List out any four obstacles of entrepreneurship.
16. What is social cost benefit analysis?
17. What is pre-investment appraisal?
18. What do you mean by occupational mobility?
19. What is industrial sickness?
20. What is a subsidy?
21. What is project formulation?
22. What do you mean by incubators?

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions. (Not to exceed 120 words). Each question carries **4** marks.

23. What is the role of channel selection in launching a product in the market?
24. Discuss the techniques for project appraisal.
25. Discuss the steps involved in operations planning before a business is launched.
26. What do you mean by matching of Entrepreneur with the Project? Discuss the need for it.
27. Examine the benefits of registration of MSME in relation to entrepreneurial development.
28. Discuss the phases of EDP.
29. Describe the skills required for a successful entrepreneur.
30. Bring out the functions of a successful entrepreneur.
31. Discuss the requirements of a good project report.

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions. (Not exceeding 4 pages). Each question carries **15** marks.

32. Discuss the barriers of entrepreneurship. What measures would you suggest in the post pandemic situation to promote entrepreneurship?
33. What are the important factors affecting entrepreneurial growth?
34. What are the steps involved in feasibility report preparation and evaluation criteria?
35. Discuss the institutional support system available to entrepreneurs.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Com. Degree Examination, March 2021

First Degree Programme under CBCSS

Complementary Course III

E-BUSINESS

(Common for CO 1331/CC 1331/HM 1331/CX 1331)

(2018 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions, in one word to two sentences. Each question carries **1** mark.

1. What is a digital certificate?
2. Write a note on G2G.
3. Write any four applications of ecommerce.
4. Define E-Auction.
5. Define E-society.
6. Write a note on Digital or electronic Cash.
7. What is a search engine
8. Write a note on Online banking

9. What do you mean by e-governance?
10. What are ad-clicks?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions, not exceeding one paragraph. Each question carries **2** marks.

11. Explain about C2C model.
12. What is difference between Traditional and Online Marketing?
13. Write a note on Social Media Marketing.
14. Differentiate between internet and intranet.
15. Write the features of a good e-commerce website
16. What are the risks and disadvantages of E-commerce?
17. Write a note on Payment gateways.
18. Elaborate the benefits of E-governance.
19. Write any two advantages of E-learning.
20. Describe the importance of CRM in an organization.
21. Explain the use of internet to attract potential employees.
22. Compare and contrast e-shopping and online delivery of products.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions, not exceeding **120** words. Each question carries **4** marks.

23. What is E-marketplace and explain different functions of E-marketplaces?
24. What are the different e-commerce business models?
25. Write about various features for a successful e commerce site.
26. Discuss the two e-marketing strategies in detail.
27. Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.
28. What are the different types of issues to be considered in E-commerce?
29. What is the use of an ERP and how it can improve the efficiency of the organization?
30. What is an EDI explain the advantages of EDI?
31. Write about the security issues of electronic cash transfer over Internet.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions, not exceeding **4** pages. Each question carries **15** marks.

32. Explain the framework and components of e-commerce architecture.
33. Briefly explain various electronic payment systems and security requirements for e-cash payments.
34. Write about internet advertisement categories in e-commerce scenario and how revenue is generated through advertisement.
35. Explain the role of E-commerce in SCM and Tourism.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Com. Degree Examination, March 2021

First Degree Programme Under CBCSS

Elective Course I : Stream 1 — Finance

CO 1361.1 : FINANCIAL MANAGEMENT

(2018 Admission)

Time : 3 Hours

Max. Marks : 80

PART – A

Answer **all** questions in **one** or **two** sentences each. Each question carries **1** mark.

1. What do you understand by trading on equity?
2. What do you mean by cost of retained earnings?
3. What is optimal capital structure?
4. What is operating leverage?
5. What do you understand by 'point of indifference'?
6. What is meant by scrip dividend?
7. Define capital budgeting.
8. What is payback period method?

9. What is trade credit?
10. Name any two constituents of current liabilities.

(10 × 1 = 10 Marks)

PART – B

Answer **any eight** questions in not exceeding one paragraph each. Each question carries **2** marks.

11. What are the objectives of finance function?
12. Give a brief account of the significance of cost of capital.
13. Distinguish between explicit cost and implicit cost.
14. Give any two assumptions of Miller and Modigliani 'dividend irrelevance theorem'?
15. What do you mean by JIT inventory control system?
16. What do you understand by ABC analysis?
17. What are the various purposes for holding inventories?
18. Write a short note on 'operating cycle method' of estimating working capital requirement.
19. What do you mean by commercial paper?
20. What is Lock Box System?
21. X Ltd. issues Rs. 50,000 8% debentures at par. The tax rate applicable to the company is 50%. Calculate the cost of debt capital.
22. A company issues 10,000 10% Preference Shares of Rs. 100 each. Cost of issue is Rs. 2 per share. Calculate cost of preference share capital if these shares are issued at par.

(8 × 2 = 16 Marks)

PART – C

Answer **any six** questions in not exceeding 120 words. Each question carries **4** marks.

23. What are the functions of a finance manager?
24. Name the various kinds of working capital.
25. What do you understand by financial decisions? Discuss the major financial decisions.
26. Explain the Net Income Approach Theory of capital structure.
27. What are the assumptions of Gordon's valuation model?
28. What are the motives for holding cash?
29. Ericson Ltd. had 50,000 equity shares of Rs. 10 each outstanding on January 1. The shares are currently being quoted at par in the market. In the wake of the removal of dividend restraint, the company now intends to pay a dividend of Rs. 2 per share for the current calendar year. It belongs to a risk class whose appropriate capitalization rate is 15%. Using MM model and assuming no taxes, ascertain the price of the company's share as it is likely to prevail at the end of the year (a) when dividend is declared, and (b) when no dividend is declared.
30. A Ltd. has equity share capital of Rs. 5,00,000 divided into shares of Rs. 100 each. It wishes to raise further Rs. 3,00,000 for expansion cum modernization plans. The company plans the following two schemes:
 - (a) All common stock; and
 - (b) Rs. one lakh in common stock and Rs. two lakh in 10% debentures. The company's expected earnings before interest and tax (EBIT) are Rs. 1,50,000. The corporate tax rate is 50%You are required to determine the earnings per share (EPS) in each plan.
31. Compute the Economic Order Quantity from the following particulars:

Annual usage	: 6,000 units
Cost of materials per unit	: Rs. 20
Cost of placing and receiving one order	: Rs. 60
Annual carrying cost of one unit	: 10% of inventory value

(6 × 4 = 24 Marks)

PART – D

Answer **any two** questions in not exceeding **four** pages each. Each question carries **15** marks.

32. Define financial management. Discuss the scope and significance of financial management.
33. What is meant by capital structure? Discuss the factors determining the capital structure.
34. Discuss the various types of dividend policies.
35. From the following details you are required to make an assessment of the average amount of working capital requirement of XYZ Ltd.

Items	Average period of credit	Rs.
Purchase of material	6 weeks	26,00,000
Wages	1½ weeks	19,50,000
Overheads :		
Rent, rates etc	6 months	1,00,000
Salaries	1 month	8,00,000
Other overheads	2 months	7,50,000
Sales (Cash)	—	2,00,000
Sales (Credit)	2 months	60,00,000
Average amount of stock and work-in-progress	—	4,00,000
Average amount of undrawn profit		3,00,000

It is assumed that all expenses and income were made at even rate for the year.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Com. Degree Examination, March 2021

First Degree Programme under CBCSS

Complementary Course III

E : Business

(Common for CO 1331/CC 1331/HM 1331/CX 1331)

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions in a word or maximum of two sentences. Each question carries **1** mark.

1. What is internet marketing?
2. What is JIT?
3. What is E-tourism?
4. What is encryption?
5. What is e-learning?
6. What is e-tailing?
7. What is a search engine?
8. Distinguish between internet and world wide web.

9. What is e-business?
10. What you mean by Telebanking?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions (Not to exceed **one** paragraph each). **Each** question carries **2** mark.

11. Define ICT.
12. What is ERP?
13. What is Cryptography?
14. What is e-brokerage?
15. What is SET?
16. What is Internet Protocols?
17. Distinguish between E-cheque and Credit card.
18. What are the features of e-commerce?
19. What is E-auction?
20. What is E-purse?
21. Explain the significance of e-governance.
22. How can the risk involved in online payment may be reduced?
23. What is firewall?
24. What do you mean by hacking?
25. What is Digicash?
26. What is e-Kranti?

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. (Not exceeding **120** words). **Each** question carries **4** marks.

27. Explain the steps involved in E-commerce.
28. What is internet advertising? What are its benefits to the business?
29. What are the limitations of E-commerce?
30. Explain the role of E-commerce in tourism sector.
31. Explain briefly about the steps taken to promote e-governance in India.
32. What are the benefits of e-commerce?
33. What are the advantages of smart cards?
34. Explain the features of traditional commerce.
35. Explain briefly about the growth of e-business in India.
36. What are the functions of e-commerce?
37. Explain briefly about the major business models of B2B.
38. What are the advantages of e-governance?

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. (Not exceeding **four** pages). **Each** question carries **15** marks.

39. Explain briefly the threats associated with E-commerce.
40. Discuss various business models in E-business.

41. Describe the present E-commerce scenario in India and also explain the future prospects of e-commerce.
42. Discuss the various E-governance initiatives in Kerala.
43. What are the key attributes of an efficient payment system?
44. Explain the stages of e-governance in India.

(2 × 15 = 30 Marks)

St. Xavier's College

Reg. No. :

Name :

Third Semester B.Com. Degree Examination, March 2021

First Degree Programme Under CBCSS

Core Course

ENTREPRENEURSHIP DEVELOPMENT

(Common for CO 1341/CC 1342)

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION - A

Answer **all** questions in a word or maximum of **two** sentences. Each question carries **1** mark.

1. What is MSME?
2. What are industrial clusters?
3. Who are women entrepreneurs?
4. List out the qualities of a good project report.
5. What are Techno parks?
6. What is product layout?
7. What is seed capital?
8. What is NIESBUD?

9. What product launching?

10. What are ED Clubs?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions (Not to exceed **one** paragraph each). **Each** question carries **2** marks.

11. What are the objectives of a project report?

12. What is SWOT analysis?

13. What are project profiles?

14. What do you mean by a fabian entrepreneur?

15. List out any four obstacles of entrepreneurship.

16. What is social cost benefit analysis?

17. What is pre-investment appraisal?

18. What do you mean by occupational mobility?

19. What is industrial sickness?

20. What is a subsidy?

21. What is project formulation?

22. What do you mean by plant location?

23. What is EDP?

24. What is EIA?
25. What is bridge capital?
26. What do you mean by incubators?

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions (Not to exceed **120** words). Each question carries **4** marks.

27. What is the role of channel selection in launching a product in the market?
28. Discuss the techniques for project appraisal.
29. What are techno-economic surveys? Bring out their significance.
30. What is Sensitivity analysis? How is it applied in business?
31. What is factory design? Discuss the factors affecting factory design.
32. Discuss the steps involved in operations planning before a business is launched.
33. What do you mean by matching of Entrepreneur with the Project? Discuss the need for it.
34. Examine the benefits of registration of MSME in relation to entrepreneurial development.
35. Discuss the phases of EDP.
36. Describe the skills required for a successful entrepreneur.
37. Bring out the functions of a successful entrepreneur.
38. Discuss the requirements of a good project report.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. (Not exceeding **four** pages) Each question carries **15** marks.

39. Discuss the barriers of entrepreneurship. What measures would you suggest in the post pandemic situation to promote entrepreneurship?
40. What are the important factors affecting entrepreneurial growth?
41. What are the steps involved in feasibility report preparation and evaluation criteria?
42. Discuss the institutional support system available to entrepreneurs.
43. What is the role of MSMEs in the economic development of India?
44. What are the remedial measures taken by the government to overcome industrial sickness?

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Com. Degree Examination, March 2021

First Degree Programme under CBCSS

**Core Course : CO 1342/CX 1342/TT 1342/HM 1342/CC 1343
ADVANCED FINANCIAL ACCOUNTING**

**(Common for Commerce, Commerce and Tax Procedure and
Practice/Commerce and Hotel Management and Catering/Commerce and
Computer Application, Commerce and Tourism and Travel Management)**

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions in one or two sentences each. Each question carries **1** mark.

1. What do you mean by dissolution of partnership?
2. What do you understand by unrecorded assets?
3. What is fluctuating capital?
4. Who is an active partner?
5. Who is a consignor?
6. What do you understand by account sales?.
7. What are inter-departmental transfers?

8. What do you mean by remittance-in-transit?
9. What do you understand by branches?
10. What is abridged incorporation?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions in not exceeding one paragraph each. Each question carries **2** marks.

11. What are the advantages of registration of a partnership firm?
12. What are the different kinds of partners?
13. What do you understand by "piecemeal distribution"?
14. What is the need for consignment?
15. What is proforma invoice?
16. Briefly explain abnormal loss in consignment.
17. What do you understand by *del-credere* Commission? How is it calculated?
18. Give two examples of businesses in which joint venture are generally used.
19. Name the methods of keeping Joint Venture accounts.
20. What do you mean by "Debtors" method?
21. What are the main types of branches from accounting point of view?
22. What are dependent branches?

23. On 20th January 2020, Martin and Co., Kochi consigned 200 computer tables to Sea Land Furniture Mart, Kozhikode. On 30th June 2020, Sea Land Furniture Mart forwarded an Account Sales, with a bank draft for the balance, showing the following transactions:
- (a) 150 computer tables sold @ Rs. 1,300 and 30 @ Rs. 1,400 each.
 - (b) Unloading charges Rs. 700.
 - (c) Storage and insurance Rs. 600.
 - (d) Commission @ 12%.
 - (e) Advance given to Martin and Co. Rs. 1,00,000.
- You are required to prepare Account Sales.
24. 100 tonnes of coal are consigned @ Rs. 150 per tonne, non-recurring expenses being Rs. 4,000. Loss due to loading and unloading is 5 tonnes. The quantity sold by the consignee is 85 tonnes. Calculate the value of unsold stock.
25. Calculate the value of abnormal loss from the following details:
- (a) 10,000 kg. of oil was consigned at Rs. 32 per kg.
 - (b) Freight Rs. 8,000, packing Rs. 10,000 and insurance Rs. 2,000 were paid by the consignor.
 - (c) Consignee's expenses were: advertisement Rs. 2,800, godown rent Rs. 800.
 - (d) 1,500 kg. of oil was lost in transit and the insurance company paid Rs. 40,000 as compensation.
 - (e) 6,000 kg of oil was sold at Rs. 38 per kg.
 - (f) Stock with consignee was 2,000 kg; there being a normal loss of 500 kg.
26. Department A transferred to Department B 4,000 units of material X at Rs. 10 per unit. The actual cost of materials of Department A is Rs. 8 per unit. Find out the stock reserve on 1,000 units of material X which could not be consumed by Department B during the year.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions in not exceeding **120** words. Each question carries **4** marks.

27. Enumerate the contents of Partnership Deed.
28. What are the conditions for compulsory dissolution of a partnership firm?
29. Distinguish between Realization Account and Revaluation Account.
30. How does joint venture differ from consignment?
31. Distinguish between Invoice and Account Sales.
32. List out the basic features of a Joint Venture business.
33. What are the advantages of departmental accounts?
34. How would you allocate the following indirect expenses among different departments of departmental organization?
 - (a) Sales Manager's salary
 - (b) Bad Debts
 - (c) Rent, Rates and Taxes
 - (d) Lighting
35. The partnership firm of X, Y and Z was dissolved. Their Balance Sheet as at 31st December, 2019 was as under:

	Rs.		Rs.
X's Capital	18,000	Plant and Machinery	20,000
Y's Capital	15,000	Stock	17,000
Z's Capital	10,000	Debtors	15,000
Sundry Creditors	8,000	Cash at Bank	2,000
Outstanding expenses	1,000		
Reserve	2,000		
	54,000		54,000

X, Y and Z were sharing profits and losses as 5 : 3 : 2. Plant is sold for Rs. 15,000 and Stock for Rs. 18,000. In addition, stock worth Rs. 2,000 was taken over by X. Debtors realized Rs. 11,000. Creditors were paid Rs. 7,000 in full settlement. Rs. 1,000 was spent for realization expenses.

Prepare Realization Account.

36. Pass the necessary journal entries for the following transactions on the dissolution of a firm, after various assets (other than cash) and third party liabilities have been transferred to Realization Account:
- Bank Loan Rs. 10,000 is paid.
 - Stock worth Rs. 5,000 is taken over by partner A.
 - Expenses on dissolution amounted to Rs. 1,200 and were paid by partner B.
 - Loss on Realization Rs. 7,000 was to be distributed between A and B in the ratio of 5 : 2.
37. Salem Garments Ltd. opened a branch at Kozhikode on 1st April, 2019. Prepare Kozhikode Branch Account for the year ended 31st March 2020, from the following information.

	Rs.
Goods sent to Kozhikode Branch	3,25,000
Cash sent to branch for -	
Salaries	35,000
Rent	32,000
Sundry expenses	10,000
Cash remitted by the branch	4,32,000
Closing stock at branch	60,500
Petty cash in branch (31-3-2020)	1,400

38. The Mumbai Head Office sent goods to Chennai branch at 25% profit over costs. From the following details, prepare the Branch Account in the Head Office books and ascertain the net profit at the branch:

	Rs.
Opening stock of goods at branch at invoice price	20,000
Goods sent to branch at invoice price	90,000
Loss of goods in transit at invoice price	6,000

	Rs.
Pilferage at branch at cost to branch	1,200
Closing stock at branch at its cost	16,000
Sales at branch	1,05,000
Salaries and wages at branch	6,000
Other expenses at branch	3,000

Chennai branch received Rs.4,000 from the Insurance Company in settlement of the claim for the loss of goods in transit.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions in not exceeding **4** pages each. Each question carries **15** marks.

39. What is piecemeal distribution? Discuss the two methods of piecemeal distribution.
40. Discuss in detail the different types of branches from accounting point of view.
41. Neptune, Jupiter, Venus and Pluto had been carrying on business in partnership, sharing profits and losses in the ratio of 3:2:1:1. They decide to dissolve the partnership on the basis of the following Balance Sheet as on April 30, 2020:

Liabilities	Rs.	Assets	Rs.
Capital Accounts:		Premises	1,20,000
Neptune	1,00,000	Furniture	40,000
Jupiter	<u>60,000</u>	Stock	1,00,000
General Reserve	56,000	Debtors	40,000
Capital Reserve	14,000	Cash	8,000
Sundry Creditors	20,000	Capital Overdrawn:	
Mortgage Loan	80,000	Venus	10,000
		Pluto	<u>12,000</u>
	<u>3,30,000</u>		<u>22,000</u>
			<u>3,30,000</u>

- (a) Assets were realized as follows: debtors Rs. 24,000, stock Rs. 60,000; furniture Rs. 16,000; and premises Rs. 90,000.
- (b) Expenses of dissolution amounted to Rs. 4,000.
- (c) Further creditors of Rs. 12,000 had to be met.
- (d) General reserve, unlike capital reserve, was built up by appropriation of profits.

Draw up Realization Account, Partners' Capital Accounts and Cash Account assuming that Venus became insolvent and nothing was realized from his private estate. Apply the principles laid down in *Garner vs Murray*.

42. Kay sent 500 articles to his agent Jay at an invoice price (cost to Kay) of Rs. 25 per article and paid freight and cartage Rs. 460. Jay sold 300 articles @ Rs. 30 per article and sent an account sales deducting Rs. 200 for storage charges and Rs. 300 for selling expenses. He charged 10% commission on the gross sale proceeds and remitted the amount due to Kay. Jay also informed Kay that 50 articles had been damaged in transit and they fetched only total 70% of their cost. Prepare necessary ledger accounts in Kay's books of accounts showing the profit earned by the consignor.
43. X, Y and Z enter into a joint venture to share profits in the ratio of 3:2:1 respectively. X, Y and Z contributed Rs. 3,000, Rs. 4,000 and Rs. 5,000 respectively, which amounts were deposited in a Joint Bank Account. They purchased goods worth Rs. 10,000 from N, and made him the payment by cheque. They incurred Rs. 250 as expenses on the goods purchased.

A part of the goods was sold for Rs. 9,000 and the amount was received in cash. The remaining goods were sold to P on credit for Rs. 6,000, who accepted a bill, which was discounted for Rs. 5,900.

X was allowed commission @ 5% on sales for his extra services.

Prepare Joint Venture Account, Joint Bank Account and Personal Accounts.

44. Department R sells goods to Department S at a profit of 25% on cost and Department T at 10% profit on cost. Department S sells goods to R and T at a profit of 15% and 20% profit on sales respectively. Department T charges 20% and 25% profit on cost to Department R and S respectively.

Department managers are entitled to 10% commission on net profit subject to unrealized profit on departmental sales being eliminated. Departmental profits after charging manager's commission, but before adjustment of unrealized profit, are as under:

		Rs.
Department	R	54,000
Department	S	40,500
Department	T	27,000

Stock lying at different departments at the end of the year are as under:

	Department R (Rs.)	Department S (Rs.)	Department T (Rs.)
Transfer from Department R	-	22,500	16,500
Transfer from Department S	21,000	-	18,000
Transfer from Department T	9,000	7,500	-

Find out the correct departmental profits after charging manager's commission.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Com. Degree Examination, March 2021

First Degree Programme Under CBCSS

Elective Course I – Stream 1 – Finance

CO 1361.1 — FINANCIAL MANAGEMENT

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions in **1** or **2** sentences each. Each question carries **1** mark.

1. What do you understand by trading on equity?
2. What do you mean by cost of retained earnings?
3. What is optimal capital structure?
4. What is operating leverage?
5. What do you understand by 'point of indifference'?
6. What is meant by scrip dividend?
7. Define capital budgeting.

8. What is payback period method?
9. What is trade credit?
10. Name two constituents of current liabilities.

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions in not exceeding **1** paragraph each. Each question carries **2** marks.

11. What are the objectives of finance function?
12. Distinguish between explicit cost and implicit cost.
13. Give a brief account of the significance of cost of capital.
14. Write a short note on Net Operating Income Approach.
15. What do you mean by degree of financial leverage?
16. What is meant by capital rationing?
17. What are the limitations of Payback Period Method?
18. What is internal rate of return?
19. Name any two advantages of a regular dividend policy.
20. Give any two assumptions of Miller and Modigliani 'dividend irrelevance theorem'.
21. List out the main objectives of inventory management.
22. What do you mean by JIT inventory control system?

23. What do you understand by ABC analysis?
24. What is Lock Box System?
25. X Ltd. issues Rs. 50,000 8% debentures at par. The tax rate applicable to the company is 50%. Calculate the cost of debt capital.
26. A company issues 10,000 10% Preference Shares of Rs. 100 each. Cost of issue is Rs. 2 per share. Calculate cost of preference share capital if these shares are issued at par.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions in not exceeding **120** words. Each question carries **4** marks.

27. What are the functions of a finance manager?
28. Explain Net Assets Method of Valuation of Shares.
29. What are the uses of financial leverage?
30. What do you understand by financial decisions? Discuss the major financial decisions.
31. Explain the Net Income Approach Theory of capital structure.
32. What are the assumptions of Gordon's Dividend Capitalization Model?
33. Briefly explain the various kinds of working capital.
34. What are the motives for holding cash?

35. Ericson Ltd. had 50,000 equity shares of Rs. 10 each outstanding on January 1. The shares are currently being quoted at par in the market. In the wake of the removal of dividend restraint, the company now intends to pay a dividend of Rs. 2 per share for the current calendar year. It belongs to a risk class whose appropriate capitalization rate is 15%. Using MM model and assuming no taxes, ascertain the price of the company's share as it is likely to prevail at the end of the year (i) when dividend is declared, and (ii) when no dividend is declared.

36. A Ltd. has equity share capital of Rs. 5,00,000 divided into shares of Rs. 100 each. It wishes to raise further Rs. 3,00,000 for expansion aim modernization plans. The company plans the following two schemes:

(a) All common stock, and

(b) Rs. one lakh in common stock and Rs. two lakh in 10% debentures.

The company's expected earnings before interest and tax (EBIT) are Rs. 1,50,000. The corporate tax rate is 50%.

You are required to determine the Earnings Per Share (EPS) in each plan.

37. A company issued 10,000, 10% preference shares of Rs. 10 each. Cost of issue is Rs. 2 per share. Calculate cost of capital if these shares are issued (a) at par and (b) at 10% premium.

38. Compute the Economic Order Quantity from the following particulars:

Annual Usage : 6,000 units

Cost of materials per unit : Rs. 20

Cost of placing and receiving one order : Rs. 60

Annual carrying cost of one unit : 10% of inventory value

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions in not exceeding **4** pages each. Each question carries **15** marks.

39. Define financial management. Discuss the scope and significance of financial management.
40. What is meant by capital structure? Discuss the factors determining the capital structure.
41. Discuss the various types of dividend policies.
42. Discuss in detail the different methods of estimating working capital requirements.
43. Sales levels are 1,000 units and 1,400 units. The per unit cost is Rs. 10. Variable cost is Rs. 7 per unit. Fixed cost is Rs. 1,000. Calculate the Degree of Operating Leverage and interpret the result.
44. From the following details you are required to make an assessment of the average amount of working capital requirement of XYZ Ltd.:

Items	Average Period of Credit	Rs.
Purchase of material	6 weeks	26,00,000
Wages	1 ½ weeks	19,50,000
Overheads:		
Rent, rates etc.	6 months	1,00,000
Salaries	1 month	8,00,000
Other overheads	2 months	7,50,000

Sales (Cash)	—	2,00,000
Sales (Credit)	2 months	60,00,000
Average amount of stock and work-in-progress	—	4,00,000
Average amount of undrawn profit		3,00,000

It is assumed that all expenses and income were made at even rate for the year.
(2 × 15 = 30 Marks)

St. Xavier's College

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021

Career Related First Degree Programme Under CBCSS

Group 2(a) — Malayalam and Mass Communication

Vocational Course — III

MX 1371 — REPORTING

(2015–2018 Admission)

Time : 3 Hours

Max. Marks : 80

I. Answer **all** the **ten** questions, each one in one or two sentences :

1. Nose for News
2. Field Reporting
3. News Elements
4. News Bureau
5. Citizen Journalism
6. Development Stories
7. Umbrella Lead
8. Reuters

9. Opinion Leaders

10. Editorial

(10 × 1 = 10 Marks)

II. Write short notes, not exceeding sixty words, on any **eight** of the following :

11. Editorial Conference

12. Stringer

13. Farm Journalism

14. Regular News Beat

15. Style Book

16. Attribution

17. Curtain Raiser Story

18. Blind Interview

19. Cover Story

20. Press Release

21. Editorial Cartoon

22. Credit Line.

(8 × 2 = 16 Marks)

III. Write short essays, each not exceeding **120** words, on any **six** of the following :

23. Distinguish hard news and soft news with suitable example.

24. What is a scoop? How does it differ from a normal news story?

25. Differentiate between breaking news and exclusive story.

26. Explain the term 'off-the-record' in journalistic perspective.
27. What are the interview skills needed for a Visual Media reporter.
28. What are the differences between news 'source' and news 'beat'?
29. What role can ordinary citizens play in the journalistic process?
30. What are the most important qualities of a good reporter?
31. Reporters have to work under stress of deadlines and competition. Comment.
(6 × 4 = 24 Marks)
- IV. Write long essays, each not exceeding 500 words, on any **two** of the following :
32. Accuracy, objectivity, and fairness should be the soul of the news media. Discuss.
33. Discuss News values in detail.
34. Distinguish between the coverage of a press conference and a public speech.
35. "Inverted pyramid saves readers time and editors space". Explain.
(2 × 15 = 30 Marks)
-

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021
Career Related First Degree Programme under CBCSS
Group 2(a) : Malayalam and Mass Communication

Vocational Course IV

MX 1372 : EDITING
(2015–2018 Admissions)

Time : 3 Hours

Max. Marks : 80

SECTION – A

I. Answer all the **ten** questions, each one in one or two sentences:

1. Managing editor
2. Copy editing
3. AP Style
4. Proof read
5. Reuters
6. Editorialize
7. Banner
8. Feature
9. Column inch
10. Letters to the editor.

(10 × 1 = 10 Marks)

SECTION – B

- II. Write short notes, not exceeding 60 words, on any **eight** of the following.
11. Write a short note on curtain raiser.
 12. What are the five major duties of a copy editor?
 13. What is objectivity? Comment on how to ensure it while writing a story?
 14. What is news judgment? Explain it with an example.
 15. Write a note of 'Style Sheet'.
 16. What is dogwatch? Why it is named so?
 17. What is proof reading? Discuss its significance.
 18. Explain the role of a wire editor in the newspaper organization.
 19. What are the functions of a news headline?
 20. Explain when and why you will rewrite a story.
 21. Distinguish modern and traditional makeup style.
 22. A new concept of readers editor is coming up. What do you think are its advantages?

(8 × 2 = 16 Marks)

SECTION – C

- III. Write short essays, each not exceeding 120 words, on any **six** of the following:-
23. How an editor selects different lead stories? What are the preferences?
 24. Absolute accuracy should be maintained in the newspaper. Justify.
 25. Explain the various types of Editing and Proofreading symbols.
 26. How inverted Pyramid technique of news writing is helpful in editing? Explain.

27. Why do you think headline writing is considered one of the most valuable skills in editing for print?
28. "The headline is the best salesman of a newspaper." Explain the functions of headlines with examples.
29. What do you mean by Planning in newspapers? Why is it important?
30. What is the importance of editorial page in a daily newspaper? Discuss the attributes of a good editorial.
31. "Editorial is the soul of the newspaper policy". Justify.

(6 × 4 = 24 Marks)

SECTION – D

- IV. Write long essays, each not exceeding 500 words, on any **two** of the following.
32. List the essential qualifications and skill sets needed for an efficient sub-editor.
 33. Discuss the structure of a newsroom and the role played by different people working in it.
 34. Discuss the basics of copy editing with special reference to newspapers.
 35. Illustrate the salient features of layout and design of a newspaper? Discuss with reference to a newspaper of your choice.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021
Career Related First Degree Programme under CBCSS

Malayalam and Mass Communication

Core Course V

MX 1342 : ദലിതെഴുത്ത്, പെണ്ണെഴുത്ത് : സിദ്ധാന്തവും ആവിഷ്ക്കാരവും
(2018 Admission)

Time : 3 Hours

Max. Marks : 80

1. ഒരു വാക്കിലോ പരമാവധി രണ്ടു വാക്യത്തിലോ ഉത്തരമെഴുതുക.
1. പെണ്ണെഴുത്ത് എന്ന സംജ്ഞ മലയാളത്തിൽ ആദ്യം പ്രയോഗിച്ചതാര് ?
2. 'കാലത്തിന് കടന്നുവന്ന് പതപ്പെടുത്തുക തകർക്കാനായി ഉപേക്ഷിക്കപ്പെട്ട' എന്തിനോടാണ് കോലാട് തന്റെ ജീവിതത്തെ ഉപമിക്കുന്നത് ?
3. 'അടുക്കളയില്ലാത്ത വീട്' ആരുടെ കവിത ?
4. പൊയ്ക്കയിൽ അപ്പച്ചന്റെ ജന്മസ്ഥലം എവിടെ ?
5. ആരുടെ, ഏതു കഥയിലെ കഥാപാത്രമാണ് നിർമ്മല ?
6. മധ്യകേരളത്തിലെ പറയരുടെ വീരഗാഥ എന്നറിയപ്പെടുന്നത്.
7. 'ജാഗരൂക' ആരുടെ കഥാസമാഹാരം ?

8. ഇക്കോ ഫെമിനിസം എന്ന വാക്ക് ആദ്യമായി ഉപയോഗിച്ചതാര്?
9. 'ഐഡന്റിറ്റി ക്രൈം' ആരുടെ കവിതയാണ്?
10. മുതലാളിത്ത വ്യവസ്ഥിതിയിലെയും സൗകര്യ സമ്പദ് വ്യവസ്ഥിതിയിലുമുള്ള സ്ത്രീകളുടെ അവസ്ഥ വിശകലനം ചെയ്യുന്ന ഫെമിനിസ്റ്റ് സമീപനം.

(10 × 1 = 10 Marks)

II. ഒരു ഖണ്ഡികയിൽ കവിയാതെ എട്ടു ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

11. കറുത്ത എഴുത്ത് ലക്ഷ്യമാക്കുന്നതെന്ത്?
12. 'ദലിതർക്കു സ്വന്തമായി ഒരു ഭാഷയുണ്ടെന്ന് അവകാശപ്പെടാൻ കഴിയുമോ?
13. പാരിസ്ഥിതികസ്ത്രീവാദം ലക്ഷ്യമാക്കുന്നതെന്ത്?
14. 'നിസ്സഹായന്റെ നിലവിളി'യെന്ന കഥയിൽ ജനറൽ വാർഡിൽ പ്രവേശിക്കപ്പെടുന്ന ചെറുപ്പക്കാരനിലൂടെ ചികിത്സാരംഗത്തെ വിവേചനം അടയാളപ്പെടുത്തുന്നതെങ്ങനെ?
15. പാലുവം പെണ്ണിനെത്തേടി നാടൻപാട്ടിൽ പാലുവം പെണ്ണിനെ വർണ്ണിക്കുന്നതെങ്ങനെ?
16. "ഓർത്തിടുമ്പോൾ വേദമുള്ളിൽ ആരംഭിക്കുന്നേ" ഉള്ളിൽ വേദമുണ്ടാക്കുന്നതെന്ത്?
17. "എനിക്കു മുമ്പേ ജനിച്ച കല്ലിൽ
കറുത്തവന്റെ കറുപ്പുള്ള കല്ല്" - കല്ലും ദളിത് ജീവിതാവസ്ഥയും ബന്ധപ്പെടുന്നതെങ്ങനെ?
18. "ഈ നൂറ്റാണ്ടിൽ
ഇതൊരു നൂറ്റാണ്ടിനേക്കാൾ കഠിനമാണ്" - ഇങ്ങനെ കരുതാനുള്ള കാരണമെന്ത്?
19. അന്തർജ്ജനങ്ങൾ പ്രഭു കുടുംബങ്ങളിലെ ഉണ്ണികൾക്കു മൂലപ്പാലു കൊടുക്കാൻ പാർക്കുന്നതിനു ദേവകി നിലയങ്ങോട് ചൂണ്ടിക്കാട്ടുന്ന കാരണങ്ങളേവ?

20. "അവനും തന്നെപ്പോലെ തായ്‌വേർ ഉറച്ചുപിടിച്ചിട്ടില്ലാത്ത മരമായി വളരുമോ?" നിർമ്മല ഇങ്ങനെ വിചാരിക്കുന്നതെന്തുകൊണ്ട്?
21. "ഒരു വിഡ്ഢി രാധയെക്കിട്ടാതെ കൃഷ്ണനെങ്ങനെ പൂർണ്ണനാവാൻ?" ഇത്തരമൊരു ചോദ്യമുയരുന്നതെങ്ങനെ?
22. ദലിത് സാഹിത്യരചനകൾ ഉയർത്തുന്ന രാഷ്ട്രീയമെന്ത്?

(8 × 2 = 16 Marks)

III. ഒന്നരപ്പുറത്തിൽ കവിയാതെ ആറ് ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

23. മാർക്സിസ്റ്റ് സ്ത്രീവാദം ചുരുക്കി അവതരിപ്പിക്കുക.
24. നവോത്ഥാനപൂർവ്വ സന്ദർഭത്തിൽനിന്നു തുടങ്ങുന്ന ചരിത്രം മലയാളത്തിലെ ദലിത്പക്ഷ രചനകൾക്ക് അവകാശപ്പെടാൻ കഴിയുമോ?
25. ദളിത് ജീവിത യാഥാർത്ഥ്യങ്ങൾക്കു മിത്തിന്റെ പരിവേഷം നൽകുന്ന രചനാരീതി 'നിരവത്ത് കയ്യാണി'യിൽ ആഖ്യാനതന്ത്രമായി മാറുന്നുണ്ടോ?
26. "അതിരാവിലെ
കവിത പാതി എഴുതി
ഉറക്കം തൂങ്ങുമ്പോൾ
അമ്മ പലതും പറയുന്നതു കേൾക്കാം" - അമ്മയുടെ പറച്ചിലുകൾ ദലിത് ജീവിതാനുഭവങ്ങളാവുന്നതെങ്ങനെ?
27. 'എരി'യിലൂടെ കീഴാളഭാഷാ ഗവേഷകനായ ആഖ്യാതാവ് നിർവ്വഹിക്കുന്ന ദൗത്യമെന്ത്?
28. പെണ്ണും പരിസ്ഥിതിയും ചുഷണവിയേയമാകുന്നുവെന്ന കാഴ്ചപ്പാട് വനദുർഗ്ഗയിൽ സംവാദാത്മകമാകുന്നതെങ്ങനെ?
29. 'പ്രതിഷ്ഠ' കവിതയിലെ സ്ത്രീയുടെ സ്വയം വിലയിരുത്തലുകൾ എന്തെല്ലാം?

30. "അജ്ഞതയുടെ തൂണിൽ
കെട്ടിയിട്ട ഒരു ജന്തുവാണു്" താനെന്നു കോലാട് ഉറപ്പിക്കുന്നതെങ്ങനെ?
31. "പലതരം നേരങ്ങളും ഇടങ്ങളും പലമട്ടിൽ വി.എം. ഗിരിജയുടെ കവിതയിൽ ഇടപഴകുന്നു"
പെണ്ണുങ്ങൾ കാണാത്ത പാതിരാന്ദേരങ്ങൾ എന്ന കവിതയെ മുൻനിർത്തി പരിശോധിക്കുക.

(6 × 4 = 24 Marks)

IV. മൂന്നു പുറത്തിൽ കവിയാതെ ഏതെങ്കിലും രണ്ട് ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

32. വാമൊഴി ആഖ്യാനങ്ങളിൽ തെളിയുന്ന ദലിത്ജീവിതത്തിന്റെ സവിശേഷതകൾ 'പാലുവം
പെണ്ണിനെത്തേടി' നാടൻപാട്ട് മുൻനിർത്തി വിവരിക്കുക.
33. "കിഴാളജ്ഞാനപാരമ്പര്യം പ്രതിരോധാശയമായി ഉയർത്തിയെടുക്കുന്ന നോവലാണ് എരി"
വിലയിരുത്തുക.
34. കേരളത്തിലെ സ്ത്രീമുന്നേറ്റങ്ങൾ ചുരുക്കി അവതരിപ്പിക്കുക.
35. നമ്പൂതിരിസമുദായത്തിലെ സ്ത്രീജീവിതാനുഭവങ്ങൾ ആത്മകഥയിൽ ദേവകി നിലയങ്ങോട്
പങ്കുവയ്ക്കുന്നത് ക്രോഡീകരിക്കുക.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021

Career Related First Degree Programme under CBCSS

Malayalam and Mass Communication

Foundation Course II

MX 1321 : (Informatics) – ആധുനിക സാങ്കേതികവിദ്യയും മലയാള ഭാഷാപഠനവും

(2019 Admission - Regular)

Time : 3 Hours

Max. Marks : 80

- I. ഒരു വാക്കിലോ പരമാവധി രണ്ടു വാക്യത്തിലോ ഉത്തരമെഴുതുക.
1. സൈബർ എന്ന പദം ആദ്യമായി ഉപയോഗിച്ചതാര് ?
 2. മലയാളം കമ്പ്യൂട്ടിംഗുമായി ബന്ധപ്പെട്ട് ആദ്യകാലപരിശ്രമങ്ങൾ ഏതു വ്യവസ്ഥയുടെ അടിസ്ഥാനത്തിലായിരുന്നു നടന്നത് ?
 3. ഐ.എസ്.എം. പ്രോഗ്രാം തയ്യാറാക്കിയ സ്ഥാപനമേത് ?
 4. മലയാളത്തിലെ ലിപി പരിഷ്കരണക്കമ്മിറ്റിയുടെ അദ്ധ്യക്ഷൻ ആരായിരുന്നു ?
 5. ഏകീകൃതലിപി വിന്യാസരീതിക്കു നേതൃത്വം നൽകിയതാര് ?
 6. ഹൈപ്പർ ടെക്സ്റ്റ് എന്ന ഗ്രന്ഥത്തിന്റെ കർത്താവ് ആരാണ് ?
 7. ഇന്റർനെറ്റിൽ പ്രസിദ്ധീകരിച്ച ആദ്യ മലയാളനോവൽ ഏത് ? എഴുതിയതാര് ?

8. കൊക്കരണി എന്ന കഥ എഴുതിയതാര് ?
9. മേൽനോട്ടത്തിന്റെയും നിയന്ത്രണത്തിന്റെയും അധിവികളുണ്ടോപകരണമാണ് സാങ്കേതികവിദ്യ എന്നഭിപ്രായപ്പെട്ടതാര് ?
10. യാഥാർത്ഥ്യത്തിന്റെ ഉപഗ്രഹവത്കരണമാണ് (Satellisation) കമ്പ്യൂട്ടർ സ്ക്രീൻ അവതരിപ്പിക്കുന്നതെന്ന അഭിപ്രായം ആരുടേതാണ് ?

(10 × 1 = 10 Marks)

II. ഒരു ഖണ്ഡികയിൽ കവിയാതെ എട്ടു ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

11. മലയാളം കമ്പ്യൂട്ടിംഗിന്റെ ചരിത്രത്തിലെ മൂന്ന് ഘട്ടങ്ങളേവ? പരിചയപ്പെടുത്തുക.
12. അമ്പാൾ പ്രസ്സ്.
13. എൻകോഡിംഗിൽ മാനകീകരണം ആവശ്യമായി വന്ന സാഹചര്യം വിശദമാക്കുക.
14. ഇസ്ഫോക് എന്നാലെന്ത്?
15. ഐ.എസ്.എം. എന്നാലെന്ത്?
16. 'മലയാളത്തനിമ' ലിപി പരിഷ്കരണം.
17. സൈബർ സാഹിത്യത്തെ ഏറ്റവും ലളിതമായി നിർവ്വചിക്കുന്നതെങ്ങനെ?
18. 'സൈബർ സ്പെയ്സ്' എന്ന പദത്തിന്റെ ആരംഭത്തെപ്പറ്റി വിവരിക്കുക.
19. വിക്സിപീഡിയയെപ്പറ്റി കുറിപ്പെഴുതുക.
20. 'കൊക്കരണി'യെപ്പറ്റി പി.കെ. രാജശേഖരന്റെ നിരീക്ഷണമെന്ത്?

21. സൈബർ സ്പേസ്സിനെപ്പറ്റി മലയാളകഥയിലെ ആദ്യ പരാമർശങ്ങൾ ആരുടേതാണ്? രാജശേഖരന്റെ അഭിപ്രായം രേഖപ്പെടുത്തുക.

22. ടിറ്റർ-നോട്ടു കുറിക്കുക.

23. എന്താണ് ബ്ലോഗ്?

24. മലയാള ബ്ലോഗുകളുടെ ആദ്യകാലചരിത്രം വ്യക്തമാക്കുക.

25. കൊടകര പുരാണം.

26. മലയാളിസ്വത്വത്തെ ചേർത്തു നിർമ്മിക്കുന്നതിൽ ബ്ലോഗുകൾ സഹായകമാകുന്നതെങ്ങനെ?

(8 × 2 = 16 Marks)

III. ഓരോന്നിനും ഒന്നരപ്പേജത്തിൽ കവിയാതെ ഏതെങ്കിലും ആറ് ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

27. തനതു ലിപിക്കുവേണ്ടി 'രചന' നടത്തിയ സ്വന്നദ്ധപ്രവർത്തനങ്ങൾ വിശദമാക്കുക.

28. യൂനിക്കോഡും മലയാളവും - വിശദീകരിക്കുക.

29. ഇന്റർനെറ്റിന്റെ ഇന്ത്യയിലെ ചരിത്രം വിവരിക്കുക.

30. വിവരസാങ്കേതികവിദ്യ എന്നാലെന്ത്? അതിന്റെ ചരിത്രം വിവരിക്കുക.

31. സോഷ്യൽ നെറ്റ്‌വർക്കിംഗ് സൈറ്റുകളുടെ വികാസചരിത്രം എഴുതി സവിശേഷതകൾ വ്യക്തമാക്കുക.

32. ഇ-ബുക്ക് വായനയെ പുതിയ രീതിയിൽ വളർത്തുകയാണ് എന്ന അഭിപ്രായം വിലയിരുത്തുക.

33. മുമ്പു പരിചയിച്ചിട്ടില്ലാത്ത ഒരു തുറസ്സിനെ അഭിമുഖീകരിക്കുകയാണ് ഇപ്പോൾ മലയാളചെറുകഥ എന്ന് പി.കെ. രാജശേഖരൻ അഭിപ്രായപ്പെടുന്നതെന്തുകൊണ്ട്? വിശദമാക്കുക.

34. വിവരസാങ്കേതികവിദ്യയുമായി ബന്ധപ്പെട്ട മറ്റു കഥകളിൽ നിന്നും 'വർത്താളി'യെ വ്യത്യസ്തമാക്കുന്ന ഘടകങ്ങൾ എന്തെല്ലാമെന്നാണ് പി.കെ. രാജശേഖരൻ രേഖപ്പെടുത്തുന്നത്?

35. രണ്ടാം മാധ്യമയുഗത്തിന്റെ ഭാഗമാണീക്കഥകൾ - ഏതെല്ലാം കഥകളെക്കുറിച്ചാണ് പരാമർശം? വ്യക്തമാക്കുക.
36. പുരോഗമന സമൂഹത്തിൽ മാധ്യമങ്ങൾ നിർവ്വഹിക്കേണ്ട ധർമ്മമാണിന്ന് സമൂഹ മാധ്യമങ്ങൾ ഏറ്റെടുക്കുന്നതെന്ന അഭിപ്രായം വിലയിരുത്തുക.
37. മനുഷ്യാവകാശരംഗത്തു നടക്കുന്ന ഓൺലൈൻ ഇടപെടലുകളെപ്പറ്റിയുള്ള അഭിപ്രായം വ്യക്തമാക്കുക.
38. കാര്യമായി ഉപയോഗിക്കപ്പെടാത്ത യൂട്യൂബ് എന്ന പരാമർശം സമകാലീന സാഹചര്യത്തിൽ വിലയിരുത്തുക.

(6 × 4 = 24 Marks)

- IV. തൂന്നു പുറത്തിൽ കവിയാതെ ഏതെങ്കിലും രണ്ട് ചോദ്യത്തിന് ഉത്തരമെഴുതുക.
39. കമ്പ്യൂട്ടർ എന്ന ഉപകരണത്തിന്റെ വികാസചരിത്രത്തിലൂടെ വിവിധതരം കമ്പ്യൂട്ടറുകളെ പരിചയപ്പെടുത്തുക.
40. മലയാളം ടൈപ്പു ചെയ്യുന്നതിനുള്ള വിവിധ മാർഗ്ഗങ്ങളെപ്പറ്റി ഉപന്യസിക്കുക.
41. മലയാളഭാഷയും സാഹിത്യവുമായി ബന്ധപ്പെട്ട വെബ്സൈറ്റുകളെപ്പറ്റി ഉപന്യസിക്കുക.
42. സിറ്റിസെൻ ജേർണലിസത്തിന്റെ സവിശേഷതകൾ ഏതെല്ലാം? വിവരിക്കുക.
43. മലയാളത്തിലെ സൈബർ നോവലുകളെപ്പറ്റി ഉപന്യസിക്കുക.
44. പൊതുഇടം എന്ന നിലയിൽ സോഷ്യൽ നെറ്റ്വർക്കുകൾക്കുള്ള സ്ഥാനമെന്ത്? വിശദമാക്കുക.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021
Career Related First Degree Programme under CBCSS
Malayalam and Mass Communication

Core Course V

MX 1342 : ദലിതെഴുത്ത്, പെണ്ണെഴുത്ത് - സിദ്ധാന്തവും ആവിഷ്ക്കാരവും
(2019 Admission - Regular)

Time : 3 Hours

Max. Marks : 80

- I. ഒരു വാക്കിലോ പരമാവധി രണ്ടു വാക്യത്തിലോ ഉത്തരമെഴുതുക.
1. നഷ്ടബോധങ്ങളില്ലാതെ എന്ന കൃതിയുടെ രചയിതാവ് ആര് ?
2. പൊയ്ക്കയിൽ അപ്പച്ചൻ സ്ഥാപിച്ച പ്രസ്ഥാനം ഏത് ?
3. കേരള സാഹിത്യ അക്കാദമി പുരസ്കാരം നേടിയ എസ്. ജോസഫിന്റെ കൃതി ഏത് ?
4. 'മെഡുസയുടെ ചിരി'യുടെ കർത്താവ്.
5. 'പാലുവം പെണ്ണിനെത്തേടി', നാടൻപാട്ടിന്റെ ഏതു ശാഖയിൽപ്പെടുന്നു ?
6. ഫ്രഞ്ച്-ആഫ്രിക്കൻ വിമോചനത്തിന്റെ ശബ്ദമായി രൂപംകൊണ്ട പ്രസ്ഥാനം.
7. 'ഞാൻ എന്തുകൊണ്ട് ഹിന്ദുവല്ല' എന്ന പുസ്തകം രചിച്ചതാര് ?
8. ഒന്നാംതരംഗസ്ത്രീവാദത്തിന്റെ മറ്റൊരു പേര്.

9. 'ഉച്ചവെയിലും ഇളംനീലാവും' എന്ന നോവൽ രചിച്ചതാര്?

10. ഓംപ്രകാശ് വാല്മീകിയുടെ ആത്മകഥയുടെ പേര്?

(10 × 1 = 10 Marks)

II. ഒരു ഖണ്ഡികയിൽ ഏതെങ്കിലും എട്ടു ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

11. 'ഗതിയൊന്നുമില്ലാത്തവന് രണ്ടെണ്ണം ആർഭാടമല്ലേ' - വിവക്ഷിതമെന്ത്?

12. എരി, പറയുകുലത്തിൽ വരുത്തിയ ആദ്യപരിഷ്കാരമെന്തായിരുന്നു?

13. വനദുർഗ്ഗ എന്ന പേര് അനിതയെ സ്തബ്ധയാക്കിയതെന്തുകൊണ്ട്?

14. 'ഏഴു വയസ്സുള്ള ഒരു കുട്ടിയുടെ അമ്മയാണ് എന്നിട്ട് മോശം!' നിർമ്മലയുടെ ഈ വിചാരത്തിനു കാരണമെന്ത്?

15. 'എല്ലാ വിളക്കുമണഞ്ഞാലിപ്പാതിര-
എങ്ങനെയാവുമീ നാട്ടിൽ' - ഈ ആശങ്കയ്ക്കടിസ്ഥാനമെന്ത്?

16. നമ്പൂതിരിമാർ കഥകളിവേഷക്കാരാകാൻ താത്പര്യപ്പെടാതിരുന്നതെന്തുകൊണ്ട്?

17. ഏറെ സാധാരണമായിരുന്നു അക്കാലത്ത് ഇല്ലങ്ങളുടെ ജപ്പി - കാരണമെന്ത്?

18. 'മായക്കണ്ണോ ഇത് പഴയമായക്കാലമല്ല, സൈബർ കാലമാണ്'. ഈ വാചകത്തിന്റെ ധ്വനിയെന്ത്?

19. ചെങ്ങന്നൂരാതിയെക്കണ്ട പാലുവംകോയിയുടെ പ്രതികരണമെന്ത്?

20. 'ഇതെല്ലാം ബാല്യത്തിൻ ചവറ്റുകുട്ടയാ
ണിതെല്ലാമൊന്നോടെ എറിഞ്ഞുപോകുന്നു' - കവി ഉപേക്ഷിക്കുന്നതെന്തെല്ലാം?

21. അമ്മ ഒരു കാല്പനികകവിതയല്ല എന്ന് കവയിത്രി പറയാൻ കാരണമെന്ത്?

22. ഒരു സമയം അടുകുളക്കാരിയും സാമൂഹികജീവിതമാകേണ്ടിവരുന്ന ആധുനികസ്മൃതിയുടെ അവസ്ഥയെ പ്രതിഷ്ഠ അടയാളപ്പെടുത്തുന്നതെങ്ങനെ?
23. അങ്ങനെ, അന്യനാട്ടിൽ അനാഥരായിത്തീർന്ന ചിറ്റാണ്ടയും മക്കളും സ്വന്തം നാട്ടിലേക്കു തിരിച്ചു - എങ്ങനെ?
24. കല്ലൂർ കണാരപ്പണിക്കർ എന്ന മാന്ത്രികൻ തന്റെ അജ്ഞാനം തിരിച്ചറിഞ്ഞ് എരിയെ നമിച്ചതെപ്പോൾ?
25. കുറിപ്പെഴുതുക. - മാലികസ്മൃതിവാദം.
26. സ്മൃതികൾക്കും അധഃസ്ഥിതർക്കും ഒന്നിലധികം ആത്മകഥകളുണ്ടാകുന്നതിനു കാരണമെന്ത്?

(8 × 2 = 16 Marks)

- III. ഓരോന്നിനും ഒന്നരപ്പുറത്തിൽ കവിയാതെ ഏതെങ്കിലും ആറ് ചോദ്യത്തിന് ഉത്തരമെഴുതുക.
27. നിസ്സഹായന്റെ നിലവിളിയിലെ ആശുപത്രിക്കൊഴുപ്പുകൾ സമകാലികസമൂഹത്തിന്റെ കണ്ണാടിയാണ്. എന്തുകൊണ്ട്?
28. സ്മൃതിജീവിതത്തിന്റെ ദുരന്തമുഖങ്ങളെ വനദൂർഗ്ഗ എന്ന കഥ അടയാളപ്പെടുത്തുന്നതെങ്ങനെ?
29. സമൂഹത്തിന്റെ ചട്ടക്കൂടിനു പുറത്തേക്കിറങ്ങാൻ ശ്രമിക്കുകയും പരാജയപ്പെടുകയും ചെയ്യുന്ന നായികയാണ് രാജലക്ഷ്മിയുടെ നിർമ്മല - പരിശോധിക്കുക.
30. നമ്പൂതിരിപ്പെൺകുട്ടികളുടെ വിദ്യാഭ്യാസത്തെക്കുറിച്ച് കാലപ്പകർച്ചകൾ നൽകുന്ന വിവരണമെന്ത്?
31. 'ഇത്തവണരായ' എന്ന കഥയെ അടിസ്ഥാനമാക്കി പ്രിയ. എ. എസിന്റെ കാമികഭാഷയെ വിലയിരുത്തുക.
32. പാലുവംപെണ്ണിൽ വിവരിക്കുന്ന ആചാരമര്യാദകളെന്തെല്ലാം?
33. ഒരു ശരാശരി ദളിത്സ്മൃതിയുടെ ജീവിതചിത്രണമായി 'അമ്മ ഒരു കാലാനിത കവിതയല്ല' മാറുന്നതെങ്ങനെ?
34. വിവാഹത്തിലൂടെ ജാതിയുടെ പൊള്ളത്തരത്തെ എരി തുറന്നു കാട്ടുന്നതെങ്ങനെ?

35. നിസ്സഹായരുടെ നിലവിളികൾ ഉയരുന്ന പുതുകാലത്തിന്റെ പരിച്ഛേദമാണ് നാരായന്റെ കഥ - എന്തുകൊണ്ട്?
36. അജ്ഞതയുടെ തൂണിൽ കെട്ടിയിട്ട കോലാടിന്റെ കാഴ്ചകളും തിരിച്ചറിവുകളും സംഗ്രഹിക്കുക.
37. താൻ പോരിമയുള്ള പെണ്ണിന്റെ ചിത്രം പാലുവംപെണ്ണിൽ വരച്ചിട്ടിരിക്കുന്നതെങ്ങനെ?
38. 'എനിക്കുനിന്നുള്ളും തുളച്ചുപോകണം' കരിങ്കല്ലേ എന്നു കവി ആഗ്രഹിക്കുന്നതെന്തുകൊണ്ട്?

(6 × 4 = 24 Marks)

IV. മൂന്നു പുറത്തിൽ കവിയാതെ ഏതെങ്കിലും രണ്ട് ചോദ്യത്തിനുത്തരമെഴുതുക.

39. ആധുനികസാമൂഹ്യാവബോധത്തിലേക്ക് കേരളീയരെ നയിച്ച വിവിധ നവോത്ഥാന ശ്രമങ്ങളിലൊന്നിന്റെ ഭാവനാവിഷ്കാരമാണ് 'എരി' - ചർച്ച ചെയ്യുക.
40. സ്ത്രീകളുടെ ആത്മകഥകളുടെ സവിശേഷതകൾ കാലപ്പകർച്ചകളെ അടിസ്ഥാനമാക്കി വിശകലനം ചെയ്യുക.
41. മലയാളസാഹിത്യത്തിലെ ദലിതെഴുത്തിന്റെ ചരിത്രം ക്രോഡീകരിക്കുക.
42. പെൺലോകത്തിന്റെ വർത്തമാനകാലമുഖമാണ്, അവളുടെ പ്രതിരോധമാണ് 'ഇത്തവണ രാധ' എന്ന കഥ വിശകലനം ചെയ്യുക.
43. സാറാ ജോസഫിന്റെ രചനകൾ പെണ്ണെഴുത്തിന്റെ ശക്തമായ ദൃഷ്ടാന്തങ്ങളാണ് - സമർത്ഥിക്കുക.
44. ലോകമെമ്പാടുമുള്ള പ്രാന്തീകൃതരുടെ ആഖ്യാനങ്ങളും ആവിഷ്കാരങ്ങളുമായി പൊയ്ക്കയിൽ അപ്പച്ചന്റെ പാട്ടുകൾക്ക് പൊക്കിൾക്കൊടി ബന്ധമാണുള്ളത് - പരിശോധിക്കുക.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021

Career Related First Degree Programme under CBCSS

Malayalam and Mass Communication

Complementary Course

MX 1331 : വിവർത്തന താരതമ്യപഠനം

(2019 Admission - Regular)

Time : 3 Hours

Max. Marks : 80

- I. ഒരു വാക്കിലോ പരമാവധി രണ്ടു വാക്യത്തിലോ ഉത്തരമെഴുതുക.
1. ഇംഗ്ലീഷിലേയ്ക്കു പരിഭാഷപ്പെടുത്തുക - പൂച്ചയ്ക്കൊരു മണി കെട്ടും.
2. തത്സമയമായ മലയാളപദം കണ്ടെത്തുക - School.
3. അഷിതയുടെ നിലാവിന്റെ നാട്ടിൽ എന്ന ചെറുകഥ ഇംഗ്ലീഷിലേയ്ക്കു പരിഭാഷപ്പെടുത്തിയതാര്?
4. ചെമ്മീൻ എന്ന നോവലിലെ കേന്ദ്രകഥാപാത്രം ആരാണ്?
5. എ.പി.ജെ. അബ്ദുൾ കലാമിന്റെ Wings of Fire ഏതു പേരിലാണ് മലയാളത്തിൽ പുറത്തുവന്നത്?
6. കാഞ്ചനസീത ഇംഗ്ലീഷിലേയ്ക്കു വിവർത്തനം ചെയ്തതാര്?
7. ഗാന്ധിയും കവിതയും എന്ന രചന ആരുടേതാണ്?

8. സമാനമായ മലയാളപദം കണ്ടെത്തുക.

Back Translation

9. ഇംഗ്ലീഷിലേയ്ക്കു മൊഴിമാറ്റം നടത്തുക.

സച്ചിന് ഭാരതരത്നം നല്കി.

10. തത്തുല്യമായ ഇംഗ്ലീഷ് പദം കണ്ടെത്തുക.

അച്ചടക്കനടപടി

(10 × 1 = 10 Marks)

II. ഒരു ഖണ്ഡികയിൽ കവിയാതെ ഏതെങ്കിലും എട്ടു ചോദ്യങ്ങൾക്ക് ഉത്തരമെഴുതുക.

11. മുകളിലെ നൂളുക, വായിൽ വെള്ളിക്കുണ്ടിയുമായി ജനിക്കുക - ഇംഗ്ലീഷിലേയ്ക്കു പരിഭാഷപ്പെടുത്തുക.

12. to let the cat out of bag - മലയാളത്തിലാക്കുക.

13. പി. രാധികയുടെ കഥാവിവർത്തനം ഏതു രീതിയിലുള്ളതാണ്? വിശദമാക്കുക.

14. അഷിതയുടെ കഥകളിലെ മുഖ്യഭാവമെന്ത്?

15. ഇംഗ്ലീഷിലേയ്ക്കു മൊഴിമാറ്റം നടത്തുക. പഴയതിനു ഗുഡ്ബൈ പുതിയതിന് ഹലോ.

16. ഭരണഭാഷാപദാവലി എന്നാലെന്ത്?

17. വ്യക്തിനാമങ്ങളെ പരിഭാഷ എങ്ങനെ പരിചരിക്കുന്നു?

18. സംഭാഷണം തർജ്ജമ ചെയ്യുമ്പോൾ സ്വീകരിക്കേണ്ട രീതി എങ്ങനെയായിരിക്കണം?

19. തീയില്ലാതെ പുകയില്ല - ഇംഗ്ലീഷിലേയ്ക്കു പരിഭാഷപ്പെടുത്തുക.

20. എ.പി.ജെ. അബ്ദുൾ കലാമിന്റെ രചനാസമീപനം എപ്രകാരമുള്ളതാണ്?
21. Off and on, Out of hand - മലയാളത്തിലേയ്ക്കു മൊഴിമാറ്റം ചെയ്യുക.
22. പഴഞ്ചൊല്ലുകളുടെ വിവർത്തനത്തിൽ ശ്രദ്ധിക്കേണ്ട തത്ത്വങ്ങളെന്തെല്ലാം?
23. Wings of Fire-ന്റെ മലയാളപരിഭാഷരീതി പരിചയപ്പെടുത്തുക.
24. സാങ്കേതികപദവിവർത്തനത്തിലെ പ്രധാന തത്ത്വമെന്ത്?
25. പരസ്യവിവർത്തനത്തിൽ ശ്രദ്ധിക്കേണ്ട കാര്യങ്ങളെന്തെല്ലാം?
26. നാട്ടുശൈലികളുടെ പരിഭാഷയിലെ പ്രധാന വെല്ലുവിളികളെന്തെല്ലാം?

(8 × 2 = 16 Marks)

III. ഓരോന്നിനും ഒന്നരപ്പുറത്തിൽ കവിയാതെ ഏതെങ്കിലും ആറ് ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

27. സാഹിത്യേതരഗദ്യത്തിന്റെ പ്രധാന സവിശേഷതകളെന്തെല്ലാം?
28. ഇംഗ്ലീഷിലേയ്ക്കു പരിഭാഷപ്പെടുത്തുക.

ഇന്ത്യയിൽ പ്രധാനമായും കേരള സംസ്ഥാനത്തിലും ലക്ഷദ്വീപിലും പൂതൂച്ചേരിയുടെ ഭാഗമായ മയ്യഴിയിലും സംസാരിക്കുന്ന ഭാഷയാണ് മലയാളം.

29. മലയാളത്തിലേക്കു തർജ്ജമ ചെയ്യുക.

Swami Tapovan Majaraj authored two books on his travels through the Himalayas :

"Wanderings in the Himalayas" (Himagiri Viharam) and "Kailasa Yatra".

30. മാധ്യമപരിഭാഷയിലെ മർമ്മമെന്ത്?
31. അഷിതയുടെ നിലാവിന്റെ നാട്ടിൽ എന്ന രചനയെ പരിഭാഷപ്പെടുത്തിയപ്പോൾ അതിനു സിദ്ധിച്ച മെച്ചങ്ങളെന്തെല്ലാം?
32. പ്രാദേശികത കമാവിവർത്തനത്തിന് തടസ്സമാകുന്നതെങ്ങനെ?

33. ചെമ്മീനിലെ വിവർത്തനാനീതഘടകങ്ങൾ ഏതൊക്കെയാണ്?
34. നോവൽവിവർത്തനത്തിനുള്ള സാമഗ്രികളെന്തൊക്കെ? വിശദമാക്കുക.
35. എ.പി.ജെ. അബ്ദുൾ കലാം തന്റെ രചനകളിൽ മുന്നോട്ടുവയ്ക്കുന്ന പ്രധാന ആശയങ്ങളെന്തെല്ലാം?
36. കവിത വിവർത്തനക്ഷമമല്ലെന്നു പറയുന്നതെന്തുകൊണ്ട്?
37. സി.എൻ. ശ്രീകണ്ഠൻ നായരുടെ നാടകത്തിലെ സംഭാഷണങ്ങളുടെ സ്വഭാവമെന്ത്?
38. പുരാണകഥാസരീക്ഷത്തിന്റെ മിത്തിക്കൽ സ്വഭാവം വിവർത്തനത്തിൽ നിലനില്ക്കുന്നുണ്ടോ? വിശദമാക്കുക.

(6 × 4 = 24 Marks)

- IV. മൂന്നു പുറത്തിൽ കവിയാതെ ഏതെങ്കിലും രണ്ട് ചോദ്യത്തിന് ഉത്തരമെഴുതുക.
39. സാങ്കേതികപദങ്ങളുടെ പരിഭാഷ ജാഗ്രതയോടെയുള്ള വിജ്ഞാനപ്രവർത്തനമാണ്. ഉദാഹരണസഹിതം വിവരിക്കുക.
 40. പരസ്പരധാരണയുള്ള വഴിയാണ് വിവർത്തനം എന്ന പ്രസ്താവനയുടെ സാധുത്വം പാഠഭാഗങ്ങളെ ആസ്പദമാക്കി വിവരിക്കുക.
 41. ചെമ്മീനിലെ സ്ഥലകാലങ്ങൾ വിവർത്തനത്തിൽ വെല്ലുവിളിയാകുന്നുണ്ടോ? വിശദീകരിക്കുക.
 42. എ.പി.ജെ. അബ്ദുൾ കലാമിന്റെ ഇംഗ്ലീഷ് രചനകൾ വിവർത്തനവിധേയമാകുന്ന ഭാഷകളിലെല്ലാം ജനപ്രിയമാകുന്നതിന്റെ കാരണങ്ങളെന്തെല്ലാം?
 43. കവിതാവിവർത്തനത്തിലെ മുഖ്യതത്ത്വങ്ങൾ വിശദീകരിക്കുക.
 44. വാർത്താവിവർത്തനത്തിൽ ശ്രദ്ധിക്കേണ്ട തത്ത്വങ്ങളെന്തെല്ലാം?

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021

Career Related First Degree Programme under CBCSS

Group 2(a)

Malayalam and Mass Communication Vocational Course III

MX 1371 : REPORTING

(2019 Admission – Regular)

Time : 3 Hours

Max. Marks : 80

- I. Explain/Describe the following in **one** or **two** words or in **one** or **two** sentences :
1. Deadline
 2. Nose for news
 3. Scoop
 4. Byline
 5. Banner
 6. Dummy
 7. Beat
 8. Credit line
 9. Press Conference
 10. AP.

(10 × 1 = 10 Marks)

II. Describe answer **any eight** questions each in **60** words.

11. Feature syndicate.
12. UNI.
13. Running story.
14. Role of news agencies in India.
15. What is a human interest story?
16. Define News.
17. Attribution.
18. Letters to the editor.
19. Cartoons.
20. What is a feature story?
21. Freak lead.
22. What is expected news?
23. Staccato lead.
24. What is obit?
25. Stringer.
26. What is novelty?

(8 × 2 = 16 Marks)

III. Answer **any six** questions, each in about **120** words.

27. How is the language of sports reporting different from that of other hard news? Illustrate.
28. What will be the preparations you make when you are assigned to cover the state School youth festival?
29. What are the differences between hard news and a feature story?
30. Sources are valued assets of a news reporter. He should handle it with care- Illustrate.
31. What do you mean by 5 W's and 1 H? Explain in detail.
32. What are the qualities of a bureau chief?
33. What is farm journalism?
34. How to report a crime story? Explain with a news report.
35. What is precision journalism?
36. What is news conference? Explain with suitable examples.
37. What is a middle?
38. Who is a special correspondent? Explain his duties.

(6 × 4 = 24 Marks)

IV. Write long essays on **any two** of the following

39. Prepare a detailed news report on up coming Olympics.
40. List a few tips to Write an editorial? Explain the various types of editorial with suitable examples.
41. What are the major types of reporting? Create a development report based on your locality.

42. What is investigative reporting? Explain with suitable examples.
43. Explain the qualities and qualifications of a reporter.
44. What are the major techniques used in news gathering? Explain in detail.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3)

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Reg. No. :

Name :

Third Semester B.A. Degree Examination, March 2021
Career Related First Degree Programme Under CBCSS

Group 2(a)

Malayalam and Mass Communication

Vocational Course – IV

MX 1372 : EDITING

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

PART – A

Explain the following in maximum of 30 words.

1. Define Headline
2. Define master head.
3. What is bias?
4. Tabloid Journalism.
5. Beat Reporting.
6. Hard News.
7. Bureau Chief.

P.T.O.

8. PTI.
9. What is editor's guild?
10. Photoshop.

(10 × 1 = 10 Marks)

PART – B

Write **short notes**, each not exceeding **60** words, on **any eight** of the following.

11. What is 5W and 1H?
12. Write about the responsibilities of city editor.
13. Who is mofussil correspondent?
14. Explain kicker.
15. What is dateline?
16. What is typography?
17. What is proofreading?
18. What is copy editing?
19. What is rewriting?
20. What is style book?
21. Define voice modulation.
22. What is cutline?
23. What is Quark Express?
24. What is caption?
25. What is a column?
26. What is a feature?

(8 × 2 = 16 Marks)

PART – C

Write **short essays**, each not exceeding **120** words, on **any six** of the following.

27. Write down the functions of sub editor in a newspaper.
28. Explain the functions of news editor.
29. What do mean by letter to the editor?
30. Describe Press Release.
31. What are the functions of computer page make up?
32. Explain the importance of punctuations in news writing.
33. What is general desk?
34. Write down the difference between stringer and freelancer.
35. What is the significance of graphic arts?
36. Explain about imprint.
37. What are the various photo editing softwares available.
38. Give a short note on translation and its process.

(6 × 4 = 24 Marks)

PART – D

Write **long essays** for **any two** of the following.

39. Explain the qualification and responsibilities of editor.
40. Write the principle and techniques of Page Make up.
41. Describe the functions of Newsrooms.
42. Describe the various kinds of headlines with example.
43. Discuss the different designations in Reporting and Editorial Department.
44. Write the principles and purposes of editing.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021.

Career Related First Degree Programme under CBCSS

Group 2(a) – Botany and Biotechnology

Vocational Course – IV

BB 1371- PROTISTA AND ANIMAL DIVERSITY

(2013, 2015 – 18 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions in a word or a sentence. Each question carries **1** marks :

1. Name one Symbiotic protist.
2. What is the common name of Dentalium?
3. Write the Genus name of garden lizard.
4. What is syrinx?
5. Name a living fossil.
6. Name the causative organism of elephantiasis.
7. Write down the scientific names of any pests of paddy.
8. Common name of Rhacophorus.

9. Name the characteristic larvae of class Ophiuroidea.
10. What is ecdysis?

(10 × 1 = 10 Marks)

SECTION – B

Short answer questions. Not exceed in one paragraph. Answer **any eight**.

11. Write a note on the symbiotic association of sea anemone.
12. Give notes on parental care in Ichthyophis.
13. Distinguish between schizocoely and enterocoely.
14. What is amoebiasis?
15. Explain the mechanism of defence in sea cucumber.
16. Comment on Axolotl larva.
17. Write any four salient features of subphylum Vertebrata.
18. What is conjugation? Give one example.
19. Distinguish between proteroglyphous and Solenoglyphous fangs.
20. Briefly explain the economic importance of Pearl oyster.
21. What are pedicellariae? Mention their function.
22. What are placoid scales?

(8 × 2 = 16 Marks)

SECTION – C

Short essay. Not to exceed **120** words. Answer **any six**

23. Give an account of classification of phylum Platyhelminthes.
24. Write the key to the identification of poisonous and non-poisonous snakes.

25. Write a short essay on the pathogenecity and clinical features of Plasmodium.
26. Write notes on the blood feeding adaptations of Hirudinaria.
27. Comment on Amphioxus.
28. Write a short essay on different types of feathers in birds.
29. Explain different kinds of respiration in frog.
30. Write notes on the desert adaptations of Ostrich.
31. Describe the salient features of phylum Porifera.

(6 × 4 = 24 Marks)

SECTION – D

Long essay. Answer **any two** questions

32. Explain the salient features of phylum Onychophora. Mention the affinities of Peripatus to phylum Annelida and Arthropoda.
33. Discuss in detail the various adaptations of aquatic mammals.
34. Write an essay on the classification of kingdom Protista.
35. Explain Five-kingdom classification of organisms. Give an account of its merits and demerits.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021

Career Related First Degree Programme Under CBCSS

Group 2(a) — Botany and Biotechnology

Complementary Course

BB 1331 — PHYSIOLOGICAL ASPECTS IN BIOCHEMISTRY

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Very short answer type maximum **two** sentences. Answer **all** questions.

1. The detoxification processes take place in _____
2. Name hormone secreted by adrenal cortex which regulate mineral metabolism.
3. Cretinism is a disorder caused by deficiency of _____ in newborns.
4. Define jaundice
5. Heparin is _____
6. Name vitamin essential for synthesis of collagen.
7. The shape of the oxygen dissociation curve of Hb is _____
8. Name the condition in which high level of cholesterol in blood is present.
9. Name two hormones of adrenal medulla
10. The endocrine organ responsible for the synthesis of trophic hormones is _____

(10 × 1 = 10 Marks)

SECTION – B

Short answer questions not exceed **one** paragraph. Answer any eight questions. **Each** question carries **2** marks.

11. What are abnormal Hbs?
12. Define BMR.
13. What are tropic hormones?
14. Explain the metabolism of foreign compounds in the liver.
15. Explain the role of carbonic anhydrase in blood.
16. Comment on bleeding time.
17. What are peptide hormones? Write two examples.
18. What is erythropoiesis
19. Define Bohr effect.
20. What is GFR?
21. Mention the name the muscles of Respiration?
22. State any two functions of bile.
23. List out the name of four co-enzymes?
24. What are the four different sources of Iron?
25. Write notes on obesity.
26. What is respiratory alkalosis?

(8 × 2 = 16 Marks)

SECTION – C

Short essay not exceeding **120** words. Answer **any six** of the following. **Each** question carries **4** marks.

27. Write any four functions of thyroid hormone.
28. Illustrate the structure of hemoglobin.
29. Describe different functions of growth hormone.
30. Discuss on atherosclerosis.
31. How does the liver act as a detoxifying organ?
32. Explain the occurrence and functions of calcium in our body.
33. List out the functions of oxytocin and vasopressin.
34. Explain different components of blood.
35. Discuss pulmonary ventilation.
36. Elaborate renal function tests.
37. Describe buffers in the blood.
38. List out the functions of plasma protein.

(6 × 4 = 24 Marks)

SECTION – D

Long essay questions. Answer **any two** questions. **Each** question carries **15** marks.

39. Explain the secretions of the anterior pituitary gland and write the functions.
40. Explain the mechanism of blood coagulation.
41. Elaborate the structure of nephron.

42. Review the organization of the endocrine system.

43. Explain functions and deficiency states of

(a) Vitamin D

(b) Vitamin A

(c) Vitamin C.

44. Describe how the blood transports oxygen and carbon dioxide.

(2 × 15 = 30 Marks)

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Third Semester B.Sc. Degree Examination, March 2021

Career Related First Degree Programme under CBCSS

Group 2(a) : Botany and Biotechnology

Core Course

BB 1342 : HORTICULTURE, MUSHROOM CULTIVATION AND MARKETING
(2019 Admission – Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** the questions in **a word** or **one or two** sentences.

Each question carries **1** mark.

1. Define a vertical garden.
2. What are foliar sprays?
3. Give the binomial of white button mushroom.
4. What is mycetism?
5. Name two substrates used for mushroom cultivation.
6. What is the use of *Sphagnum* in horticulture?
7. Define a stipe.
8. What are carpet beds?
9. Name a flower inducing hormone.
10. What is hydroponics?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. Each question carries **2** marks. (Answer not to exceed **one paragraph**)

11. Explain the vegetative propagation by leaf cuttings.
12. What are roof gardens?
13. Explain the morphology of *Pleurotus*.
14. What are weedicides?
15. Discuss the importance of floristry.
16. Briefly explain mushroom processing by freeze drying.
17. What is approach grafting?
18. List the advantages of irrigation.
19. Discuss the food value of mushrooms.
20. What is a terrarium?
21. Discuss the significance of parthenocarpy in horticulture.
22. Write the composition of Bordeaux mixture.
23. What are the components of potting mixture?
24. Draw the diagram of a dikaryotic mycelium.
25. What is canning?
26. Explain the storage and marketing of fruits.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. Each question carries **4** marks. (Answer not to exceed **120 words**)

27. Distinguish blanching and steeping.
28. Brief a note on any four garden implements.
29. What is a spawn? Add a note on its preparation.

30. Comment on storage of mushrooms on a commercial scale.
31. What is vermicompost? Explain its preparation.
32. Explain the methods of preservation of vegetables.
33. Mention the role of growth promoters in horticulture.
34. Explain the art and preparation of bonsai.
35. What are pesticides? Explain with examples.
36. Differentiate biofertilizers and chemical fertilizers.
37. What is a conservatory? State its significance.
38. Discuss the medicinal value of mushrooms.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. Each question carries **15** marks. (Answer not to exceed **3 pages**)

39. With neat labelled diagrams, describe vegetative propagation by budding and layering.
40. Explain the various components of an ornamental garden.
41. Write an essay on common diseases affecting fruits and vegetable crops.
42. Describe the cultivation method of Oyster mushroom.
43. Explain various types of floral arrangements in horticulture.
44. Give a detailed account on disease and pest control in mushrooms.

(2 × 15 = 30 Marks)

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, March 2021
Career Related First Degree Programme Under CBCSS

Group 2(a) – Botany and Biotechnology

Vocational Course – III

BB 1371 — PROTISTA AND ANIMAL DIVERSITY

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** the questions in a word or one or two sentences. **Each** question carries **1** marks.

1. What is pseudopodium? Mention its function.
2. Name the Kingdom and Phylum to which Paramecium belong.
3. What is Cytopyge?
4. Who proposed the five kingdom classification?
5. What is a Crown sponge?
6. Comment on book lungs.
7. Name a Paddy pest.
8. Comment on Spicules.
9. Name an egg laying mammal.
10. What is Metagenesis?

(10 × 1 = 10 Marks)

SECTION – B

Answer **any eight** questions. **Each** question carries **2** marks. (Answer not to exceed **one** paragraph).

11. Write the salient features of Rhizopoda.
12. What is Red tide?
13. Explain diatomaceous earth.
14. What are cryptomerozoites?
15. Distinguish between Protostomia and Deuterostomia.
16. Comment on the reproduction in Sycon.
17. What are corals?
18. Comment on polymorphism in Cnidaria.
19. What is a living fossil? Give an example from Mollusca.
20. Comment on the excretory organs in Scorpion.
21. Explain Neoteny with an example.
22. Comment on Petromyzon and its larva.
23. Write a short note on alternation of generation with an example.
24. Explain the mechanism of nutrition in Paramecium.
25. Trichonympha is a symbiont. Justify?
26. Write any four identifying feature of Protists.

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions. **Each** question carries **4** marks. (Answer not to exceed **120** words).

27. Explain the mode of transmission in Entamoeba.
28. Give the classification of Phylum Porifera with examples.
29. Explain the salient features of Mesozoa with classification.
30. Comment on the general characters of class Trematoda with example.
31. Explain the salient features of phylum Mollusca with examples.
32. Distinguish between Chilopoda and Diplopoda. Give examples.
33. Explain the digestive system of Cockroach with a labelled diagram.
34. Write a note on desert adaptation of Ostrich.
35. Explain the affinities of Peripatus.
36. List out the salient features of phylum Dinoflagellates with one example.
37. Name the different species of Plasmodium and the disease caused by them.
38. Explain the salient features of Ciliophora with an example.

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions. **Each** question carries **15** marks. (Answer not to exceed **3** pages).

39. Describe the salient features of Phylum Cnidaria upto their classes, with examples.
40. Explain the life history of Plasmodium with the aid of diagrams.

41. Describe the flight adaptation of birds.
42. Explain the key to the identification of poisonous snakes and non-poisonous snakes with illustrations.
43. Classify Phylum Mollusca based on salient features. Give examples to each class.
44. Explain the general characters of Echinodermata and classify the phylum up to classes with examples.

(2 × 15 = 30 Marks)

St. Xavier's College

Reg. No. :

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Third Semester B.Sc. Degree Examination, March 2021

Career Related First Degree Programme Under CBCSS

Group 2 (a) Botany and Biotechnology

Vocational Course IV

BB 1372 – ANIMAL PHYSIOLOGY AND ANATOMY

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** the questions in a word or one or two sentences. Each question carries **1** mark.

1. Which arteries carry deoxygenated blood?
2. What is an open circulatory system?
3. Name the basic functional unit of Kidney.
4. Name the respiratory center of brain which regulates respiration.
5. What is sarcolemma?
6. What is the name of the junction between an axon and dendrite of another neuron?
7. Which hormone has anti-insulin effect?

8. Name the hormone that is produced by corpus luteum in mammals.
9. What is HCG?
10. What is Fertilizins?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. **Each** question carries **2** marks. (Answer not to exceed one paragraph)

11. What is filter feeding?
12. Give a note on Triiodothyroxine.
13. Identify the functions of Spleen.
14. What is QRS complex?
15. What is parasympathetic Nervous System?
16. Mention the functions of Loop of Henle.
17. Give note on goitre.
18. What is Osmoregulation?
19. What is Hemolymph?
20. Explain Pineal Gland.
21. Write a note on GnRH.
22. Explain the Feedback Loop.
23. What is succus entericus?
24. What is ACTH?

25. Give note on uricotelism.
26. What do you mean by formed elements of blood?

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. **Each** question carries **4** marks. (Answer not to exceed **120** words)

27. Explain the ultra-structure of striated muscle.
28. Differentiate between open and closed circulation.
29. Explain pulmonary circulation.
30. Give an account on types of reproduction in animals.
31. Explain different excretory system in animals.
32. Explain the types and functions of protein hormones.
33. What is All or None law?
34. Write a brief note on menstrual cycle.
35. Explain the secretions of adrenal gland.
36. What is biological oxidation? Give a brief note on oxidation of glucose.
37. Write a brief note on different types of muscles.
38. What is nutrition? Explain different types of nutrition.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. **Each** question carries **15** marks. (Answer not to exceed **three** pages).

39. Describe in detail urine formation.
40. Write a short essay on the mechanism of muscle contraction.
41. Describe in detail the nervous system of prawn.
42. Explain the various mechanisms involved in the digestion and absorption of food.
43. Why is the pituitary gland known as the master gland of the endocrine system?
44. Write an essay on oogenesis in humans.

(2 × 15 = 30 Marks)
