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Reg. No. : .....

Name : .....

Third Semester B.A./B.Sc. Degree Examination, October 2019

First Degree Programme under CBCSS

Malayalam Language

Language Course VII – Additional Language III

ML 1311.1 : DRISHYAKALASAHITHYAM

(2014-2017 admissions)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

I. ഒരു വാക്കിലോ പരമാവധി രണ്ടു വാക്യത്തിലോ ഉത്തരമെഴുതുക.

1. 'മലയാളത്തിലെ ഇബ്സൻ' എന്നറിയപ്പെടുന്നതാര്?

2. കേരളകലാമണ്ഡലം സ്ഥാപിതമായ വർഷം.

3. 'വൈശാലി'യുടെ കഥാതന്തു സ്വീകരിച്ചിരിക്കുന്നതെവിടെനിന്ന്?

4. കുഞ്ചൻ നമ്പ്യാരെ 'കോമിക് ജീനിയസ്സ്' എന്നു വിശേഷിപ്പിച്ചതാര്?

5. 'ബകവധ'ത്തിന്റെ കർത്താവാര്?

6. തിരക്കഥയ്ക്കുള്ള ദേശീയപുരസ്ക്കാരം ആദ്യം നേടിയ മലയാളി?

7. എൻ.എൻ. പിള്ള എഴുതിയ നാടകപഠനഗ്രന്ഥം.

P.T.O.

8. ദമയന്തീസ്വയംവരത്തിൽ കോപിഷ്ഠനായ കലിയുടെ ശപഥമെന്ത്?

9. ജോസഫ് മുണ്ടശ്ശേരി നളചരിതത്തെ വിശേഷിപ്പിച്ചതെങ്ങനെ?

10. അഭിജ്ഞാനശാകുന്തളത്തിന്റെ ആദ്യമലയാള വിവർത്തകൻ ആര്?

(10 × 1 = 10 Marks)

II. **ഓരോ** ഖണ്ഡികയിൽ കവിയാതെ ഏതെങ്കിലും **എട്ടു** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

11. നളചരിതത്തിലെ ഉദ്യാനവർണ്ണനയുടെ ഔചിത്യം വ്യക്തമാക്കുക.

12. 'മുല്ലയിന്മേൽ ആരെങ്കിലും ചൂടുവെള്ളം ഒഴിക്കുമോ?' ആരുടെ വാക്കുകൾ? സാഹചര്യമെന്ത്?

13. 'ഒരു പെണ്ണിനെ കുരുത്തി കൊടുത്ത കൈകൊണ്ടെന്നെ തൊടരുത്' വക്താവ്, സന്ദർഭം, സാംഗത്യം എന്നിവ വ്യക്തമാക്കുക.

14. വിഭാണ്ഡകമുനിയുടെ ചിത്രണം എം.ടി. നിർവ്വഹിച്ചിരിക്കുന്നതെങ്ങനെ?

15. 'ഒറ്റച്ചോദ്യത്തിനുത്തരം കിട്ടാവുന്നത്ര ലളിതമായ ഒന്നാണതെന്ന് എന്റെ മക്കൾ കരുതുന്നുണ്ടോ' - സൂചിതമെന്ത്?

16. ഭീമന്റെ ദുർഭാഷണത്തിന് ഹനുമാന്റെ മറുപടി എന്തായിരുന്നു?

17. തുള്ളൽ എത്രവിധം? ഏതെല്ലാം? സാമാന്യമായി പരിചയപ്പെടുത്തുക.

18. 'നാലഞ്ചുഭർത്താവൊരിത്തിക്കു താനത്

നാലുജാതിക്കും വിധിച്ചതല്ലോർക്കണം' - സാംഗത്യമെന്ത്?

19. ഭർത്തൃഗൃഹത്തിലേക്ക് യാത്രയാകുന്ന ശകുന്തളയ്ക്ക് താതകാശ്യപൻ നൽകുന്ന ഉപദേശമെന്ത്?

20. 'വ്യസനം തവ വരുമുടനേ' - സന്ദർഭവും ആശയവും വിശദമാക്കുക.

21. ഋശ്യശൃംഗന്റെ തപോബലത്തെ സൂചിപ്പിക്കുന്ന ഒരു സന്ദർഭം വ്യക്തമാക്കുക.

22. 'ധർമ്മലബ്ധമല്ലോ ഭാഗ്യം' - സൂചിതമെന്ത്?

(8 × 2 = 16 Marks)

St. Xavier's College

III. ഓരോന്നിനും **120** വാക്കിൽ കവിയാതെ ഏതെങ്കിലും **ആറു** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

23. ചലച്ചിത്രസംവിധായകന് സ്രഷ്ടാവിന്റെ സ്ഥാനമാണ്. എന്തുകൊണ്ട്?

24. 'കറുത്ത ദൈവത്തെത്തേടി' അന്വേഷണത്തിന്റെ തന്നെ നാടകീകരണമായി മാറുന്നതെങ്ങനെ?

25. എം.ടി. യുടെ തിരക്കഥാരചനാപാടവത്തിനുദാഹരണമാണ് മഴയില്ലാത്ത അംഗരാജ്യത്തിന്റെ ചിത്രണം - സമർത്ഥിക്കുക.

26. ധർമ്മപുത്രാനുജൻ എന്ന ഭീമഗർവ്വത്തെ ഹനുമാൻ തകർക്കുന്നതെങ്ങനെ?

27. 'ഗുഡ്നൈറ്റ്' എന്ന ശീർഷകം നാടകത്തിന്റെ ഭാവതലവുമായി ചേർന്നു നില്ക്കുന്നതെങ്ങനെ?

28. ഉണ്ണായിവാര്യരുടെ ഭാഷാനയമെന്ത്?

29. ശകുന്തളയുടെ വിവാഹവാർത്തയറിഞ്ഞ കാശ്യപന്റെ പ്രതികരണമെന്ത്?

30. 'ദൈവദോഷം നിനക്കുവന്നു; ഭാവമില്ലെട്ടില്ലയോ' എന്ന പുഷ്കരന്റെ അഭിപ്രായപ്രകടനത്തിനു കാരണമെന്ത്?

31. തനതുനാടകവേദി - കുറിപ്പെഴുതുക.

(6 × 4 = 24 Marks)

IV. **മൂന്നു** പുറത്തിൽ കവിയാതെ **രണ്ടു** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

32. രൂപപരമായ പരീക്ഷണവും പ്രമേയപരമായ അന്വേഷണബുദ്ധിയും ദാർശനികമായ ദുരന്തബോധവും സമന്വയിക്കുന്ന കൃതിയാണ് 'കറുത്ത ദൈവത്തെത്തേടി' - സമർത്ഥിക്കുക.

33. വൈശാലി എന്ന സുന്ദരസൃഷ്ടിയിൽ ഭാവനാശാലിയായ എം.ടി.യുടെ സാന്നിദ്ധ്യം ശക്തമാണ് - പരിശോധിക്കുക.

34. തുള്ളൽ ഒരു ജനകീയകലാരൂപമായി പരിഗണിക്കപ്പെടുന്നതെന്തുകൊണ്ട്?

35. 'മലയാളികളുടെ കപടസദാചാരത്തെ കൊഞ്ഞനം കുത്തുന്ന നാടകമാണ് ഗുഡ്നൈറ്റ്' - ചർച്ച ചെയ്യുക.

(2 × 15 = 30 Marks)

St. Xavier's College

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Reg. No. : .....

Name : .....

Third Semester B.Com. Degree Examination, October 2019

First Degree Programme under CBCSS

Core Course

ENTREPRENEURSHIP DEVELOPMENT

(Common for CO 1341/CC 1342)

(2018 Admission)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions in one word or to a maximum of **2** sentences each. **Each** question carries **1** mark.

1. What do you mean by Venture capital?
2. Who is a drone entrepreneur?
3. What is meant by Project life cycle?
4. What do you mean by bridge finance?
5. What are industrial estates?
6. What is process layout?

P.T.O.

7. Explain seed capital.

8. What is locational mobility?

9. What are industrial clusters?

10. Expand SIDBI.

(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 phases of EDP?

12. Describe the risks involved with entrepreneurship.

13. Discuss the objectives of NAYE.

14. Give the objectives of KVIC.

15. Distinguish between technology transfer and technology acquisition.

16. Explain feasibility analysis.

17. State the merits and limitations of payback period method.

18. Explain social cost benefit analysis.

19. Discuss the advantages of subsidies.

20. Explain technology incubators and specialist incubators.

21. Distinguish between intrapreneur and entrepreneur.

22. Explain SWOT analysis.

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION – C

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

23. Discuss the advantages of industrial estates.
24. Explain the phases of project management.
25. Describe the characteristics of an entrepreneur.
26. Explain the functions of ED clubs.
27. Discuss the elements of project formulation.
28. Enumerate the functions of KINFRA.
29. Discuss the functions of an entrepreneur.
30. Explain the services provided by business incubators.
31. Explain the main functions of SIDBI.

(6 × 4 = 24 Marks)

SECTION – D

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

32. Describe the different types of entrepreneurs.
33. Explain the steps involved in starting an MSME.
34. Discuss the barriers to entrepreneurship.
35. Discuss the various Industrial promotional activities of government of Kerala.

(2 × 15 = 30 Marks)

St. Xavier's College

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(Pages : 3)

Reg. No. : .....

Name : .....

Third Semester B.A./B.Sc. Degree Examination, October 2019

First Degree Programme Under CBCSS

Hindi Language

Language Course — (Additional Language III)

HN 1311.1 – POETRY AND GRAMMAR

(2017 Admission Onwards)

St. Xavier's College

Time : 3 Hours

Max. Marks : 80

I. एक या दो वाक्यों में उत्तर लिखिए। 1 से 10 के सभी प्रश्नों के उत्तर अनिवार्य है।

1. हिन्दी में निर्गुण भक्तिधारा के प्रवर्तक के रूप में किसे मानते हैं?
2. तुलसी दास के सर्वश्रेष्ट रचना का नाम लिखिए।
3. अज्ञेय का पूरा नाम क्या है?
4. 'मुरझाया फूल' किसकी रचना है?
5. यशोधरा के अनुसार सिद्धार्थ क्यों उसे छोड़कर चले गए थे?
6. कवयित्रि के अनुसार स्त्रियों को कैसे पढ़ा गया है?
7. कवि क्यों लगातार सुख या दुख नहीं चाहता है?
8. विशेषण किसे कहते है?
9. वचन किसे कहते है? हिन्दी के कितने वचन है?
10. वर्ण कितने प्रकार के होते हैं?

(10 × 1 = 10 Marks)

P.T.O.

II. किन्हीं **आठ** प्रश्नों के उत्तर दो या तीनस वाक्यों में लिखिए।

11. कवि "मछली" के आँखों में क्या देखता है?

12. जाति की निस्सारता के बारे में कबीरदास क्या कहते है?

13. कवि ने हारिल पक्षी की तुलना किससे की है और क्यों?

14. तुलसीदास के अनुसार मुखिया किस तरह होना चाहिए? क्यों?

15. निराला ने भिक्षुक का वर्णन कैसे किया?

16. कवयित्रि मुरझाए फूल को क्यों 'दानी सुमन' कहती है?

17. यशोदा क्या कहकर कृष्ण को दूध पिलाती है?

18. कबीर क्यों पहले गुरु का चरण स्पर्श करना चाहता है?

19. संज्ञा किसे कहते है? उसके कितने भेद है?

20. क्रिया धातु किसे कहते है?

21. भाव वाचक संज्ञा रूप लिखिए – चुराना, मीठा, उदार, लिखना

22. अधिकरण कारक और करण कारक के लक्षण लिखिए। **(8 × 2 = 16 Marks)**

III. किन्हीं **छः** प्रश्नों के उत्तर लिखिए।

23. क्रिया की परिभाषा देकर उसके भेदों को सोदाहरण समझाइए।

24. कारक किसे कहते है? उसके कितने भेद है?

25. "मछली" कविता का सारांश लिखिए।

26. 'सखी, वे मुझसे कहकर जाते' में अभिव्यक्त यशोधरा की मनोव्यथा का वर्णन कीजिए।

27. 'मैया कबही बढ़ेगी चोटी' पद के आधार पर नटखट कृष्ण एवं यशोधरा के वात्सल्य का वर्णन कीजिए।

28. 'उड़ चल हारिल' कविता की विषय वस्तु समझाइए।

St. Xavier's College

29. बुरा जो देखन मैं चला, बुरा न मिल्या कोय जो दिल खोणा आपना, मुझ से बुरा न कोय।

30. 'उड चल हारिल' कविता की विशेषता क्या है?

31. "मुरझाया फूल" कविता में व्यक्त भाव को समझाइए।

(6 × 4 = 24 Marks)

IV. किन्हीं **दो** प्रश्नों के उत्तर लिखिए।

32. दस साल बाद अपने गाँव में लौट आए बैरागी ने गाँव में क्या-क्या स्थितियाँ उत्पन्न हुई।

33. सुख-दुख कविता में व्यक्त दार्शनिक चिंता को व्यक्त कीजिए।

34. "महादेवी वर्मा ने 'मुरझाया फूल' कविता में जीवन की क्षणभंगुरता का वर्णन किया है"। इस पर विचार कीजिए।

35. सर्वनाम की परिभाषा देकर उसके भेदों को सोदाहरण समझाइए।

(2 × 15 = 30 Marks)

St. Xavier's College

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Reg. No. : .....

Name : .....

Third Semester B.A. Degree Examination, October 2019

First Degree Programme under CBCSS

History

Foundation Course II

HY 1321 : INFORMATICS

(2013 Admission Onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

PART – A

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

1. Wi Fi
2. Blu-Ray
3. LAN
4. Computer language
5. ALU
6. Email
7. JSTOR
8. Plagiarism
9. Cyber addiction
10. SPSS

(10 × 1 = 10 Marks)

P.T.O.

PART – B

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

11. World Wide Web.
12. ARPANET.
13. Data and Information.
14. Subject Directory.
15. Digital Divide.
16. NICNET.
17. Copyright.
18. Cyber crime.
19. Cookies.
20. Green computing.
21. Social cybernetics.
22. Data analysis software.

(8 × 2 = 16 Marks)

St. Xavier's College

PART – C

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

23. Discuss the salient features of modern computers.
24. Explain how the various Internet tools help in creating cyber presence.
25. Examine the major services of information networks.

26. Enumerate the role of IT in teaching-learning process.

27. Write a note on open access publishing models.

28. What are the challenges faced in a digital society?

29. What is cyber security? Analyse the various cyber security measures.

30. Point out the basic issue of e-waste.

31. Explain briefly the steps for preparing graphs and diagrams using Excel and SPSS.

(6 × 4 = 24 Marks)

PART – D

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

32. What is a computer network? Discuss the various types and components of a network.

33. What is an operating system? Explain its functions.

34. Analyse the importance of Internet as a knowledge repository.

35. What is SPSS? Bring out its features and benefits.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3)

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Reg. No. : .....

Name : .....

Third Semester B.A. Degree Examination, October 2019

First Degree Programme under CBCSS

History

Core Course III

HY 1341 : EVOLUTION OF EARLY INDIAN SOCIETY AND CULTURE

(2013 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

PART – A

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

1. Maaski
2. Lothal
3. Saranath
4. Rajasuya
5. Allahabad Prasasti
6. *Marutham*
7. *Indica*
8. Menhris
9. *Seethadhyaksha*
10. *Charakasamhita.*

(10 × 1 = 10 Marks)

P.T.O.

St Xavier's College

PART – B

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

11. Allchins
12. Brahmagiri excavation
13. Surcotada
14. Great bath
15. *Gana*
16. *Chathurvarnya*
17. Sravanabalagola
18. Saptanga theory of state
19. Junagar inscription
20. Shankaracharya
21. *Madhurai kanji*
22. *Thirukkural.*

(8 × 2 = 16 Marks)

St. Xavier's College

PART – C

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

23. Write a short note on the pre historic cave paintings in India with special references to Bimbedka in Madhya Pradesh.
24. Write a note on the salient features of Neolithic cultures in South India.
25. Elucidate the second urbanization in gangetic valley.
26. Write a note on the emergence of varna and jathis in ancient India.

27. Explain about Harappan religion.

28. Write a note on Mauryan administration.

29. Write a note on the development of literature during Gupta period.

30. Write a note on the development of Bakti movements in South India.

31. Write a note on the features of Sangam policy and society.

(6 × 4 = 24 Marks)

PART – D

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

32. Write an essay on the reasons for the decline of Harappan civilization.

33. Write an essay on the features of PGW and NBPW cultures.

34. Write a note on the Gupta contribution to literature and art.

35. "Early Tamil societies have a brisk trading contact with Greek and Rome" – Describe with literary and archaeological sources.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) H – 1439

Reg. No. : .....

Name : .....

Third Semester B.A. Degree Examination, October 2019

First Degree Programme under CBCSS

Economics

Foundation Course II

EC 1321 : INFORMATICS

(2015 Admission Onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. Plagiarism
2. CPU
3. Laptop
4. Mouse
5. WAN
6. Spread sheets
7. Hard disk
8. Motherboard
9. RAM
10. Laser printer.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

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

11. Explain system software.
12. Software piracy.
13. What do you mean by UPS?
14. Explain LINUX operating system.
15. What is computer hacking?
16. Define virtual memory.
17. What do you mean by computer virus?
18. Write a short note on LAN.
19. Briefly explain the major search engines.
20. Point out the major functions of a work book.
21. What is educational software and what are its different types?
22. What do you mean by Phishing?

(8 × 2 = 16 Marks)

SECTION – C

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

23. What are the main objectives of INFLIBNET?
24. What are the statistical functions of Excel?
25. Write a note on e-waste.
26. How can we export and import data from Excel?
27. Point out the various remedies for computer hacking.

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28. Give a short note on the social and ethical issues of information technology.

29. What are virtual classrooms?

30. Explain NICNET.

31. What do you mean by the graphical representation of the data?

(6 × 4 = 24 Marks)

SECTION – D

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

32. What is ergonomics? What are the health issues related with the use of computers?

33. Explain briefly the concept of digital divide and point out its various types.

34. What is e-commerce and what are its benefits?

35. Write an essay on the different parts of a computer.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) H – 1440

Reg. No. : .....

Name : .....

Third Semester B.A. Degree Examination, October 2019

First Degree Programme under CBCSS

Economics

Core Course III

EC 1341 : MICRO ECONOMICS — II

(2015 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – I

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

1. Normal profit
2. Excess capacity
3. Monopoly
4. Price discrimination
5. Economic efficiency
6. Welfare economics
7. Risk
8. Feasible region

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P.T.O.

9. Real wage

10. Marginal cost.

(10 × 1 = 10 Marks)

SECTION – II

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

11. What do you mean by Quasi rent?

12. Explain collective bargaining.

13. Explain the concept of objective function in linear programming.

14. Explain the concept of expected utility.

15. Distinguish between net profit and gross profit.

16. Explain kinked demand curve.

17. Explain Bentham's criterion.

18. What do you mean by subsistence wage?

19. Explain the logic behind the backward bending supply curve of labour.

20. What is Pareto optimality?

21. Explain Cardinalist criterion of social welfare.

22. Explain the liquidity preference theory of interest.

(8 × 2 = 16 Marks)

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SECTION – III

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

23. Explain the Risk theory of profit.

24. Explain Kaldor-Hicks compensation principle.

25. Explain dynamic theory of profit.

26. Explain Scitovsky paradox.

27. Describe classical theory of interest.

28. State and explain the conditions of Pareto optimality.

29. Explain the features of Monopolistic competition.

30. Examine the features of Oligopoly market.

31. Examine Marginal productivity theory of distribution.

(6 × 4 = 24 Marks)

SECTION – IV

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

32. Explain the linear programming technique to solve the problem of constrained optimization.

33. Analyze the equilibrium condition of a firm under perfect competition in the short and long run.

34. Critically discuss Modern theory of rent.

35. Discuss Neuman-Morgenstern theory of expected utility.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) H – 1453

Reg. No. : .....

Name : .....

Third Semester B.A. Degree Examination, October 2019

First Degree Programme under CBCSS

Complementary Course

PL 1332 : ECO PHILOSOPHY

(2017 Admission Onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

PART – A (Very short notes)

Answer **all** questions in one or two sentences.

Each question carries 1 mark.

1. Medha Padkar
2. Bio-diversity
3. Land pyramid
4. Teleos
5. Holism.
6. Atman centric view
7. Respect for Nature

P.T.O.

8. Biotic right

9. Arne Narss

10. Ecologism.

(10 × 1 = 10 Marks)

PART – B (Short Answer Questions)

Answer any **eight** questions.

Each question carries 2 marks.

11. What is symbiosis?

12. Define Eco-centricism.

13. State the basic principle of biocentric ethics.

14. What is dark green ecology?

15. Define ecosophy.

16. What is environmentalism?

17. Define the concept of Vasudaiva Kudumpakam.

18. Define holism in ecological movement.

19. What is ecological niche?

20. Define technocrazy.

21. Explain Eco-feminism.

22. Write a note on land ethics.

(8 × 2 = 16 Marks)

St. Xavier's College

PART – C

Answer any **six** questions in about 120 words each.

Each question carries 4 marks.

23. Examine the problem of patriarchy and matriarchy.

24. Give a brief account of 'Jungle ethics'.

25. Distinguish the nature of deep ecology and shallow ecology.

26. Discuss the environmental ethics of biotic rights.

27. Examine the basic assumptions of biocentricism.

28. Explain anthropocentricism.

29. Briefly explain the purpose of ecological studies in Indian context.

30. Explain Warwick's Fox's view on ecosophy.

31. Examine the philosophical outlook of the book, silent spring.

(6 × 4 = 24 Marks)

PART – D

Answer any **two** questions in about 600 words each.

Each question carries 15 marks.

32. Elucidate Arne Narss's view on popular, formal and philosophical sense of deep ecology.

33. Examine the general feature of environmentalism.

34. What is sustainable development? Discuss.

35. Briefly examine the scope and relevance of environmental philosophy.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) H – 1456

Reg. No. : .....

Name : .....

Third Semester B.A. Degree Examination, October 2019

First Degree Programme under CBCSS

Complementary Course

PS 1331 — PUBLIC ADMINISTRATION

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

(2017 Admission Onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

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

1. Private administration
2. Decentralisation
3. Woodrow Wilson
4. Civil service
5. Delegation
6. Budget
7. Formal training
8. Personnel administration

9. Public relations

10. Panchayati Raj.

(10 × 1 = 10 Marks)

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

11. What is hierarchy?

12. Discuss the features of span of control.

13. Write a note on Public Administration.

14. Independent Regulatory Commission.

15. Line and staff agencies.

16. Co-ordination.

17. Union Public Service Commission.

18. Auditing.

19. Performance Appraisal.

20. Define principles of organization.

21. Explain direct recruitment.

22. Discuss good governance.

(8 × 2 = 16 Marks)

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

23. What is New Public Administration?

24. Write a note on growth of public administration.

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25. Discuss about politics-administration dichotomy.

26. Discuss the powers and functions of the Chief Executive.

27. Explain the role of public corporation in welfare state.

28. Define Bureaucracy. Discuss its features.

29. Define recruitment and explain the different types of recruitment.

30. Write a note on departments.

31. Write a note on Unity of Command.

(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. Discuss development administration. Explain the role of District Collector.

34. Write an essay on training.

35. Discuss financial administration and the budgetary process with reference to India.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) H-1480

Reg. No. : .....

Name : .....

Third Semester B.Sc Degree Examination, October 2019

First Degree Programme under CBCSS

Complementary Course for Physics

CH 1331.1 – PHYSICAL AND INORGANIC CHEMISTRY

(2013 -2016 Admissions)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION– A

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

1. Define most probable velocity of a gas.
2. What is meant by Boyle temperature of gas?
3. Define plane of symmetry.
4. What are miller indices?
5. How Kc is related to Kp?
6. Give an example for a Lewis acid.
7. Write the conjugate base of HNO_3.
8. Give an example for a basic buffer.

P.T.O.

9. What is slag?

10. What are nano particles?

(10 × 1 = 10 Marks)

SECTION – B

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

11. Distinguish between free path and mean free path.

12. Write the van der Waals Virial equation of state.

13. List the elements of symmetry for a perfect cube.

14. Give a sketch of (200) planes of a BCC lattice.

15. How are potassium and chloride ions arranged in KCl crystal?

16. For the dissociation of water $H_2O(g) \rightleftharpoons H_2(g)+1/2\ O_2(g)$ at 1400°C, the value of Kp in atm is 1.87×10^{-6}. Assuming ideal behaviour of gases, calculate the corresponding value of Kc with concentration in moles/litre.

17. Explain Arrhenius theory of acid and bases.

18. Give the Henderson's equation for an acidic buffer.

19. Why an aqueous solution of $FeCl_3$ is acidic?

20. Name two ores of Thorium and Cobalt.

21. What is Van- Arkel method?

22. Expand SEM and STM.

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION – C

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

23. What is collision frequency? What is the effect of temperature and pressure on it?

24. Derive the Bragg equation.

25. State and explain Le Chatelier's principle using the reaction $N_2 + 3H_2 \rightleftharpoons 2NH_3$.

26. Obtain a relation between the degree of hydrolysis of a salt of a strong acid and a weak base and its hydrolysis constant.

27. Explain zone refining of metals.

28. Differentiate between calcinations and roasting.

29. Explain the structure of NaCl.

30. Give a brief account of optical and magnetic properties of nano particles.

31. Nano systems are found in nature : Explain with suitable example.

(6 × 4 = 24 Marks)

SECTION – D

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

32. Discuss in detail Maxwell's distribution of molecular velocities. Illustrate the effect of temperature on this distribution.

33. What are liquid crystals? How are they classified? Explain the structural features of each class. Mention any two applications of it.

34. Give the extractive metallurgy of Uranium.

35. Differentiate between top-down and bottom up approach in the synthesis of nano particles. Explain any two methods for the synthesis off nano particles.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) H – 1533

Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

First Degree Programme under CBCSS

Complementary Course for Physics

CH 1331.1 – PHYSICAL CHEMISTRY II

(2017 Admission onwards)

Time : 3 Hours Max. Marks : 80

St. Xavier's College

SECTION – A

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

1. The expression for rms velocity is _____
2. State the law of corresponding states.
3. Sketch the unit cell of bcc crystal.
4. CsCl has a bcc structure. How many Cs^+ and Cl^- ions are there in the unit cell?
5. State Beer Lambert's law.
6. State Einstein's law of photochemical equivalence.
7. Write an example for photosensitisation.
8. Give an example for a reference electrode.
9. What is the point group of NH_3?
10. Give an example for a second order reaction.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

(Answer any **eight** questions. **Each** question carries **2** mark)

11. Define mean free path.

12. What is inversion temperature? Write an expression to find out inversion temperature.

13. What is a Bravais lattice.

14. At room temperature, sodium crystallises in a body centered cubic cell with a = 4.24 A°. Calculate the theoretical density of Sodium. Molar mass of sodium = 23.0 g mol^{-1}.

15. Define fluorescence.

16. Give the mathematic representation of Beer Lamberts law and write any one limitation of the law.

17. Define half-life of a reaction. Give expression to find out half-life of a first order reaction.

18. Write Arrhenius equation and explain the terms.

19. Illustrate the symmetry element proper axis of symmetry with an example.

20. Write an example for a molecule having C_{3V} point group and list the symmetry elements in C_{3V} point group.

21. Define standard electrode potential.

22. Write any two advantages of potentiometric titrations.

(8 × 2 = 16 Marks)

SECTION – C

(Answer any **six** questions. **Each** question carries **4** mark)

23. Briefly describe joule Thomson effect.

24. Discuss homogenous and heterogenous catalysis.

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25. Define rate of a chemical reaction and explain the factors affecting rate of reaction.

26. Discuss Michaelis Menten mechanism of enzyme catalysed reaction.

27. Explain the conductometric titrations of weak acid against strong base.

28. Write note on calomel electrode.

29. Write a note on the general characteristics of catalysis.

30. Explain the seven crystal systems.

31. Construct the group multiplication table of C_{2V} point group to which H_2O belongs.

(6 × 4 = 24 Marks)

SECTION – D

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

32. (a) Derive Braggs equation.

    (b) Write a detailed account of the structure of NaCl.

33. (a) Discuss the collision theory of reaction rates.

    (b) Explain are the differences between order and molecularity.

34. Define transport number and Describe the moving boundary method for determining the transport number.

35. (a) Define catalysis and discuss briefly the intermediate compound formation theory of catalysis.

    (b) Describe a method for the liquefaction of gases.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) H-1566

Reg. No. : .....

Name : .....

Third Semester B.Com Degree Examination, October 2019

First Degree Programme under CBCSS

Complementary Course: Co 1331/CX 1331

INFORMATION TECHNOLOGY IN BUSINESS

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

(2014 to 2017 Admission)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. What is RAM?
2. What is systems software?
3. What is a star Network?
4. What do mean by internet?
5. What is web protocol?
6. Who is a Domain Name?
7. What is networking?

P.T.O.

8. What is www?

9. What is EFT?

10. What is Linux?

(10 × 1 = 10 Marks)

SECTION – B

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

11. What is Application software?

12. What are the types of Networking?

13. What is a search engine?

14. What is an IP address?

15. What is HTTP?

16. What is telnet?

17. Explain Intranet.

18. What are the advantages on using e-banking?

19. What is smart card?

20. What is system software?

21. What is e-governance?

22. What is G2C e-Governance?

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION- C

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

23. Explain the functions of an operating system.

24. Distinguish between LAN and WAN.

25. Why e-mail is important?

26. What is FTP?

27. 'Firewall acts as a gatekeeper' comment.

28. What is National Electronic Funds Transfer?

29. Explain e-business

30. Explain the types of software.

31. Explain the benefits of e-Governance.

(6 × 4 = 24 Marks)

SECTION – D

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

32. Discuss the evolution of modern computers.

33. Explain digital payment systems.

34. Explain the advantages of internet.

35. Enumerate the features of E-Governance in India.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) H – 1567

Reg. No. : .....

Name : .....

Third Semester B.Com. Degree Examination, October 2019

First Degree Programme under CBCSS

Core Course : CO 1341/CC 1342

ENTREPRENEURSHIP DEVELOPMENT

(Common for Commerce/Commerce with Computer Application)

(2014 – 2017 Admission)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. Who is a Fabian entrepreneur?
2. What is Bounty?
3. Expand TRYSEM.
4. Define Industrial Estate.
5. What are the sources of Project ideas?
6. What is STEP?
7. Name the schemes available to help women entrepreneurs.
8. What are Ancillary units?
9. Define Entrepreneurship.
10. What is Plant Capacity?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

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

11. What is the objective of Seed Capital Assistance?

12. What are the benefits of a good factory design?

13. Who are Ultrapreneurs?

14. State two Objectives of NIESBUD.

15. What do you mean by Feasibility Analysis?

16. What is Tax Holiday?

17. Classify entrepreneurs on the basis of motivation.

18. What is Bridge Capital?

19. What is SWOT Analysis?

20. What is Brainstorming?

21. What are the different types of risks involved in Entrepreneurship?

22. What is Single Window Scheme?

(8 × 2 = 16 Marks)

SECTION – C

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

23. Explain the need for Project Management.

24. Explain the functions of Kerala Financial Corporation.

25. Explain the need for Incentives and Subsidies.

St. Xavier's College

26. What are the characteristics of a Project?

27. What are qualities required for a successful entrepreneur?

28. Explain the difference between Entrepreneur and Manager.

29. State the functions of TCOs.

30. Explain the functions performed by DIC s in the development of industries of a district.

31. Explain the elements of Project Formulation.

(6 × 4 = 24 Marks)

SECTION – D

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

32. Explain the factors affecting entrepreneurial growth.

33. Define Project Report. Explain the contents of a project report.

34. Explain briefly the procedure of setting up of a small scale industrial unit.

35. "The greatest problem of women entrepreneurs is that they are women" Discuss .

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) H-1568

Reg. No. : .....

Name : .....

Third Semester B.Com Degree Examination, October 2019

First Degree Programme under CBCSS

Core Course

COMPANY ADMINISTRATION

(Common for CO 1342/CC 1343 (2014 to 2017 Admission)/

CO 1343/CC 1344 (2018 Admission))

St Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. Define one man company.
2. What is Memorandum of Association?
3. What is mean by quorum?
4. What is mean by resolution?
5. Describe DIN?
6. What is mean by related party disclosure?
7. What is CSR?

P.T.O.

8. Describe voluntary winding up?

9. What is resolution by circulation?

10. Describe small company.

(10 × 1 = 10 Marks)

SECTION – B

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

11. Compare private and public company.

12. What is mean by Table A?

13. Define Articles of Assciation.

14. What is mean by special resolution?

15. Describe the meaning of Annual returns.

16. Who are interested Directors?

17. Who are key managerial personnel?

18. What is the significance of agenda?

19. What is mean by winding up by liquidation?

20. Explain role of promoters in a company.

21. When statutory meeting arranged?

22. What is the relevance of audit committee?

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION – C

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

23. What is the relevance of doctrine of constructive notice?

24. What is mean by associate company?

25. What is mean by lifting up of corporate veil?

26. What are the special privileges of private company?

27. Differentiate private and public company.

28. Describe formation of company.

29. What are the duties and obligations of promoter of a company?

30. " object clause is essential" comment?

31. Differentiate Memorandum of Association and Articles of Association.

(6 × 4 = 24 Marks)

SECTION – D

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

32. Explain features of companies.

33. What are the various clauses in Memorandum of Association?

34. Explain in detail different types of winding up?

35. What is mean by Articles of Association? Explain the contents.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) H – 1573

Reg. No. : .....

Name : .....

Third Semester B.Com. Degree Examination, October 2019

First Degree Programme Under CBCSS

Complementary Course III

E - BUSINESS

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

(2018 Admn.)

Time : 3 Hours **Max. Marks : 80**

SECTION – A

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

1. Write a short note on e-tailing.
2. List out the names of three e-payment method.
3. Differentiate E-commerce and E-business.
4. Define WWW.
5. Define an e-citizen.
6. Write a note on Electronic fund transfer.
7. Name two popular internet browser.
8. What do you mean by digital delivery of products?

P.T.O.

St Xavier's College

9. Write the name of any two e-commerce sites in India.

10. Write a short note on Internet marketing.

(10 × 1 = 10 Marks)

SECTION – B

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

11. Explain the term 'e-marketing'.

12. What is e-learning?

13. Describe the term B2B.

14. Explain the uses of ICT.

15. List out any two possible drawbacks of E-Commerce.

16. What role does SCM play in Business to Business model e-commerce?

17. Write a short note on e-governance.

18. What are the features of E-commerce?

19. Explain the advantages to society because of e-commerce?

20. Explain e-auction.

21. How is email useful for e-commerce?

22. What is Electronic Filing?

(8 × 2 = 16 Marks)

SECTION – C

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

23. What are the advantages of E-commerce?

24. What are the different types of E-market place?

St. Xavier's College

25. "CRM helps to improve the business relationship with customers". Comment.

26. Write about different advertisement strategies online.

27. Discuss in detail about the security issues connected to electronic cash transferred over internet?

28. Compare and contrast the traditional business and e business in a book business

29. Explain different steps in creating an ecommerce web site.

30. Write in detail how tourism industry can gain advantage using ecommerce websites?

31. Write note on the any of the successful Kerala e-governance initiative.

(6 × 4 = 24 Marks)

SECTION – D

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

32. What is ERP? Explain and illustrate the advantages of ERP system with the help of an example.

33. What are the major e-business models?

34. Explain any four applications of e-commerce in detail.

35. What do you mean by E-governance? Explain various types of E governance Model.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) H – 1598

Reg. No. : .....

Name : .....

Third Semester B.A. Degree Examination, October 2019

Career Related First Degree Programme under CBCSS

Malayalam and Mass Communication

Complementary Course III

MX 1331 : വിവർത്തനതാരതമ്യപഠനം

(2014-2017 Admissions)

Time : 3 Hours Max. Marks : 80

I. ഒരു വാക്കിലോ പരമാവധി ഒരു വാക്യത്തിലോ ഉത്തരമെഴുതുക.

1. ശാസ്ത്ര-സാങ്കേതിക വിഷയങ്ങൾ വിവർത്തനം ചെയ്യുമ്പോൾ ആദ്യപരിഗണന ഏതിനാണ്?

2. ഭാഷയ്ക്ക് ജീവനും തനിമയും നല്കുന്നത് എന്തെല്ലാം?

3. ശാസ്ത്രഗ്രന്ഥങ്ങൾ വിവർത്തനം ചെയ്യുമ്പോൾ വിവർത്തകൻ ആദ്യം ചെയ്യേണ്ടത്?

4. മലയാളത്തിൽ പ്രചാരമുള്ള ഒട്ടുമിക്ക ശൈലികളും ഏതുതരം ഭാഷയിലാണ് പ്രചരിച്ചിട്ടുള്ളത്?

5. 'അച്ചടക്ക നടപടി' എന്നതിന്റെ ഇംഗ്ലീഷ് പരിഭാഷ.

6. 'ചെകുത്താനും കടലിനുമിടയിൽ' - ഇംഗ്ലീഷിൽ വിവർത്തനം ചെയ്യുക.

7. 'ജലം സംരക്ഷിക്കൂ, ജീവൻ സംരക്ഷിക്കൂ' - വിവർത്തനം ചെയ്യുക.

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8. സാഹിത്യവിവർത്തനം കേവലപരിഭാഷയ്ക്കപ്പുറം എന്തു കൂടിയാണ്?

9. 'നിലാവിന്റെ നാട്ടിൽ' - ഇംഗ്ലീഷിലേക്ക് തർജ്ജമ ചെയ്യുക.

10. 'Wings of Fire' -മലയാളത്തിലേക്കു തർജ്ജമ ചെയ്യുക.

(10 × 1 = 10 Marks)

II. **ഒരു** ഖണ്ഡികയിൽ കവിയാതെ ഏതെങ്കിലും **എട്ടു** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

11. സാഹിത്യേതര വിഷയങ്ങൾ വിവർത്തനം ചെയ്യുമ്പോൾ മുഖ്യമായും ശ്രദ്ധിക്കേണ്ടത് എന്തെല്ലാം?

12. ശാസ്ത്രസാങ്കേതിക പദങ്ങളുടെ പരിഭാഷയുടെ മുഖ്യ ഉപകരണങ്ങൾ (Tools) ഏതെല്ലാം?

13. പത്രറിപ്പോർട്ടുകളുടെ വിവർത്തനശൈലി ഇതരഭാഷകളിൽനിന്ന് വേറിട്ടു നില്ക്കുന്നതെങ്ങനെ?

14. പരസ്യഭാഷയുടെ പ്രത്യേകതകൾ എന്ത്?

15. പഴഞ്ചൊല്ലുകൾ വിവർത്തനം ചെയ്യുമ്പോൾ ശ്രദ്ധിക്കേണ്ട സംഗതികൾ ഏവ?

16. ഇംഗ്ലീഷിൽ നിന്ന് മലയാളത്തിലേക്ക് വിവർത്തനം ചെയ്യുമ്പോൾ എടുക്കേണ്ട മുൻകരുതലുകൾ ഏതെല്ലാം?

17. ഭരണഭാഷാവിവർത്തനത്തിൽ നേരിടുന്ന പ്രശ്നങ്ങൾ ഏവ?

18. സാഹിത്യകൃതികളുടെ പരിഭാഷ നിർവ്വഹിക്കേണ്ടതെങ്ങനെ?

19. ജീവചരിത്രം, ആത്മകഥ എന്നിവ പരിഭാഷപ്പെടുത്തുമ്പോൾ ശ്രദ്ധിക്കേണ്ട സംഗതികൾ എന്തെല്ലാം?

20. ചെറുകഥയുടെ വിവർത്തനത്തിൽ പാലിക്കേണ്ട ഘടകങ്ങൾ ഏവ?

21. നോവൽ പരിഭാഷയ്ക്ക് എത്രമാത്രം ഇണങ്ങുന്നുണ്ട്?

22. യാത്രാനുഭവങ്ങൾ വിവർത്തനവിധേയമാക്കുമ്പോഴുള്ള പ്രശ്നങ്ങൾ എന്തെല്ലാം?

(8 × 2 = 16 Marks)

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III. **120** വാക്കിൽ കവിയാതെ ഏതെങ്കിലും **ആറു** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

23. വിവർത്തനത്തിൽ പ്രമേയപരമായ താരതമ്യത്തിന് എത്രത്തോളം പ്രസക്തിയുണ്ട്?

24. 'ശൈലികളും പഴഞ്ചൊല്ലുകളും' - വിവർത്തന സാധ്യതകൾ ആരായുക?

25. മാധ്യമവിവർത്തനം സാഹിത്യവിവർത്തനത്തിൽ നിന്നും വ്യത്യസ്തമാകുന്നതെങ്ങനെയെല്ലാം?

26. Cosmology, Transliteration എന്നീ പദങ്ങളുടെ വിവർത്തനവ്യാപ്തി വിലയിരുത്തുക.

27. പരസ്യങ്ങളും വാർത്തകളും പുലർത്തേണ്ട വാക്യഘടന എന്ത്?

28. മലയാളത്തിലേക്കു വിവർത്തനം ചെയ്യുക
'Today's children tomorrow's citizens. The Future of nation depends on them'.

29. തകഴിയുടെ കയർ വിവർത്തനം ചെയ്യുമ്പോൾ നേരിടുന്ന പ്രശ്നങ്ങൾ എന്തെല്ലാം?

30. മലയാളത്തിലെ വിവർത്തന ചരിത്രത്തിൽ കേരളഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ടിന്റെ സംഭാവന വിലയിരുത്തുക.

31. 'എൻജിനീയറിങ്' വിഷയങ്ങൾ പരിഭാഷപ്പെടുത്തുമ്പോൾ എടുക്കേണ്ട മുൻകരുതലുകൾ ഏവ?

(6 × 4 = 24 Marks)

IV. **മൂന്നു** പുറത്തിൽ കവിയാതെ ഏതെങ്കിലും **രണ്ടു** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

32. വിവർത്തനത്തിൽ പ്രായോഗിക പരിശീലനത്തിന്റെ പ്രസക്തി എന്ത്?

33. ഭരണഭാഷാപദങ്ങളുടെ മലയാള പരിഭാഷ എത്രമാത്രം പ്രായോഗികമാണെന്ന് പരിശോധിക്കുക.

34. സാഹിത്യവിവർത്തനത്തിൽ വ്യത്യസ്തശൈലികൾ എത്രത്തോളം സ്വാധീനം ചെലുത്തുന്നുണ്ട്.

35. 'ചെമ്മീൻ' പരിഭാഷ തകഴിയുടെ ഭാഷയുമായി നീതിപുലർത്തുന്നുണ്ടോ? വിലയിരുത്തുക.

(2 × 15 = 30 Marks)

St. Xavier's College

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Reg. No. : .....

Name : .....

Third Semester B.A. Degree Examination, October 2019

Career Related First Degree Programme under CBCSS

Group 2 (a)

Malayalam and Mass Communication

Vocational Course III

MX 1371 : REPORTING

(2014 Admission onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

I. Answer the following in **1** or **2** words in **1** or **2** sentences :

1. Byline
2. Stringer
3. Scoop
4. Roundup
5. PTI
6. Press release
7. Deadline

P.T.O.

8. Freak lead

9. Exclusive

10. Intro

(10 × 1 = 10 Marks)

II. Answer any **eight** questions, each in about **60** words :

11. Soft news

12. Freelancer

13. The nut graph

14. Advertorial

15. On the record

16. Reuters

17. News bureau

18. Investigative journalism

19. Proximity

20. Press conference

21. Press Council of India

22. Sports reporter

(8 × 2 = 16 Marks)

III. Answer any **six** questions, each in about **120** words :

23. Paid news

24. Newsworthiness

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25. Inverted pyramid

26. Source

27. Human interest story

28. Personality interview

29. Beat

30. Editorial

31. News agency.

(6 × 4 = 24 Marks)

IV. Write long essays on any **two** of the following :

32. Discuss in detail the qualities, duties and responsibilities of a reporter.

33. You are assigned to look after politics in a newspaper. Discuss the various sources from where you will get information for doing stories? Explain ways to ensure objectivity while sourcing news.

34. How do you analyze the coverage of Kerala floods, the disaster that hit the State in August 2018, by print media? Compare reports in national and vernacular newspapers.

35. Discuss the structure of news and explain in detail different types of lead with examples.

(2 × 15 = 30 Marks)

St. Xavier's College

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Reg. No. : .....

Name : .....

Third Semester B.A. Degree Examination, October 2019

Career Related First Degree Programme Under CBCSS

Group 2(a)

Malayalam and Mass Communication

Vocational Course IV

MX 1372 : EDITING

(2014 Admission onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

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

1. Line editing
2. News Desk
3. Style Book
4. Cutline
5. Infographics
6. Word Processing Software
7. Master Page
8. Errors and Correction
9. Column
10. Op-Ed Page.

(10 × 1 = 10 Marks)

P.T.O.

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

11. Define the functions of the News Desk.

12. Explicate the News Values for an event to become news.

13. What does editing do for a copy?

14. Distinguish copy editing and general editing.

15. Express the functions of the Line editing method.

16. Mention any five editing marks used while editing an illustrated work.

17. What is dogwatch? Why is it named so?

18. Who is Ombudsman? Discuss his role.

19. What are headlines? How many types of them have you studied? List few of them.

20. What are the various elements of design for a newspaper?

21. A new concept of readers editor is coming up. What do you think are its advantages?

22. What are Columns? How many types of them have you studied?

(8 × 2 = 16 Marks)

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

23. How do the editors decide the newsworthiness of a story?

24. Explain the importance of gate keeping.

25. What is inverted pyramid style of writing news?

26. Explain the importance of news agencies.

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27. Write a note of the importance of revision and re-writing the news story copy.

28. Discuss the significance of a headline for a news story.

29. Explain the role of dummy in the newspaper layout.

30. What is feature story? Explain different types of feature stories.

31. "The editorial page is an opinion page". Whose opinions are carried on this page? What purpose do they serve?

(6 × 4 = 24 Marks)

IV. Write **long essays**, each not exceeding **500** words, on any two of the following:-

32. Briefly explain the role of a sub-editor in a newsroom?

33. Explain whether or not the inverted pyramid is still relevant in this age and era.

34. As a news editor, how will you make sure the highest regard for decorum, propriety and good taste in your newspaper?

35. Write your observations regarding the use of typography, layout and design in the newspaper you follow regularly.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) H – 1613

Reg. No. : .....

Name : .....

Third Semester B.A. Degree Examination, October 2019

Career Related First Degree Programme under CBCSS

Malayalam and Mass Communication

Foundation Course II (Informatics)

MX 1321 : ആധുനിക സാങ്കേതികവിദ്യയും മലയാളഭാഷാപഠനവും

(2018 Admission)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

I. ഒരു വാക്കിലോ പരമാവധി ഒരു വാക്യത്തിലോ ഉത്തരമെഴുതുക.

1. മലയാളലിപി പ്രത്യക്ഷപ്പെടുന്ന ആദ്യഗ്രന്ഥം.

2. കേരളത്തിൽ അച്ചടിച്ച ആദ്യമലയാള പുസ്തകം.

3. അച്ചടിയുടെ പിതാവായി അറിയപ്പെടുന്നത്?

4. 'ഇന്റർനെറ്റ്' എന്നാലെന്ത്?

5. എന്താണ് പാസ്‌വേർഡ്?

6. പോസ്റ്റ് ചെയ്യുക എന്നാൽ.

7. വിക്കിപീഡിയ എന്നാലെന്ത്?

P.T.O.

8. 'ലിനക്സ്' എന്താണ്?

9. ട്വിറ്ററിലൂടെ അയയ്ക്കുന്ന സന്ദേശത്തെ എന്തു പറയും?

10. Transliteration എന്നാൽ.

(10 × 1 = 10 Marks)

II. **ഒരു** ഖണ്ഡികയിൽ കവിയാതെ ഏതെങ്കിലും **എട്ടു** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

11. ഇന്റർനെറ്റിന്റെ മുദ്രാവാക്യമെന്ത്? എന്നാരംഭിച്ചതാണ്?

12. ബ്ലോഗ് എന്നാലെന്ത്?

13. ENIAC - എന്താണ്?

14. എൻകോഡിംഗ് എന്നാലെന്ത്?

15. യൂണികോഡ് എന്തെന്ന് വിശദീകരിക്കുക.

16. 'വിക്കിപീഡിയ'യുടെ ചരിത്രവും പ്രാധാന്യവും വിശദമാക്കുക.

17. ഇന്റർനെറ്റ് വഴി വാർത്താവെബ്സൈറ്റ് ആരംഭിച്ച ആദ്യമലയാള പത്രങ്ങളുടെ വിവരണം തയ്യാറാക്കുക.

18. എന്താണ് തിരമൊഴി? തിരമൊഴിയുടെ പ്രത്യേകതകൾ എന്തെല്ലാം?

19. സൈബർ സാഹിത്യവും പുതുവായനകളും.

20. ഗൂഗിൾ എന്ന അന്വേഷണയന്ത്രത്തിന്റെ പ്രസക്തിയെന്ത്?

21. പോർട്ടലുകൾ എന്നാലെന്ത്?

22. DTP - കുറിപ്പെഴുതുക.

(8 × 2 = 16 Marks)

St. Xavier's College

III. **120** വാക്കിൽ കവിയാതെ ഏതെങ്കിലും **ആറു** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

23. അച്ചടിയുടെ ഉത്ഭവവും വികാസവും - വിവരണം തയ്യാറാക്കുക.

24. ഇന്റർനെറ്റിന്റെ ജനപ്രിയത വിലയിരുത്തുക.

25. സൈബർ മലയാളം എന്നതുകൊണ്ട് ഉദ്ദേശിക്കുന്നതെന്താണ്?

26. മലയാളം ഓൺലൈൻ വഴിയുള്ള എഴുത്ത് സാധ്യമാകുന്നതെങ്ങനെ?

27. കമ്പ്യൂട്ടറുകളുടെ അഞ്ചു തലമുറ ഏതെല്ലാം?

28. വിൻഡോസ് ഓപ്പറേറ്റിംഗ് സിസ്റ്റത്തെപ്പറ്റി എഴുതുക.

29. 'വ്ളോഗിങ്' എന്നാലെന്ത്? അതിന്റെ സാധ്യതകൾ എന്തെല്ലാം?

30. ബ്ലോഗ് വായനയുടെ പ്രസക്തിയെന്ത്?

31. മലയാളം കമ്പ്യൂട്ടർ അക്ഷരമാലയുടെ പേരും ശില്പികളും.

(6 × 4 = 24 Marks)

IV. **മൂന്നു** പുറത്തിൽ കവിയാതെ ഏതെങ്കിലും **രണ്ടു** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

32. 'ബൂലോകം' എന്താണ്? അതിലെ വിഷയങ്ങൾ പരിചയപ്പെടുത്തുക.

33. പ്രധാനപ്പെട്ട ബ്ലോഗുകൾ ഏതെല്ലാം?

34. ആധുനിക സാങ്കേതിക വിദ്യയും ആശയവിനിമയവും - ഉപന്യസിക്കുക.

35. എഴുത്തിന്റെ 'നാലാമിടം' - വിവരണം തയ്യാറാക്കുക.

(2 × 15 = 30 Marks)

St. Xavier's College

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Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

Career Related First Degree Programme under CBCSS

Common for Group 2 (a) Botany and Biotechnology and

Group 2 (b) Biotechnology (Multimajor)

Core Course

BB1341/BV 1341.1- ANGIOSPERM ANATOMY AND REPRODUCTIVE BOTANY

(2013 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

St. Xavier's College

SECTION – A

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

1. What is placentation?
2. What are companion cells?
3. Define triple fusion.
4. What is syngamy.
5. Define anemophily.
6. List out the four layers of anther wall.

7. What is meant by dendrochronology?

8. Mention the role of passage cells in roots.

9. Who proposed histogen theory?

10. Define bulliform cells.

(10 × 1 = 10 Marks)

SECTION – B

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

(Answer not to exceed one paragraph).

St. Xavier's College

11. What is cystolith?

12. Define apical cell theory. Who proposed it?

13. What are sclerides? Flow they are classified?

14. What are the products of syngämy and triple fusion?

15. Differentiate fascicular cambium from interfascicular cambium.

16. How heart wood differ from sap wood?

17. Mention any two methods of determining the viability of pollen grains.

18. How bark is formed in plants?

19. Mention the functions of cambium in monocots.

20. Define collenchyma. Mention their types.

21. Name any two plants yielding fibres of economic value.

22. Differentiate P- tapetum from C-tapetum

(8 × 2 = 16 Marks)

SECTION – C

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

(Answer should not to exceed 120 words).

23. Explain the structure and development of periderm.
24. Mention the anomalous cambial activity seen in plants.
25. Write notes on the theories on apical organizations.
26. Differentiate ring porous and diffuse porous wood.
27. What do you understand by ground tissue system?
28. Describe various tyes of stomata.
29. Explain various types of cell wall thickening in treachery elements.
30. With the help of diagram describe the anatomy of dicot leaf.
31. Explain the various barriers of fertilization in plants.

(6 × 4 = 24 Marks)

SECTION – D

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

(Answer not to exceed three paragraph).

32. Explain different types of embryosacs with suitable diagrams.
33. What are complex tissues? Describe the structure and functions of various components of xylem and phloem.
34. Give a detailed account on the development, structure and function of cambium in stem and roots.
35. Draw and explain the different types of ovules in angiosperms.

(2 × 15 = 30 Marks)

St. Xavier's College

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Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

Career Related First Degree Programme under CBCSS

Group 2 (a) Botany and Biotechnology

Vocational Course IV

BB 1371 – PROTISTA AND ANIMAL DIVERSITY

(2013 Admission Onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – A

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

Draw diagrams only if specified in the questions.

1. Write down the scientific name of filarial worm.
2. Name the larva of Ascidia.
3. What do you mean by trignathic?
4. What is the function of marsupium?
5. Who proposed the three kingdom classification?
6. What is Pectoralis major?
7. Name an amphibian that shows parental care.
8. What is the function of pectoral girdle?

P.T.O.

9. Which are the cycles of Plasmodium that occurs within man?

10. What is a digenetic parasite?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. **Each** question carries **2** mark. Answer not to exceed **one** paragraph.

11. Comment on brittle star.

12. Mention the economic importance of dentalium.

13. What is the difference between Protostomia and Deuterostomia?

14. Mention the salient features of Echidna.

15. Write a short note on Hirudinaria.

16. Comment on the damages caused by *Leptocorisa acuta*.

17. How does the bite of Russel's viper affect the victim?

18. Comment on the salient features of Ammocoetus larva.

19. What is Strobila?

20. Write down the salient features of Class Calcarea.

21. Define Neoteny.

22. Comment on the symbiotic relation of Phylum Parabasalia.

(8 × 2 = 16 Marks)

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SECTION – C

Answer any **six** of the following (Answer not to exceed **120** words). **Each** question carries **4** marks.

23. Comment on the adaptations of aquatic mammals.

24. Mention the salient features of Urochordata and Cephalochordata?

25. Distinguish between Calotes and Draco.

26. Write an account on the pest attack and its control measures in paddy.

27. Briefly explain the life history of *Taenia solium.*

28. Write down the salient features of Phylum Onychophora with example.

29. Comment on the different appendages of Limulus.

30. Mention the salient features of Subphylum Mandibulata and its classffication?

31. Explain retrogressive metamorphosis with an example.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions (Not more than **three** pages). **Each** question carries **15** marks.

32. Explain the digestive system and nervous system of Cockroach with suitable diagrams.

33. Write a brief description on the Kingdom Protista and example phyla.

34. Explain the characteristic features of Phylum Chordata and its classification with suitable examples.

35. Briefly explain the flight adaptations of birds.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) H–1629

Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

Career Related First Degree Programme under CBCSS

Group 2 (a) Botany and Biotechnology

Vocational Course V

BB 1372 : ANIMAL PHYSIOLOGY AND ANATOMY

(2013 Admission Onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. What is Cellular respiration?
2. Explain Thyroxine.
3. Give note on Myelin Sheath.
4. Give note on Melatonin.
5. What is an Eosinophil?
6. Give note on Sarcoplasmatic Reticulum.
7. What is FSH?

P.T.O.

8. Give note on Neurotransmitter.

9. What is Striated muscle?

10. Explain Counter-current Flow.

(10 × 1 = 10 Marks)

SECTION – B

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

11. What is Lymphocyte?

12. Explain Gas exchange.

13. What is Graafian follicle?

14. Define feedback Loop.

15. Define homeostasis.

16. What is meant by Renin?

17. What is the function of SA Node?

18. Explain autonomic nervous system.

19. What is the function of Loop of Henle?

20. Explain pulmonary respiration.

21. What is Cardiac Cycle?

22. What is sensory neuron?

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION – C

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

23. Explain the process of menstrual cycle.

24. Give note on the nervous system of invertebrates.

25. Explain the various types of circulation.

26. What are the functions of pancreas.

27. Give an account of human axial skeleton system.

28. Explain the structure of sperm.

29. Explain the structure of nephrones.

30. Explain different types of digestion.

31. Give a brief note on human respiratory system.

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions.(not more than **3** pages). Each questions carries 15 marks

32. Explain the spermatogenesis in human.

33. With the help of a labelled diagram describe Human heart.

34. Give an essay on excretory organs of invertebrates.

35. Explain the endocrine functions of the pituitary glands and discuss their regulatory functions.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) H – 1647

Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

Career Related First Degree Programme Under CBCSS

2(a) – Botany and Biotechnology

Complementary Course: BB 1331

PHYSIOLOGICAL ASPECTS IN BIOCHEMISTRY

(2014 Admission Onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – I

Answer **all** questions

1. What is the functions of RBC?
2. How Iron is transported?
3. Name the blood forming organs.
4. What is the other name of Viamin K.
5. What is oxidation? How it is useful for detoxification?
6. What is Bohr effect?
7. Name the buffers present in blood.
8. What is NIDM?

P.T.O.

9. State the functions of cortisol.

10. Name peptide hormones.

(10 × 1 = 10 Marks)

SECTION – II

Answer any **eight** questions.

11. Write down the constituents of blood.

12. Write about erythropoeisis.

13. Write the functions of vitamin D.

14. What are the main constituents of urine?

15. What is the functions of carbonic anhydrase?

16. Define chloride shift.

17. Classify the types of jaundice.

18. What is the importance of BMI?

19. What is conjugation reactions? Give two examples?

20. What is the normal levels of blood glucose?

21. State the functions of GH.

22. How T_3 is differ from T_4?

(8 × 2 = 16 Marks)

SECTION – III

Answer any **six** questions.

23. Write the structure and functions of Hemoglobin.

24. Write about the absorption and metabolism of Iron.

25. Discuss the Detoxification process by oxidation and hydrolysis.

St. Xavier's College

26. Write a note on obesity.

27. Explain the partial pressure of gases.

28. Write about acid base im balance.

29. Write the functions of thyroxine.

30. What are all the functions of estradiol?

31. Differentiate adrenalin and nor adrenalin with their functions.

(6 × 4 = 24 Marks)

SECTION – IV

Answer any **two** questions.

32. Write the chemical nature, sources, functions and deficiency of fat soluble vitamins.

33. Discuss about Liver function tests.

34. Write about hyper colesterolenia and Atherosclerosis.

35. Explain the transport and exchange of gases.

(2 × 15 = 30 Marks)

St Xaviers College

(Pages : 3) H – 1795

Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

First Degree Programme under CBCSS

Complementary Course for Chemistry

PY 1331.2 : OPTICS, MAGNETISM AND ELECTRICITY

(2018 Admission)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

PART – A

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

1. What property of light cause the colours of thin film?
2. Define the phenomenon of diffraction of waves.
3. Distinguish between step index fiber and graded index fiber.
4. What is meant by polarization of light?
5. Define magnetic permeability.
6. Distinguish between rms and mean value of ac.
7. Write any property of ferromagnetic material.
8. Give any two applications of Laser.
9. What are the circuit elements of an electrical resonance circuits?
10. Distinguish between ordinary ray and extra ordinary ray.

(10 × 1 = 10 Marks)

P.T.O.

PART – B

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

11. What property of light is responsible for the production of newton's rings? How they are produced in the experimental setup?

12. Write the expression for the area of the half period zone and justify that all the half period zones have equal area.

13. What do you understand by population inversion?

14. In double slit diffraction patterns all fringes are of equal width. Examine this statement by writing the expression for fringe width.

15. Explain the constructional details of optical fiber. What is critical angle?

16. What is resonance? Obtain the condition for resonance in series LC circuit.

17. What is Curie temperature?

18. What is optical activity? Mention any application of it.

19. Distinguish between diamagnetic and paramagnetic material.

20. What is magnetic susceptibility? How it is related to magnetic permeability?

21. How do you produce circularly polarized light?

22. What are birefringent materials? Give one example.

(8 × 2 = 16 Marks)

St. Xavier's College

PART – C

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

23. Calculate the fringe width of the interference pattern formed on a screen arranged at a distance of 10 cm from a double slit arrangement of slit width is 10^{-4}m, if illuminated by light of wavelength 500 nm.

24. A transformer has 500 turns in the primary winding and 20 turns in the secondary winding. If the primary voltage is 220, Find the secondary voltage.

25. An air wedge is made by placing a thin foil between two glass plates at a distance of 5 cm from their point of contact. When light of 600 nm is used to illuminate the air wedge, fringes are formed 1 mm apart. What is the thickness of the foil?

26. A beam of un-polarised light of intensity 50 candela is passed through a polaroid A, then through another polaroid B which is oriented so that its principal plane makes an angle 45 degree with respect to A. What shall be the intensity of the emergent light?

27. Calculate the thickness of a quarter wave plate made from a quartz crystal for which the refractive index of ordinary light is 1.544 and that of extra ordinary light is 1.553 for a wavelength of 6000 A°.

28. The magnetic susceptibility of silicon is -0.4×10^{-5}. Calculate the flux density and magnetic moment per unit volume when magnetic field of intensity $5 \times 10^5 A/m$ is applied.

29. An ac circuit consists of a resistance 1000 ohms and a capacitance 0.1 microfarad Calculate power factor for a frequency of 10 kHz.

30. What is the self-inductance of the coil which produce 5 V when current in it changes from 3A to 2A in 1 ms.?

31. An ac circuit contain 4Ω resistance in series with an inductive load of reactance 3Ω Calculate the impedance of the circuit.

($6 \times 4 = 24$ Marks)

PART – D

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

32. Explain theory of interference. Describe Young's double slit experiment and obtain expression for bandwidth.

33. Write a note on the electron theory of magnetism and explain ferromagnetism.

34. Describe Fraunhoffer diffraction at a single slit. Obtain central maxima, secondary maxima and secondary minima.

35. Explain the principle of laser. Describe the application of these principle in the construction of Ruby laser.

($2 \times 15 = 30$ Marks)

St. Xavier's College

(Pages : 4) H – 1330

Reg. No. : .....

Name : .....

Third Semester B.A./B.Sc. Degree Examination, October 2019

First Degree Programme under CBCSS

English – (Language Course)

EN 1311.1/EN 1311.3 : WRITING AND PRESENTATION SKILLS

(Common for B.A./B.Sc. (Language Course VI) & Career related 2 (a) (Language Course V)

(2013 & 2014 Admissions)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

I. Answer *all* questions :

A. Rewrite the following sentences, correcting them errors, if any.

1. Many a man has done so.

2. If you studied hard, you would have attained it.

3. Drink water so that you should be thirsty.

4. His wife never cook.

5. The child slept soundly.

B. Write *one* synonym each for the following words.

6. Timid

7. Great

8. Suffocate

9. Throb

10. Diagram.

(10 × 1 = 10 Marks)

II. Write a short paragraph each on any *eight* of the following :

11. The pitfalls of e-mail writing.

12. "Coherence" in a paragraph.

13. Expository Essay.

14. Letter of Appreciation.

15. Functional Resume.

16. The informal nature of a Business Report.

17. Body Language.

18. Personal Zone.

19. Features of Good Notes.

20. 'Sustained analogy' in a paragraph.

21. Acronym.

22. Salient features of Business Reports.

(8 × 2 = 16 Marks)

St Xavier's College

III. Answer any *six* of the following, each in a paragraph of about 100 words :

23. Write a letter to your friend, congratulating him on his selection to the University Football team.

24. Make a précis of the following :

There is nothing which adds so much to the beauty of the countryside as water, be it just a little stream tricking over the rocks or a little pond by the wayside where the cattle quench their thirst of an evening. The rainfed tanks that are so common in South India – alas often so sadly neglected in their maintenance – are a cheering sight when they are full. They are, of course, shallow, but this is less evident since the water is slit laden and throws the light back, and the bottom does not therefore show up. These tanks play a vital role in South Indian Agriculture. In Mysore, for example, much of the rice is grown under them. Some of these tanks are surprisingly large and it is a beautiful sight to see the sun rise or set over one of them. Water in a landscape may be compared to the eyes in a human face. It reflects the mood of the hour, being bright and gay when the sun shines, turning to dark and gloomy when the sky is overcast.

25. Script a conversation between the District Collector and the Deputy Collector on distributing aids to flood victims.

26. Prepare a questionnaire to be used among the victims of a bus accident.

27. Make report for the newspaper on the State Arts Festival of the schools.

28. List out the elements to be considered while composing e-mail messages.

29. Send an e-mail to your teacher, congratulating him on his acquiring Ph.D.

30. Explain the use of graphic aids / illustrations.

31. Describe the process of Data Collection.

(6 × 4 = 24 Marks)

St. Xavier's College

IV. Write essays of about 300 words on any *two* of the following :

32. Steps in writing a 'precis'.

33. Proxemics.

34. Characteristics of Reporting.

35. Types of Business Letters.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) H – 1417

Reg. No. : .....

Name : .....

Third Semester B.A. Degree Examination, October 2019

First Degree Programme under CBCSS

Complementary Course for Economics

MM 1331.5 – MATHEMATICS FOR ECONOMICS – III

(2013 Admission onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – I

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

1. Find $\int \left(f'(x)e^{f(x)}\right)dx$ if $f(x)=x^2$.
2. Find an antiderivative of $f(x)=\sqrt{x}$.
3. Evaluate $\int \frac{xdx}{1+x^2}$.
4. Evaluate $\int_6^{10} \frac{dx}{x-2}$.
5. If $\int_{-1}^{1} f(x)dx = 5$ and $\int_{-1}^{1} g(x)dx = 7$ then find $\int_{-1}^{1} [2f(x)+3g(x)]dx$.
6. Find the integral $\int xe^{2x}\,dx$.
7. A firm's marginal cost function is $M(x)=x^2+2x+4$. Find the total cost function if the fixed costs are 100.

P.T.O.

8. Examine the convergence of the series $1-\frac{1}{3}+\frac{1}{3^2}-\frac{1}{3^3}+....$

9. Find the sum of the series $1+\frac{1}{4}+\frac{1}{4^2}+\frac{1}{4^3}+....$

10. Find the Taylor series generated by $f(x)=e^x$ at $x=2$.

SECTION – II

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

11. Integrate with respect to x :

(a) $\frac{2x+3}{\sqrt{x^2+3x-4}}$

(b) $\frac{1}{x(1+\log x)^3}$.

12. Evaluate $\int \frac{1-x}{\sqrt{1+x}}dx$.

13. Find the integral $\int_e^{e^2} \frac{\log x}{x}dx$.

14. Sketch the area represented by the integral $\int_0^2 (2-x)dx$ and hence evaluate it.

15. If the marginal revenue of a firm is given by $MR = 9-4x^2$, find the total revenue in terms of x.

16. If the marginal cost function is $f'(x)=2+x+x^2$, find the total cost function $f(x)$ when $f(0)=50$.

St. Xavier's College

17. Find the sum of the infinite series $1+\frac{2}{1}\left(\frac{1}{6}\right)+\frac{2.5}{1.2}\left(\frac{1}{6^2}\right)+\frac{2.5.8}{1.2.3}\left(\frac{1}{6^3}\right)+....$

18. Show that $\frac{1.2}{1!}+\frac{2.3}{2!}+\frac{3.4}{3!}+....=3e$.

19. Find the Maclaurin's series for $\cos x$.

20. Prove that $\frac{1}{1.2}+\frac{1}{3.4}+\frac{1}{5.6}+\frac{1}{7.8}+...=\log 2$.

21. Write the series whose sum of n terms is $\frac{1}{2}-\frac{1}{n+2}$. Find the sum to infinity of the series.

22. Find binomial series for $\frac{1}{\sqrt{1+x}}$.

SECTION – III

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

23. Evaluate $\int \frac{1+x}{(2+x)^2}e^x\,dx$.

24. Evaluate $\int (\log t)^2\,dt$.

25. Obtain the demand function for a commodity whose elasticity of demand is given as $e_{xp}=3-2p$ where p denotes the price per unit of the commodity.

26. A bank pays interest at the rate of 6% per annum compounded continuously. If a person places Rs. 1,000 in the bank each year, how much will be in his account after 3 years.

St. Xavier's College

27. Investment function is given by $I(t) = 200e^{0.4t}$, where $I(t) = \frac{dK}{dt}$ and K denotes the capital at time t. If the initial stock $K(0) = 100$, find the capital formation during the first five years.

28. Prove that $\frac{1}{1!} + \frac{1+3}{2!} + \frac{1+3+5}{3!} + \frac{1+3+5+7}{4!} + \ldots = 2e$.

29. Express the repeating decimal 5.232323... as the ratio of two integers.

30. Evaluate the integral $\int_0^1 \frac{dx}{3+2x}$ by using trapezoidal rule with $n = 4$.

31. Show that $\log x = \frac{x-1}{x+1} + \frac{1}{2}\cdot\frac{x^2-1}{(x+1)^2} + \frac{1}{3}\cdot\frac{x^3-1}{(x+1)^3} + \ldots$.

SECTION – IV

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

32. If the marginal revenue function is $p_m = \frac{6}{(x+3)^2} - 6$, show that $p = \frac{2}{x+3} - 6$ is the demand law.

33. Write down the capital value of a uniform income stream of Rs. A per year for x years, reckoning interest continuously at $100r\%$ per year. By letting $x \to \infty$, deduce that the capital value of such an income stream going on for ever is Rs. $\frac{A}{r}$.

34. Find the sum to infinity of the series $\frac{1}{4} + \frac{5}{4.8} + \frac{5.7}{4.8.12} + \frac{5.7.9}{4.8.12.16} \ldots$.

35. Find an approximate value of $\int_0^1 x^2\,dx$ by Simpson's rule with $n = 10$.

St. Xavier's College

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Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

First Degree Programme under CBCSS

Complementary Course for Physics

MM 1331.1 : MATHEMATICS III — DIFFERENTIAL EQUATIONS, THEORY OF EQUATIONS AND THEORY OF MATRICES

(2014-2017 admissions)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – I

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

1. Solve $4xy\frac{dy}{dx} = y^2 - 1$.

2. Find the integrating factor of $\frac{1}{x}\frac{dy}{dx} + 4y = 2$.

3. Solve $4xy + 2x + (2x^2 + 3y^2)\frac{dy}{dx} = 0$.

4. Write the following system of equations as a matrix equation.
$2x + 6y + z = 7$
$x + 2y - z = -1$
$5x + 7y - 4z = 9$

5. Find the rank of the matrix $\begin{pmatrix} 3 & -1 \\ 1 & 3 \end{pmatrix}$.

P.T.O.

6. Define a symmetric matrix.

7. Find the sum of the eigenvalues of the matrix $\begin{pmatrix} -2 & 1 & 0 \\ 1 & 3 & 0 \\ 0 & 0 & -1 \end{pmatrix}$.

8. Solve $4x^3 + 16x^2 - 9x - 36 = 0$, the sum of two of the roots being zero.

9. Find the equation whose roots are $\frac{2}{3}, \frac{3}{2} \pm \sqrt{3}$.

10. State the Fundamental theorem of algebra.

SECTION – II

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

St Xavier's College

11. Solve the initial value problem $y - x = x\frac{dy}{dx}$, $y(1) = 2$.

12. Solve $y' = (x + y - 2)^2$.

13. Solve $\frac{dy}{dx} + xy = \frac{x}{y}$.

14. Solve $(x+1)\frac{dy}{dx} - y = e^{3x}(x+1)^2$.

15. Solve :

$$x + y = 1$$
$$4x - y = -6$$
$$2x - 3y = 8$$

16. Find eigen values and eigenvectors of $A = \begin{pmatrix} 3 & 4 \\ -1 & 7 \end{pmatrix}$.

17. Diagonalize $A = \begin{pmatrix} -5 & 9 \\ -6 & 10 \end{pmatrix}$.

18. Obtain the characteristic polynomial of the matrix $A = \begin{pmatrix} 1 & -1 & 0 \\ 1 & 2 & 1 \\ -2 & 1 & -1 \end{pmatrix}$.

19. Show that $x^5 - 2x^2 + 7 = 0$ has at least two imaginary roots.

20. Solve the equation $x^3 - 10x^2 + 8x + 64 = 0$, given that the product of two of the roots is the negative of the third.

21. Solve the equation $2x^3 + 3x^2 - 11x - 6 = 0$, given that the three roots form an Arithmetic sequence.

22. Solve $x^4 - 5x^3 + 4x^2 + 8x - 8 = 0$, given that one of the roots is $1 - \sqrt{5}$.

SECTION – III

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

23. Find the orthogonal trajectories of the family of curves $(x - c)^2 + y^2 = c^2$.

24. Solve the initial value problem

$y'' - 6y + 25y = 0,\ y(0) = -3,\ y'(0) = -1.$

25. Solve $x^2y'' - xy' + y = \ln x$.

26. Solve

$x + 3y - 2z = -7$

$4x + y + 3z = 5$

$2x + 5y + 7z = 19$

27. Given that $\lambda = 1$ is a three-times repeated eigen value of the matrix $A = \begin{pmatrix} -3 & -7 & -5 \\ 2 & 4 & 3 \\ 1 & 2 & 2 \end{pmatrix}$. Find the corresponding eigenvector.

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28. Diagonalize the matrix $A = \begin{pmatrix} 6 & -10 \\ 3 & -5 \end{pmatrix}$ and use the result to find A^{10}.

29. Find the nature of the roots of the equation $3x^4 + 12x^2 + 5x - 4 = 0$.

30. Solve the equation $x^5 - x^4 + 8x^2 - 9x - 15 = 0$, one root being $\sqrt{3}$ and another $1 - 2i$.

31. Using bisection method, find a real root of the equation $x^3 - 5x + 1 = 0$.

SECTION – IV

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

32. (a) Solve $y''' - 2y'' + 4y' + 8y = 6xe^{2x}$.

(b) Solve $y''' - 4y'' - 5y' = 0$.

33. (a) Reduce the matrix $A = \begin{pmatrix} 4 & -2 & 2 & 3 & 1 \\ 2 & 0 & 0 & 3 & 2 \\ 4 & 1 & 2 & 5 & 1 \end{pmatrix}$ to its row-reduced echelon form and find its rank.

(b) Construct an orthogonal diagonalizing matrix for the symmetric matrix $A = \begin{pmatrix} 4 & 0 & 0 \\ 0 & 1 & 2 \\ 0 & 2 & 1 \end{pmatrix}$.

34. (a) Test for consistency and solve

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

$x + y - 2z = 0$

(b) Solve $(1+x)^2 y'' + (1+x) y' + y = 2\sin[\ln(1+x)]$.

35. Use the Newton-Raphson method to find the roots between 1 and 2, correct to six decimal places, of the equation $x^3 + 2x^2 - 5x + 1 = 0$.

St. Xavier's College

(Pages : 4) H – 1336

Reg. No. : .....

Name : .....

Third Semester B.A./B.Sc. Degree Examination, October 2019

First Degree Programme under CBCSS

Language Course – Latin

LT 1311 : LITERATURE IN LATIN

(2013 Admission Onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

PART – A

RESPONDE OMNIBUS :

1. Scribe quod non aptum
(Mercury, Sosia, Alcumna, Remus)

2. Delige verbum aptissimum
Parasti in conspectu meo ———— adversus eos qui tribulant me (mensa, mensae, mensam)

3. Indica Verum (T) an falsum (F)
Sosia was the servant of Amphitruo.

4. Redde Latine
The friend expects supper.

5. Redde Anglice
Haec fuit poena mendacii. — Ne puerum mendacem imitati sitis!

6. Qui erant the 'tres venatores'?

P.T.O.

7. Write the title of the poem 'Qui se laudari gaudet verbis subdolis...'

8. Qui est Amphitruo?

9. Describe 'Cerberus'.

10. Make a sentence of your own using the word 'vulnerare'.

(10 × 1 = 10 Marks)

PART – B

RESPONDE OCTO DE DATIS :

11. Explica : Bona fide.

12. Explica: Audi alteram partem.

13. Expande et Explica: RIP.

14. Who were the founding fathers of Rome?

15. Conjugate the Latin verb 'Laudare' in the present, imperfect and perfect tenses.

16. Differentiate between :
Regina lunam monstrat.
Regina lunam monstrabit.

17. What are the cultural and geographical features discussed in the poem, "Italia"?

18. How did **Cincinnatus** help Rome in the difficult situation?

19. Give English derivation of the Latin word italicized in the line given below explaining its meaning in English.
Si ***vocem*** haberes, nulla prior ales foret.

20. Redde Anglice.
Ego primam partem capio.

21. Redde Latine.
Certain boy was herding the flock.

22. Corrige sententiam :
Erant etiam filius Rheae Silviae.

(8 × 2 = 16 Marks)

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PART – C

RESPONDE SEX DE DATIS

Explica sententias datas.

23. Metella in atrio sedet.
24. Turn Horatius in ponte sine auxilio stat. Pro vita sua non timebat.
25. Populo Romano magnum auxilium dabat quod dictator erat et Romam servabat.
26. Qui se laudari gaudet verbis subdolis.
27. Write a short note on the major theme discussed in 'Mercator'.

Redde in Latinam linguam.

28. Arma virumque canō, Troiae quī primus ab ōris
Ītaliam, fātō profugus, Lāviniaque vēnit
lītora, multum ille et terris iactātus et altō
vī superum saevae memorem Iūnōnis ob īram;
multa quoque et bellō passūs, dum conderet urbem,
inferretque deōs Latiō, genus unde Latīnum,
Albānīque patrēs, atque altae moenia Rōmae.
Mūsa, mihī causās memorā, quō nūmine laesō,
quidve dolēns, rēgīna deum tot volvere cāsūs
īnsignem pietāte virum, tot adīre labōrēs
impulerit. Tantaene animīs caelestibus īrae?

29. The friend visits Caecilius. The friend is the merchant. The merchant enters in the home. Clemens is in atrium. Clemens wished the merchant. Caecilius is in table. He is counting the money. He was a banker.

Redde in Anglicam linguam

30. "O qui tuarum, corve, pinnarum est nitor!
Quantum decoris corpora et vultu geris!
Si vocem haberes, nulla prior ales foret".
At ille stultus, dum vult vocem ostendere,
Emisit ore caseum, quem celeriter
Dolosa vulpes avidis rapuit dentibus.
Tunc demum ingemuit corvi deceptus stupor.

31. Coquus est in culina. Coquus in culina dormit. Cerberus intrat. Cerberus circumspectat. Cibus est in mensa. Canis salit. Canis in mensa stat. Grumio stertit.

(6 × 4 = 24 Marks)

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PART – D

RESPONDE DUO DE DATIS.

32. The beauty and the cultural relevance of the poem 'De Equo Elogium'.

33. Explain the main activities of the seven kings of ancient Rome.

Scribe fabulam verbis aptis

34. Roma saepe .....1..... (pacem, pads, pax) non .....2..... (habe, habebant, habebat), sed in periculo .....3..... (ero, erant, erat) et contra .....4..... (finitimos, finitima, finitimis) suos pugnabat. Roma copias .....5..... (bona, bonas, bonis) atque arma .....6..... (habebat, habebant, habebam), sed oppugnabatur. Populous timebat quod ducem non habebat. nuntii ad .....7..... (Cincinnatum, Cincinnatus, Cincinnatis) eunt et ubi Cincinnatum, agricolam .....8..... (Romanis, Romanus, Romanum), in agro vident, de bello et magno .....9..... (periculum, periculos, periculo) narrant. Cincinnatus agros .....10..... (suus, suis, suos) .....11..... (bonus, bene, bonos) amabat, sed Romam quoque bene .....12..... (amabat, amabo, amabant) et ab .....13..... (nuntiis, nuntius, nuntias) movebatur. Populo Romano magnum .....14..... (auxilium, auxilius, auxiliis) .....15..... (dabat, dant, datis).

35. Dominus .....1..... (regere, regimes, reget) me et nihil .....2..... (mihi, me, mei) deerit. In loco pascuae ibi; me .....3..... (conlocavint, conlocavimus, conlocavit) super aquam .....4..... (refectiones, refectionis, refectionibus) educavit me. Animam .....5..... (meus, mea, meam) convertit deduxit me super .....6..... (semita, semitis, semitas) iustitiae propter .....7..... (nomen, nominis, nomini) suum. Nam et si .....8..... (ambulaveris, ambulaverint, ambulavero) in medio umbrae .....9..... (mortum, mortis, mortibus) non timebo mala quoniam tu .....10..... (tecum, secum, mecum) es virga tua et baculus tuus ipsa me consolata sunt. Parasti in conspectu meo .....11..... (mensa,. mensae, mensam) adversus eos qui .....12..... (tribulat, tribulas, tribulant) me inpinguasti in oleo caput .....13..... (meus, mea, meum) et calix meus inebrians quam pracelarus est, et .....14..... (misericordiam, misericordias, misericordia) tua subsequitur me omnibus .....15..... (dies, dierum, diebus) viate meae et ut inhabitem in domo Domini in longitudinem dierum.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) H – 1344

Reg. No. : .....

Name : .....

Third Semester B.A./B.Sc. Degree Examination, October 2019

First Degree Programme under CBCSS

English – (Language Course)

EN 1311.1/EN 1311.3 : WRITING AND PRESENTATION SKILLS

(Common for B.A./B.Sc. (Language Course VI) and Career related 2 (a) (Language Course V))

(2015 Admission onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

I. Answer **all** questions, each in a word or sentence.

A. Rewrite the following sentences, correcting the errors, if any.

1. Everybody in the class know the answer.
2. Ten miles are a long distance to walk.
3. I prefer coffee than tea.
4. I congratulated him for his success.
5. One of the teachers are absent today.

B. Write **one** synonym each for the following words :

6. strange
7. train
8. pause
9. observe
10. negotiate.

(10 × 1 = 10 Marks)

P.T.O.

II. Answer any **eight**, each in a short paragraph not exceeding 50 words.

11. Write a note on the importance of writing.

12. What is blogging?

13. What does the term 'conventions of language' refer to?

14. What is a memorandum?

15. Define collocation.

16. What is syntax?

17. Why is 'clubbing or clustering' important?

18. What is a report?

19. What is the difference between a précis and a summary?

20. What are morphemes?

21. What is a topic sentence? Explain its importance.

22. Explain the difference between writing and speaking.

(8 × 2 = 16 Marks)

III. Answer any **six** as directed :

23. Prepare an email to the HR manager of a company that is recruiting fresh graduates as trainee executives. Attach your resume.

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24. Write a précis of the following passage reducing it to one third of its length

Malayalam is the mother-tongue of 35 million Malayalis, eighty percent of whom live in Kerala. The remainder are scattered over different parts of India and the world, including Malaysia, Singapore, the countries surrounding the Persian Gulf, Africa, Europe and North America.

Malayalis are well-known for their ability to adjust easily to their surroundings. Wherever a Malayali goes, from New Delhi to New York, he becomes a part of the local scene, though Kerala is always present in his heart.

Like its speakers, the Malayalam language also has been open to foreign influences. Malayalam literature reflects this spirit of accommodation and has, over the centuries, developed a tradition which, although deeply rooted in the native soil of Kerala, is truly universal in spirit. It is remarkably free from the prejudices that have marred the literature of certain other parts of our country. To its basic Dravidian stock have been added elements borrowed or adopted from non-Dravidian languages such as Sanskrit, Arabic, French, Portuguese and English. The earliest of these associations was with Tamil, which according to many linguists is the root language from which Malayalam was born. Sanskrit, however, accounts for the largest of the 'foreign' influences, followed closely in recent times by English. This broad-based cosmopolitanism has indeed become a distinctive feature of Malayalam language and literature.

25. Imagine that you are the secretary of the arts club in your college. Prepare a report on the various activities conducted by the arts club.

26. Write a letter to the principal of your college, making an enquiry about the courses offered there.

27. Prepare a questionnaire to evaluate the quality of the waste disposal system in your locality.

28. What is the difference between formal and informal letters?

29. Distinguish between academic and creative writing.

30. Imagine that you are the General Manager of a company. Prepare a memo to remind an employee to attend a quarterly sales meeting.

31. Create content for 8 to 12 slides on "The Festival of Onam".

(6 × 4 = 24 Marks)

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IV. Answer any **two** as directed.

32. Write an essay on, "The impact of cinema on youth" in about 300 words.

33. Discuss the various stages of writing that enable a writer to create an ideal piece of writing.

34. What is an essay? What are the guidelines for writing a good essay?

35. Request the manager of a bank, in writing, for a replacement of the debit card you have lost.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) H-1476

Reg. No. : .....

Name : .....

Third Semester B.Sc Degree Examination, October 2019

First Degree Programme under CBCSS

Complementary Course for Mathematics

PY -1331.1 - OPTICS, MAGNETISM AND ELECTRICITY

(2013 - 2017 Admissions)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

PART – A

Answer **all** the questions. Answer should not exceed **two** sentences.

Each question carries 1 mark.

1. What is a metastable state?
2. What is meant by dispersive power of a grating?
3. What is meant by interferences?
4. State Brewster's law
5. Write down the condition for destructive interference
6. Define resolving power of optical instruments
7. Define spatial coherence
8. What is the condition for stimulated emission in laser?

P.T.O.

9. What are the different types of wave front?

10. What does acceptance angle mean?

(10 × 1 = 10 Marks)

PART – B

Answer any **eight** question. Answer should not exceed **one** small paragraph.

Each question carries **2** marks.

11. Why population inversion is in necessary for Laser action to occur?

12. Explain why a series LCR circuit is called an acceptor circuit

13. Why the fringes are circular in Newton's ring experiment?

14. Give any four differences between a convex lens and zone plate.

15. Explain the dispersive power of a grating

16. How is polarized light produced by reflection?

17. Give any four properties of diamagnetic substance

18. What produces the colours you see on the surface of a soap dubble?

19. What is acceptor and rejecter circuit?

20. Explain clearly he basic difference between paramagnetism and ferromagnetism.

21. Explain the terms inversion of population and stimulated emission as applied to lasers

22. How will you determine the wavelength of a light using grating?

(8 × 2 = 16 Marks)

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PART - C

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

23. A laser beam of wavelength 740 nm hascoherrence time $4x10^{-5}$ s. deduce the order of magnitude of its (a) coherence length, (b) spectral half-width and (c) the purity factor.

24. What will be the critical angle for a ray in a step-index fibre for which $n_1 = 1.53$ and which has a cladding whose R1 is 2.5 per cent less.

25. The refractive index of the core in a step-index fibre is 1.50 and the relative refractive index difference between the core and the cladding of the fibre is 1.8%. estimate (a) the numerical aperture (NA), (b) the criticl angle at the core – cladding interface within the fibre.

26. The magnetic susceptibility of silicon is -0.4 x 10-5. Calculate the flux density and magnetic moment per unit volume when magnetic field of intensity 5x105 A/m is applied.

27. A magnetic material has a magnetization of 3300 A/m and flux density of 0.0044 Wb/m^2. Calculate the magnetic field and the relative permeability of the material.

28. Estimate the diamagnetic susceptibility of argon. Argon has atomic number 18 and at temperature 4K, its concentration is $2.66 \times 10^{28}\ m^3$. Take root mean square distance of an electron from nearest nucleus to be $0.66\ \mathring{A}$. Also calculate the magnetization of solid argon at 2T.

29. Consider a series LCR circuit with L=5.0 H, C-80μF, R = 40 Ω are connected to variable frequency 240V source. Calculate (a) the angular frequency of the source which drives the circuit at resonance., (b) the current at the resonating frequency, (c) the rms potential drop across the capacitor at resonance.

30. A series LCR circuit consists of a resistance of 10 Ω, a capacitor of resistance 60 Ω and an inductor coil. The Circuit is found to resonate when put across 300V, 100 Hz supply. Calculate (a) The inductance of the coil (b) Current in the circuit at resonance.

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31. Calculate the ratio of the diameters of the fifth interference rings with and without water (refractive index 1.33) between the lens and the plate if the radius of curvature of lens is 0.50 m.

(6 × 4 = 24 Marks)

PART - D

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

32. Describe an experiment to determine the refractive index of liquid by Newton's rings method.

33. (a) Explain the terms stimulated and spontaneous emissions.

(b) Mention some important applications of laser?

(c) How laser light is propagated through optical fiber?

34. Give an account of weiss theory of ferromagnetism. On the basis of this theory, how will you explain hysteresis and curie point? Explain clearly the basic difference between paramagnetic and ferromagnetic substances.

35. (a) What do you mean by diffraction of light and state the condition for the diffraction?

(b) Describe the phenomenon of Fresnel diffraction at straight edge.

(2 × 15 = 30 Marks)

St Xavier's College

(Pages : 4) H – 1485

Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

First Degree Programme Under CBCSS

Complementary Course For Chemistry and Polymer Chemistry

PY 1331.2 – OPTICS, MAGNETISM AND ELECTRICITY

(2013 – 2017 Admissions)

Time : 3 Hours Max. Marks : 80

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SECTION – A

Answer **all** the questions. Answer should not exceed two sentences.

Each question carries 1 mark.

1. Define interference.
2. Give two examples of coherent sources.
3. What is Rayleigh's criterion for resolution?
4. State and explain grating law.
5. What is meant by plane polarised light?
6. What is a positive crystal? Give two examples.
7. Define power factor.
8. What is meant by pumping? Name two types of pumping.

P.T.O.

9. What is numerical aperture of an optical fibre?

10. Give two properties of ferromagnetic substances.

(10 × 1 = 10 Marks)

SECTION – B

Answer **any Eight** questions. Answer should not exceed one small paragraph.

Each question carries **2** marks.

11. Draw the intensity distribution curve of interference pattern.

12. How will you test the optical flatness of a glass plate.

13. Obtain the expression for the resolving power of a grating.

14. State and explain Brewster's law.

15. What are the factors on which the optical rotation of an optically active solution depend on?

16. What is LASER? Give three properties of laser.

17. Explain total internal reflection.

18. How can paramagnetic and diamagnetic material rods be distinguished in a magnetic field?

19. Explain the theory of transformer.

20. Explain electromagnetic induction.

21. Derive the relation between **B, H** and **I** in magnetism.

22. What is the difference between step index fibre and graded index fibre?

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION – C

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

23. Newton's rings are observed in reflected light of $\lambda = 5.9 \times 10^{-7}$ m. The diameter of the 10^{th} dark ring is *0.5* cm. Find the radius of curvature of the lens and the thickness of the air film.

24. Light of wavelength 6000 $A°$ is incident on a thin film of glass of $\mu = 1.6$, 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.

25. A parallel beam of monochromatic light is allowed to be incident normally on a plane transmission grating having 5000 lines per cm and third order spectral line is found to be diffracted through 45°. Calculate the wavelength of light.

26. Calculate the thickness of

    (a) a quarter wave plate and

    (b) a half wave plate. Given that $\mu_0 = 1.973$, $\mu_e = 2.656$ and $\lambda - 590\,nm$.

27. Sugar solution of concentration 0.2 gram/cc contained in a tube of length 18 cm, rotates the plane of polarization by 23.4°. Calculate the specific rotation of sugar solution.

28. If the number of lines per millimeter of a grating is 600, how many orders of spectra are possible for light of wavelength 5.89×10^{-7} m?

29. The energy level difference between two laser level is 0.21 eV. Determine the wavelength of radiation.

30. Show that the current leads the applied e.m.f. by $\frac{\pi}{2}$, when A.C. is passed through a circuit containing a capacitor.

31. A coil of resistance 60Ω and inductance 3 H is connected in series with a capacitor $4\mu F$ and an a.c. supply of 200 V and 50 Hz. Calculate the impedance in the circuit.

(6 × 4 = 24 Marks)

St. Xavier's College

SECTION – D

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

32. Discuss in detail Fraunhofer diffraction due to a double slit.

33. What is double refraction? Describe the construction, working and use of a nicol prism.

34. With a neat diagram, explain the construction and working of Laurent's half shade polarimeter.

35. Describe the principle, construction and working of a Ruby laser.

(2 × 15 = 30 Marks)

St. Xavier's College

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Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

First Degree Programme under CBCSS

Complementary Course for Mathematics

ST 1331.1 – STATISTICAL DISTRIBUTIONS

(2018 Admission)

Time : 3 Hours Max. Marks : 80

St. Xavier's College

SECTION – A

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

1. If the standard deviation of a Poisson random variable X is 3, write the probability mass function of X.

2. Moment generating function of a random variable Y is $(0.65 + 0.35e^t)^5$. Identify the statistical distribution and its parameters.

3. Write the mean and variance of geometric distribution.

4. Write the mode for the Poisson distribution with mean 7.5.

5. Let X follows discrete uniform with parameter n. Compute the coefficient of variation of X.

6. What is odd order moment about mean of normal distribution?

7. Define statistic.

8. Define t statistic.

P.T.O.

9. Let Y be a random variable and Y follows exponential distribution with mean 3. Compute $P(Y=3)$.

10. Write the variance of random variable follows Chi square distribution with 10 degrees of freedom.

(10 × 1 = 10 Marks)

SECTION – B

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

11. Define Bernoulli distribution. What is its mean?

12. If X follows Binomial (n,p), derive the distribution of $n-X$.

13. Define hyper geometric distribution.

14. Derive the MGF of a discrete uniform random variable.

15. Let X be a continuous uniform random variable with mean 1 and variance 4/3. Find $P(X<0)$.

16. State the additive property of gamma distribution.

17. Write the relationship between Beta I and Beta II random variables.

18. Let X be standard Normal random variable, compute $P(1< X < 2)$.

19. Define convergence in probability.

20. State central limit theorem for i.i.d random variables.

21. Justify the statement "every statistic is a random variable".

22. Write probability density functions of t and F distributions.

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION – C

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

23. If $X \sim$ Binomial $(6, p)$ and $P(X = 4) = P(X = 2)$, find the value of p.

24. Let X_1 and X_2 be independent and identically distributed geometric random variables. Show that the conditional distribution of X_1 given $X_1 + X_2$ is uniform.

25. For a Normal distribution, the first moment about 10 is 40 and the fourth moment about 50 is 48. What is the mean and variance of the distribution?

26. Derive the mean and variance of Beta I distribution.

27. State and prove lack of memory property of exponential distribution.

28. Derive Bernoulli's law of large numbers.

29. Derive the moment generating function of Chi square distribution and hence derive its mean and variance.

30. Let X_n assumes the values $\frac{1}{\sqrt{n}}$ and $-\frac{1}{\sqrt{n}}$ with probabilities $\frac{2}{3}$ and $\frac{1}{3}$ respectively. Check whether the weak law of large numbers holds good for the sequence $\{X_n\}$ of independent random variables.

31. Derive the relationships between Chi square, t and F distributions.

(6 × 4 = 24 Marks)

SECTION – D

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

32. (a) Derive the recurrence relation for central moments of Poisson distribution.

    (b) Prove that under certain conditions Binomial distribution tends to Poisson distribution.

33. (a) Define Normal distribution.

    (b) Derive the mean, median and mode of Normal distribution.

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34. (a) Derive Chebyshev's inequality.

(b) Suppose that the lifetime of an electronic device follows exponential distribution with mean 1. Determine the upper bound of $P(|X - 1| \geq 2)$ using Chebyshev's inequality.

35. (a) Let X_1 and X_2 be two independent random variables follow Chi square distribution with 1 degrees of freedom. Determine the value of k if $P(X_1 + X_2 > k) = 0.5$.

(b) Establish the sampling distribution of the sample variance of random sample drawn from Normal distribution.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) H – 1515

Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

First Degree Programme Under CBCSS

Complementary Course for Mathematics

ST 1331.1 – PROBABILITY DISTRIBUTIONS AND THEORY OF ESTIMATION

(2014-17 Admissions)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

Use of Statistical Table and Calculator is Permitted

SECTION – A

Answer **all** questions Each question carrie **1** marks

1. Write the moment generating function of Binomial distribution.
2. Give an example of statistical distribution whose mean and standard deviation are same.
3. State the additive property of Poisson distribution.
4. Define convergence in probability.
5. What is meant by standard error?
6. Write the variance of Chi square distribution with 10 degrees of freedom.
7. If a random variable $X\text{-}F_{(m,n)}$ identify the distribution of 1/X.
8. Write Cramer—Rao inequality.
9. What is meant by point estimation?
10. Write an example of a statistic which is not unbiased but consistent. **(10 × 1 = 10)**

P.T.O.

SECTION – B

Answer any **8** questions. Each question carries **2** Marks.

11. If X is a random variable with continuous distribution function F. Then show that F ~ Uniform [0,1]

12. Let X be a Poisson random variable with mean 1. Compute P ($X \geq 2$)

13. Derive the mean of Beta I distribution.

14. Define hypergeometric random variable.

15. State weak law of large numbers.

16. State Lindberg — Levy central limit theorem.

17. Distinguish between parameter and statistic.

18. Define t statistic. Write an example for t statistic.

19. Explain the principle of least squares.

20. What is meant by minimum variance unbiased estimator?

21. Define sufficiency of an estimator. Write an example for sufficient statistic.

22. Let $x_1, x_2, \cdots x_n$ be a random sample from population with mean μ. Show that the sample mean is an unbiased estimator of μ. **(8 × 2 = 16)**

SECTION – C

Answer any **6** questions. Each question carries **4** Marks.

23. Let X and Y be independent Poisson random variables with respective means μ_1 and μ_2. If P(X=1) = P(X=2) and P(Y = 2) = P(Y=3) find the variance of X + 2Y.

24. Let X and Y be independent and identically distributed geometric random variables.

    Show that the conditional distribution of X given X+Y is uniform.

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25. Prove that the odd order moments about mean of Normal distribution are zero.

26. Derive that lack of memory property of exponential distribution.

27. Let X_n assumes the values $\frac{1}{\sqrt{n}}$ and $-\frac{1}{\sqrt{n}}$ with respective probabilities $\frac{2}{3}$ and $\frac{1}{3}$, Check whether the weak law of large numbers holds good for the sequence $\{X_n\}$ of independent random variables.

28. Derive the sampling distribution of the sample mean of a random sample drawn from Normal distribution.

29. Establish the relationship between Chi square, t and F distributions.

30. Let X be random variable with probability density function $f(x) = (1+\theta)x^{\theta}, \theta > 0, 0 < x < 1$, Derive the maximum likelihood estimator of θ.

31. Explain the method of moments. Write its properties. **(6 × 4 = 24)**

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SECTION – D

Answer any **2** questions. Each question carries **15** Marks.

32. (a) Derive the mode of Binomial distribution.

(b) Fit a Poisson distribution for the following data and calculate the expected frequencies

Values	0	1	2	3	4	5
Frequency	95	75	44	18	2	1

33. Define normal distribution state its properties. Find the MGF of normal distribution.

34. (a) Derive Chebyshev's inequality.

(b) Let X be a random variable with probability density function $f(x)=\begin{cases}\frac{1}{2\sqrt{3}}, & -\sqrt{3}<x\sqrt{3} \\ 0, & otherwise\end{cases}$. Determine the upper bound of P $\left(|X|\geq\frac{3}{2}\right)$ using Chebyshev's inequality.

35. (a) Explain the method of interval estimation.

(b) Consider a random sample from exponential distribution with mean θ. Show that sample mean is an unbiased estimator of θ also prove that the variance of the estimator coincides with Cramer — Rao lower bound. **(2 × 15 = 30)**

St. Xavier's College

(Pages : 4) H – 1516

Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

First Degree Programme under CBCSS

Mathematics

Core Course – 2

MM 1341 : ALGEBRA AND CALCULUS – 1

(2014 – 2017 Admissions)

St. Xaviers College

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. Define an unit element in a Ring.
2. A commutative skew field is ————————.
3. A commutative ring with identity and ———————— is an Integral domain.
4. Define Boolean Ring.
5. If $\vec{A} = 4\vec{i} + 2\vec{j} - 3\vec{k}$ and $\vec{B} = 3\vec{i} + 5\vec{j} + 2\vec{k}$ then find $\vec{A} \times \vec{B}$.
6. Evaluate $(\vec{i} + 2\vec{j} + 3\vec{k}) \cdot (\vec{i} + 3\vec{j} + 5\vec{k}) \times (\vec{i} + \vec{j} + 6\vec{k})$.
7. A vector V is called irrotational if ————————.

P.T.O.

8. Angle between the lines whose direction cosines are (l_1, m_1, n_1) and (l_2, m_2, n_2) are _____.

9. The equation of the straight line joining the points (2, 5, 8) and (–1, 6, 3) is _____.

10. Find the equation of the sphere with centre (–1, 2, –3) and radius 3 units.

(10 × 1 = 10 Marks)

SECTION – B

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

11. Define a Group. Is the set of integers under multiplication a group. Justify.

12. In an abelian group show that $(ab)^2 = a^2b^2$.

13. Prove that any unit in a Ring R cannot be a zero divisor.

14. Define characteristic of a ring and give one example.

15. Solve the linear congruence $5x \equiv 2 \pmod{26}$.

16. Determine a unit vector $\perp^{re}$ to the plane $\vec{A} = 2\vec{i} - 6\vec{j} - 3\vec{k}$ and $\vec{B} = 4\vec{i} + 3\vec{j} - \vec{k}$.

17. Find the area of the triangle having vertices at $P(1, 3, 2)$, $Q(2, -1, 1)$.

18. If $\vec{F} = (2xy + z^3)\vec{i} + x^2\vec{j} + 3xz^2\vec{k}$ then find the work done in moving an object from (1, –2, 1) to (3, 1, 4).

19. Find the equation if the plane through (3, 4, 5) and parallel to $2x + 3y - z = 0$.

20. Find the distance between the parallel planes $2x - 2y - z + 3 = 0$, $4x - 4y + 2z + 5 = 0$.

21. Prove that the plane section of the sphere is a circle.

22. Show that the equation of a right circular cone whose vertex is O axis OZ and semi-verticle angle α is $x^2 + y^2 = z^2 \tan^2 \alpha$.

(8 × 2 = 16 Marks)

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SECTION – C

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

23. Prove that a subgroup of a cyclic group is cyclic.

24. State and prove Fermat's theorem.

25. Prove that any field is an Integral domain.

26. Prove that $(Z_n, \oplus, \odot)$ is a Ring.

27. Find the unit tangent vector to any point on the curve $x = t^2 - t,\ y = 4t - 3,\ z = 2t^2 - 8t$.

28. Suppose $v = wx\ r$ where w is a constant then prove that $w = \frac{1}{2} curl\ v$.

29. If $\cos\alpha, \cos\beta, \cos\gamma$ are the direction cosines of a straight line then show that $\sin^2\alpha + \sin^2\beta + \sin^2\gamma = 2$.

30. Find the angle between the planes $2x - y + z = 6$ and $x + y + 2z = 3$.

31. Find the equation of the Orthogonal projection of the line $\frac{x-2}{4} = \frac{y-1}{2} = \frac{z-4}{3}$ on to the plane $8x + 2y + 9z - 1 = 0$.

(6 × 4 = 24 Marks)

St Xavier's College

SECTION – D

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

32. Let R, R' be two Rings. Let $f : R \to R'$ be an Isomorphism then prove the following :
    (a) R is commutative $\Rightarrow R'$ is commutative.
    (b) R is a Ring with identity $\Rightarrow R'$ is a Ring with identity.
    (c) R is an Integral Domain $\Rightarrow R'$ is an Integral Domain
    (d) R is a field $\Rightarrow R'$ is a field.

33. (a) Define Kernel of a Ring homomorphism.

(b) State and prove fundamental theorem of Ring homomorphism.

34. State and prove Chinese remainder theorem.

35. (a) Prove that the system of Linear congruence

$ax + by \equiv r \pmod{n}$
$cx + dy \equiv s \pmod{n}$ has a unique solution modulo n whenever $\gcd(ad - bc, n) = 1$.

(b) Find the solution of

$7x + 3y \equiv 10 \pmod{16}$
$2x + 5y \equiv 9 \pmod{16}$

solution is $x \equiv 3 \pmod{16}$
$y \equiv 7 \pmod{16}$.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) H – 1517

Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

First Degree Programme under CBCSS

Complementary Course for Physics

MM 1331.1 : MATHEMATICS III — DIFFERENTIAL EQUATIONS, THEORY OF EQUATIONS AND THEORY OF MATRICES

(2014-2017 admissions)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – I

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

1. Solve $4xy\frac{dy}{dx} = y^2 - 1$.

2. Find the integrating factor of $\frac{1}{x}\frac{dy}{dx} + 4y = 2$.

3. Solve $4xy + 2x + (2x^2 + 3y^2)\frac{dy}{dx} = 0$.

4. Write the following system of equations as a matrix equation.
$2x + 6y + z = 7$
$x + 2y - z = -1$
$5x + 7y - 4z = 9$

5. Find the rank of the matrix $\begin{pmatrix} 3 & -1 \\ 1 & 3 \end{pmatrix}$.

P.T.O.

6. Define a symmetric matrix.

7. Find the sum of the eigenvalues of the matrix $\begin{pmatrix} -2 & 1 & 0 \\ 1 & 3 & 0 \\ 0 & 0 & -1 \end{pmatrix}$.

8. Solve $4x^3 + 16x^2 - 9x - 36 = 0$, the sum of two of the roots being zero.

9. Find the equation whose roots are $\frac{2}{3}, \frac{3}{2} \pm \sqrt{3}$.

10. State the Fundamental theorem of algebra.

SECTION – II

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

11. Solve the initial value problem $y - x = x\frac{dy}{dx}$, $y(1) = 2$.

12. Solve $y' = (x + y - 2)^2$.

13. Solve $\frac{dy}{dx} + xy = \frac{x}{y}$.

14. Solve $(x+1)\frac{dy}{dx} - y = e^{3x}(x+1)^2$.

15. Solve :

$x + y = 1$

$4x - y = -6$

$2x - 3y = 8$

16. Find eigen values and eigenvectors of $A = \begin{pmatrix} 3 & 4 \\ -1 & 7 \end{pmatrix}$.

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17. Diagonalize $A = \begin{pmatrix} -5 & 9 \\ -6 & 10 \end{pmatrix}$.

18. Obtain the characteristic polynomial of the matrix $A = \begin{pmatrix} 1 & -1 & 0 \\ 1 & 2 & 1 \\ -2 & 1 & -1 \end{pmatrix}$.

19. Show that $x^5 - 2x^2 + 7 = 0$ has at least two imaginary roots.

20. Solve the equation $x^3 - 10x^2 + 8x + 64 = 0$, given that the product of two of the roots is the negative of the third.

21. Solve the equation $2x^3 + 3x^2 - 11x - 6 = 0$, given that the three roots form an Arithmetic sequence.

22. Solve $x^4 - 5x^3 + 4x^2 + 8x - 8 = 0$, given that one of the roots is $1 - \sqrt{5}$.

SECTION – III

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

23. Find the orthogonal trajectories of the family of curves $(x - c)^2 + y^2 = c^2$.

24. Solve the initial value problem

$y'' - 6y + 25y = 0,\ y(0) = -3,\ y'(0) = -1.$

25. Solve $x^2y'' - xy' + y = \ln x$.

26. Solve

$x + 3y - 2z = -7$

$4x + y + 3z = 5$

$2x + 5y + 7z = 19$

27. Given that $\lambda = 1$ is a three-times repeated eigen value of the matrix $A = \begin{pmatrix} -3 & -7 & -5 \\ 2 & 4 & 3 \\ 1 & 2 & 2 \end{pmatrix}$. Find the corresponding eigenvector.

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28. Diagonalize the matrix $A = \begin{pmatrix} 6 & -10 \\ 3 & -5 \end{pmatrix}$ and use the result to find A^{10}.

29. Find the nature of the roots of the equation $3x^4 + 12x^2 + 5x - 4 = 0$.

30. Solve the equation $x^5 - x^4 + 8x^2 - 9x - 15 = 0$, one root being $\sqrt{3}$ and another $1 - 2i$.

31. Using bisection method, find a real root of the equation $x^3 - 5x + 1 = 0$.

SECTION – IV

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

32. (a) Solve $y''' - 2y'' - 4y' + 8y = 6xe^{2x}$.

(b) Solve $y''' - 4y'' - 5y' = 0$.

33. (a) Reduce the matrix $A = \begin{pmatrix} 4 & -2 & 2 & 3 & 1 \\ 2 & 0 & 0 & 3 & 2 \\ 4 & 1 & 2 & 5 & 1 \end{pmatrix}$ to its row-reduced echelon form and find its rank.

(b) Construct an orthogonal diagonalizing matrix for the symmetric matrix $A = \begin{pmatrix} 4 & 0 & 0 \\ 0 & 1 & 2 \\ 0 & 2 & 1 \end{pmatrix}$.

34. (a) Test for consistency and solve

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

$x + y - 2z = 0$

(b) Solve $(1+x)^2 y'' + (1+x) y' + y = 2\sin[\ln(1+x)]$.

35. Use the Newton-Raphson method to find the roots between 1 and 2, correct to six decimal places, of the equation $x^3 + 2x^2 - 5x + 1 = 0$.

St. Xavier's College

(Pages : 4) H – 1519

Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

First Degree Programme under CBCSS

Complementary Course for Chemistry and Polymer Chemistry

MM 1331.2 : MATHEMATICS III – VECTOR ANALYSIS AND THEORY OF EQUATIONS

(2014-2017 Admissions)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

PART – A

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

1. What is your observation about imaginary roots of a polynomial equation?
2. State Des-Carte's rule of signs of a polynomial equation.
3. Form a rational cubic equation whose roots include 3 and $\sqrt{2}$.
4. Give an example for transcendental equation.
5. Define the continuity of a vector function.
6. Write down the condition that $Mdx + Ndy + Pdx$ is exact.
7. Define $div\phi$.
8. Define the line integral of F along C.

P.T.O.

9. If $\bar{r} = xi + yj + zk$, evaluate *curl* $\bar{r}$.

10. State Gauss divergence theorem.

(10 × 1 = 10 Marks)

PART – B

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

11. Solve the equation $2x^3 - 9x^2 - 27x + 54 = 0$, given that its roots are in GP.

12. Solve the equation $x^4 - 2x^3 + 4x^2 + 6x - 21 = 0$, given that two of its roots are equal in magnitude and opposite in sign.

13. Solve $2x^3 - 7x^2 + 36 = 0$ given that the difference between two of the roots is 5.

14. Find the condition that the roots of $ax^3 + 3bx^2 + 3cx + d = 0$ may be in GP.

15. Find the unit tangent vector to the curve $x = t^2 + 1$, $y = 4t - 3$, $z = 2t^2 - 6t$ at the point $t = 2$.

16. The position vector of a particle in space at time t is $r(t) = e^{-t}i + 2\cos 3tj + 2\sin 3tk$. Find the velocity and acceleration vectors.

17. If $F = 6x^2zi + 2x^2yj - yz^2k$, find *div* F.

18. Find the work done by $F = xyi + yj - yzk$, over the curve $r(t) = ti + t^2j + tk$, $0 \le t \le 1$, in the direction of increasing t.

19. Integrate $f(x, y, z) = x^2 + z^2$ over the circle $(t) = a\cos tj + a\sin tk$ $0 \le t \le 2\pi$.

20. Show that curvature of a circle of radius a is $\frac{1}{a}$.

21. Find the length of the curve $r(t) = \sqrt{2}\,ti + \sqrt{2}tj + (1-t)k$ from $(0, 0, 1)$ to $(\sqrt{2}, \sqrt{2}, 0)$.

22. Establish the relation $\nabla \cdot (\nabla \times \bar{F}) = 0$.

(8 × 2 = 16 Marks)

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PART – C

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

23. If $\alpha, \beta, \gamma, \delta$ are the roots of the equation $ax^4 + bx^3 + cx^2 + dx + e = 0$ such that $\alpha + \beta = \gamma + \delta$, show that $4abc - b^3 - 8a^2d = 0$.

24. Solve the equation $x^4 - 2x^3 - 21x^2 + 22x + 40 = 0$ whose roots are in AP.

25. Find the root of the equation $x^3 - 9x + 1 = 0$ correct to three decimal places using bisection method.

26. Describe the Newton-Raphson method of finding the solution of a general function $f(x) = 0$.

27. Establish the relation $\nabla \cdot (\nabla \times \bar{F}) = 0$.

28. Using Green's theorem calculate the integral $\oint_C y^2dx + x^2dy$ where C is the boundary of the triangle bounded by $x = 0$, $x + y = 1$, $y = 0$ in the counterclockwise direction.

29. Find the flux of $F = (x - y)i + xj$ across the circle $x^2 + y^2 = 1$ in the xy–plane.

30. Find the potential function for the field $(e^x \cos y + yz)i + (xz - e^x \sin y)j + (xy + z)k$.

31. Show that gradient field describing a motion is irrotational.

(6 × 4 = 24 Marks)

PART – D

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

32. (a) Solve the equation $4x^4 - 85x^3 + 357x^2 - 340x + 64 = 0$, given that roots are in geometric progression.

(b) Solve the equation $15x^3 - 23x^2 + 9x - 1 = 0$ whose roots are in HP.

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33. Use Newton-Raphson method to obtain a root, correct to three decimal places of $x - \cos x = 0$.

34. If $A = 2xyi + yz^2j + xzk$ and S is a rectangular parallelepiped bounded by $x = 0, y = 0, z = 0$, $x = 2, y = 1, z = 3$ verify divergence theorem.

35. Verify Stoke's theorem, when $F = (2x - y)i - yz^2j - y^2zk$, S is the upper half surface of the unit sphere $x^2 + y^2 + z^2 = 1$ and C is its boundary.

(2 × 15 = 30 Marks)

St. Xavier's College

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Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

First Degree Programme Under CBCSS

Complementary Course for Physics

MM 1331.1 : MATHEMATICS III — CALCULUS AND LINEAR ALGEBRA

(2018 admission)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

PART – A

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

1. Define an exact first degree first order ODE.
2. Write the general form of Bernoulli's equation.
3. Give an example for a linear first order ODE.
4. When is a vector field said to be conservative?
5. Write the continuity equation.
6. Give the integral form for divergence.
7. Give an example for a periodic function.
8. Define commutator of two matrices A and B.

P.T.O.

9. Find AB if $A=\begin{pmatrix} 3 & -4 \\ -4 & 2 \end{pmatrix}, B=\begin{pmatrix} 5 & 2 \\ -7 & 3 \end{pmatrix}$.

10. Define linear function of vectors.

(10 × 1 = 10 Marks)

PART – B

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

11. Solve the ODE $y'+2\sin 2\pi x=0$ by integration.

12. State Stoke's Theorem.

13. State divergence theorem.

14. Find the period and frequency of the function $s=\frac{1}{2}\cot(\pi t-8)$.

15. Give an example of a function which fails to satisfy the Dirichlet conditions but expandable in a Fourier series.

16. Solve $\frac{dy}{dx}=x+xy$.

17. Verify that $y=ce^{-4x}+0.35$ is a solution of the ODE $y'+4y=1.4$.

18. Give an expression for the angular momentum of a solid body rotating with angular velocity ω about an axis through the origin.

19. Write e^x as the sum of an even function and an odd function.

20. State divergence theorem.

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

22. If $\vec{F}=2xz\hat{i}+2yz^2\hat{j}+(x^2+2y^2z-1)\hat{k}$, find $\nabla\times\vec{F}$.

(8 × 2 = 16 Marks)

PART – C

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

23. Solve $x\frac{dy}{dx}+y=xy^3$.

24. Solve $(x+2y^3)\frac{dy}{dx}=y$.

25. Show that the equation

$(1+4xy+2y^2)dx+(1+4xy+2x^2)dy=0$ is exact and solve it.

26. From Ampere's law, derive Maxwell's equation in the case where the currents are steady, ie., $\nabla\times\vec{B}=\mu_0\vec{J}=0$.

27. Find the vector area of the surface of the Hemisphere $x^2+y^2+z^2=a^2, z\geq 0$ by evaluating the line integral $\vec{S}=\frac{1}{2}\oint_C \vec{r}\times d\vec{r}$ around its perimeter.

28. Represent $f(x)=\begin{cases}1, & -1<x<1\\ 0, & |x|>1\end{cases}$ as a Fourier integral.

29. Find the angle between the vectors $\vec{A}=3\hat{i}+6\hat{j}+9\hat{k}$ and $\vec{B}=-2\hat{i}+3\hat{j}+\hat{k}$.

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

31. Find the dimension of the space spanned by the vectors

$\{(1, 0, 1, 5, -2), (0, 1, 0, 6, -3), (2, -1, 2, 4, 1), (3, 0, 3, 15, -6)\}$.

(6 × 4 = 24 Marks)

PART – D

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

32. Use variation of parameters method to solve $\frac{d^2y}{dx^2} + y = \operatorname{cosec} x$, subject to the boundary conditions $y(0) = y(\pi/2) = 0$.

33. Given the vector field $\vec{a} = y\hat{i} - x\hat{j} + z\hat{k}$, verify Stoke's theorem for the hemispherical sphere $x^2 + y^2 + z^2 = a^2, z \geq 0$.

34. Find the Fourier series for $|x|$ in $[-\pi, \pi]$ and deduce that $1 + \frac{1}{3^2} + \frac{1}{5^2} + \cdots = \frac{\pi^2}{8}$.

35. Given the matrices

$$A = \begin{pmatrix} 1 & -1 & 1 \\ 4 & 0 & -1 \\ 4 & -2 & 0 \end{pmatrix}, \quad B = \begin{pmatrix} 1 & 0 & 1 \\ 2 & 1 & 1 \\ 2 & 1 & 2 \end{pmatrix}$$

(a) Find $A^{-1}, B^{-1}, B^{-1}AB$ and $B^{-1}A^{-1}B$.

(b) Show that the matrices $B^{-1}AB$ and $B^{-1}A^{-1}B$ are inverses.

(2 × 15 = 30 Marks)

St Xavier's College

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Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

First Degree Programme under CBCSS

Complementary Course for Chemistry And Polymer Chemistry

MM 1331.2 : MATHEMATICS III — LINEAR ALGEBRA, PROBABILITY THEORY AND NUMERICAL METHODS

(2018 admission)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – I

All the first **ten** questions are compulsory.

They carry **1** mark each.

1. Define singular matrix.
2. What are equivalent matrices?
3. Define Hermitian matrix.
4. Define sample space.
5. For any mutually exclusive events A and B, $P(A \cup B) =$ ————————.
6. What is a random variable?
7. Write the probability function of Binomial distribution.
8. What is an algebraic equation?

9. Give an example of a transcendental equation.

10. State trapizoidal rule.

SECTION – II

Answer any **eight** questions from among the questions 11 to 22.

These questions carry 2 marks each.

11. What are elementary transformations?

12. Using definition, find the rank of $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \\ 0 & 2 & 2 \end{bmatrix}$.

13. Find the eigen values of $A = \begin{bmatrix} 1 & 2 & 3 \\ 0 & -4 & 2 \\ 0 & 0 & 7 \end{bmatrix}$

14. Prove that the eigen values of a matrix is same as the eigen values of its transpose.

15. If $P(A) = 0.2$ and $P(B) = 0.6$ where A and B are independent events, find $P(A \cup B)$.

16. A bag contains 4 white balls and 5 black balls. A man draws 3 balls at random. What is the probability that all are black.

17. Find the coefficient of x^8 in the binomial expansion of $(1+x)^{10}$.

18. What is the probability of obtaining at least two 6's while throwing a fair die 4 times?

19. What is the probability that there are exactly 52 Sundays in a leap year?

20. What is binary chopping?

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21. Using Newton's method find P_2, where $f(x) = x^2 - 6$ and $P_0 = 2$.

22. Use trapezoidal rule to approximate $\int_0^2 x^2 dx$.

SECTION – III

Answer any **six** questions from among the questions 23 to 31.

These questions carry 4 marks each.

23. Reduce to normal form and find the rank of $A = \begin{bmatrix} 0 & 1 & 2 & -2 \\ 4 & 0 & 2 & 6 \\ 2 & 1 & 3 & 1 \end{bmatrix}$.

24. Using Cramer's rule solve $2x - y + 3z = 9$, $x + y + z = 6$, $x - y + z = 2$.

25. Prove that the eigen values of a Hermitian matrix are real where as that of skew-Hermitian matrix are purely imaginary or zero.

26. A club contains 25 members – 15 male and 10 female. In how many ways can a committee of 3 with at least 2 men be selected?

27. What is the probability that a two digit number is divisible by (a) both 4 and 6 (b) by either 4 or 6, but not both.

28. Find the number r such that the area under the normal distribution curve $y = f(x)$ from $\mu - r$ to $\mu + r$ is $\frac{1}{2}$.

29. Obtain an approximate solution of the following equations.

$9x + 6y + 12z = 17.4$, $6x + 13y + 11z = 23.6$, $12x + 11y + 26z = 30.8$

30. Write a short note on Monte-Carlo method.

31. Evaluate $\int_0^1 e^{-x^2} dx$ using Simpson's rule.

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SECTION – IV

Answer any *two* questions from among the questions 32 to 35.

These questions carry 15 marks each..

32. Find the eigen values and the corresponding eigen vectors of

$$\begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}.$$

33. A and B throw alternately a pair of dice. A wins if he throws 6 before B throws 7 and B wins if she throws 7 before A throws 6. If A begins, his chance of winning would be:

34. using Runge-Kutta method solve the initial value problem $y' = x + y$, $y(0) = 0$ with $h = 0.2$.

35. Diagonalize the matrix $\begin{bmatrix} 16 & 0 & 0 \\ 48 & -8 & 0 \\ 84 & -24 & 4 \end{bmatrix}$.

St. Xavier's College

(Pages : 4) H – 1561

Reg. No. : .....

Name : .....

Third Semester B.Com. Degree Examination, October 2019

First Degree Programme under CBCSS

CO 1361.1/CC 1342 – FINANCIAL MANAGEMENT

(Common for Commerce/Commerce with Computer Application)

(Common for CO 1361.1 (2013 to 2017 Admn.)/CC 1342 (2013 Admn))

Time : 3 Hours Max. Marks : 80

St. Xavier's College

SECTION – A

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

1. What is financial management?
2. What is IRR?
3. What is stock dividend?
4. What is net working capital?
5. What is benefit- cost ratio?
6. Define leverage.
7. What is discounting?

8. What is capital structure?

9. What is ABC analysis?

10. What is discounted payback period?

(10 × 1 = 10 Marks)

SECTION – B

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

11. What is VED analysis?

12. State the various forms of dividend.

13. What is cost of equity?

14. What are the different types of leverages?

15. Distinguish average cost of capital from marginal cost of capital.

16. What is zero working capital?

17. What is implicit cost?

18. What is inventory turnover ratio?

19. What is cost of reference shares?

20. What is capital budgeting?

21. What is ARR?

22. What is cash budget?

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION – C

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

23. Explain the various types of cost of capital.

24. Discuss the objectives of inventory management.

25. State the significance of capital budgeting.

26. What are the functions of a finance manager?

27. State the factors affecting the working capital of a firm.

28. Distinguish between ARR and IRR.

29. Explain the various techniques of inventory management.

30. A project cost Rs. 5,00,000 and yields annually a profit of Rs. 80,000 after depreciation @ 12% p.a but before tax at 50%. Calculate payback period.

31. A company has sales of Rs 10,00,000, variable cost of Rs 7,00,000 and fixed cost of Rs. 2,00,000 and debt of Rs. 5,00,000 at 10% interest rate. Calculate financial and operating leverage.

(6 × 4 = 24 Marks)

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SECTION – D

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

32. Explain the scope and contents of finance function.

33. What is dividend policy? Discuss the factors influencing dividend policy.

34. Define working capital. State its significance.

35. From the following data, calculate NPV of two projects and suggest which one should be accepted by assuming a discount rate of 10%.

Projects	Cash inflows					Cost	Life
	1	2	3	4	5		
X	5,000	10,000	10,000	3,000	2,000	20,000	5
Y	20,000	10,000	5,000	3,000	2,000	30,000	5

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) H – 1571

Reg. No. : .....

Name : .....

Third Semester B.Com. Degree Examination, October 2019

First Degree Programme under CBCSS

English — (Language Course)

EN 1311.2 : WRITING AND PRESENTATION SKILLS

(2015 Admission Onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

I. Answer **all** questions, each in a word or a sentence:

A. Rewrite the following sentences, correcting the errors if any

1. Crossing the road the cyclist hit her.

2. I was really angry at him.

3. No sooner the sun rose than the fog disappeared.

4. Have you practised the dance steps?

5. All her daughter-in-laws are clever.

B. Write one synonym each for the following words.

6. Obstacle.

7. Negligent.

8. Recall.

9. Sanction.

10. Pardon.

(10 × 1 = 10 Marks)

II Answer **any eight,** each in a short paragraph not exceeding 50 words .

11. Explain "clubbing or clustering".

12. What is syntax?

13. What is 'brain storming'?

14. What are emotions?

15. Point out the differences between formal letter and its email counterpart.

16. What is 'terms of reference'?

17. What are the features of a narrative essay?

18. Write a note on memorandum.

19. Distinguish between precis and abstract.

20. Mention any two points to be kept in mind while preparing slides for a presentation.

21. What is blogging?

22. What are the mechanics of writing.

(8 × 2 = 16 Marks)

St. Xavier's College

III Answer any **six** as directed:

23. Prepare an email complaining to a book shop, about lapses in delivery.

24. Write a precis of the following passage reducing it to one third of its length.

The most important thing is that we should have freedom of thought. This is not easy as it sounds, for everyone likes to have this freedom for himself, but is not ready to give it to others when they express different opinions. This is particularly the case when the differences of opinion arise on such important matters as religion and politics. But if we refuse to let other people hold their opinions on these matters, and specially if we try to force them to accept our own, progress is impossible. If we decide to blindly follow our ancestors and give undue importance to 'tradition' that actually do no good to society, we can expect any growth. Our thoughts depend a great deal on what we read and our interaction with the community at large. We must be able to embrace differences, think rationally and not be influenced by partisan views. Your thoughts define your personality – and how or what you think is entirely your decision.

25. Prepare a report on the relief work that your college was engaged in during the recent floods.

26. Write a letter to a friend in Mysore, asking him to make arrangements for boarding and sight seeing, for a group of students from your college.

27. Prepare a questionnaire for conducting a survey on regularity of water supply in your area.

28. Discuss the role of Computers in writing.

29. What is 'mind mapping'?

30. Write a note on how to manage stage fright during a presentation.

31. Write an email to the controller of exams requesting for a duplicate mark list – explaining the loss of the original.

(6 × 4 = 24 Marks)

St. Xavier's College

IV Answer any **two as** directed:

32. Write an essay on "What ails our educational system?"

33. As the Secretary of your Environment Club, prepare a report on its activities.

34. Create content for 15-20 slides on "An analysis of politics on campus."

35. You have completed a course in Journalism and are applying for the post of reporter in a leading publishing company. Prepare a C.V. with a covering letter.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) H – 1574

Reg. No. : .....

Name : .....

Third Semester B.Com Degree Examination, October 2019

First Degree Programme under CBCSS

Elective course I : Stream 1 — Finance

CO 1361.1 : FINANCIAL MANAGEMENT

(2018 Admission)

St. Xavier's College

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 **1** mark.

1. What is Financial Management?
2. What is time value of money?
3. What is terminal cash flow?
4. What is marginal cost of capital?
5. What is cost of capital?
6. What is trading on equity?
7. What is an interim dividend?
8. What do you mean by net present value?

P.T.O.

9. What is cost of debt?

10. What is stock dividend?

(10 × 1 = 10 Marks)

SECTION – B

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

11. Distinguish between wealth maximization approach over profit maximisation approach.

12. Distinguish between implicit cost and explicit cost.

13. What are the advantages of NPV method?

14. What is Return on Capital Employed?

15. Explain financial leverage.

16. What is Dividend payout ratio?

17. What are the concepts working capital?

18. What are the types of systematic risks?

19. 'Excessive working capital is a danger' Comment.

20. What is A-B-C analysis?

21. Distinguish between Specific cost and Combined cost.

22. What is Economic Order Quantity (EOQ)?

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION – C

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

23. What are the types Risk?

24. What are the different types of Dividend Policy?

25. Explain the advantages of equity shares.

26. What are the uses of Financial Leverage?

27. What is meant by Operating leverage?

28. Explain Profitability Index method (PI).

29. Describe the types of working capital.

30. Explain the limitations of profit maximisation objective of financial management.

31. What are the functions of inventory management?

(6 × 4 = 24 Marks)

SECTION – D

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

32. What is IRR? Discuss its merits and demerits.

33. Explain the terms :
    (a) Cash Management.
    (b) Receivable Management.
    (c) Inventory Management.

34. Explain the advantages of adequate Working Capital.

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35. Hi- tech Ltd., plan to sell 30,000 units next year. The expected cost of goods sold is

	₹ follows per unit
Raw material	100
Manufacturing expenses	30
Selling, administration and financial expenses	20
Selling price	200

The duration at various stages of the operating cycle is expected to be as follows :

Raw materials stage 2 months

Works-in- Progress stage 1 month

Finished stage 1/2 month

Debtors stage 1 month

Assuming the monthly sales level of 2500 units, estimate then Working capital requirement. Desired cash balance is 5% of the gross working capital requirement, and works-in-progress 25% complete with respect to manufacturing expenses. Working capital progress in 25% complete with respect to manufacturing expenses.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) H – 1788

Reg. No. : .....

Name : .....

Third Semester B.A./B.Sc. Degree Examination, October 2019

First Degree Programme under CBCSS

Malayalam Language

Language Course VII – Additional Language III

ML 1311.1 : DRISHYAKALASAHITHYAM

ദൃശ്യകലാസാഹിത്യം

(2018 Admission)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

I. ഒരു വാക്യത്തിലോ പരമാവധി രണ്ടു വാക്യത്തിലോ ഉത്തരമെഴുതുക.

1. രാമനാട്ടത്തിന്റെ ഉപജ്ഞാതാവ് ആര്?

2. കോട്ടയത്തു തമ്പുരാന്റെ ഏതെങ്കിലും ഒരു ആട്ടക്കഥയുടെ പേരെഴുതുക.

3. ജി. ശങ്കരപ്പിള്ളയുടെ ആദ്യ നാടകം ഏത്?

4. മലയാള നാടക സാഹിത്യചരിത്രം ആരുടെ കൃതിയാണ്?

5. നളചരിതത്തെ മലയാളത്തിന്റെ ശാകുന്തളം എന്ന് വിശേഷിപ്പിച്ചതാര്?

6. നാടകം സംബന്ധിച്ച് സി.ജെ. തോമസ്സ് രചിച്ച കൃതി ഏത്?

7. അടവിവാസവുമടവുനന്നു നന്നൊരു
കടവുമില്ല തടവുമില്ലവർക്കിഹ - ആർക്ക്?

P.T.O.

8. കുഞ്ചൻ നമ്പ്യാരുടെ തുള്ളൽ കൃതികളിൽ ആദ്യത്തേത് എന്ന് കരുതുന്നത് ഏത്?

9. ബൈസിക്കിൾ തീവ്സ് എന്ന ചലച്ചിത്രത്തിന്റെ സംവിധായകൻ ആര്?

10. നളചരിതം ആട്ടക്കഥയ്ക്ക് എ.ആർ. എഴുതിയ വ്യാഖ്യാനം എന്ത്?

(10 × 1 = 10 Marks)

II. **ഒരോ** ഖണ്ഡികയിൽ കവിയാതെ ഏതെങ്കിലും **എട്ടു** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

11. നാരദൻ നളനെ അറിയിച്ച ദമയന്തീ-വൃത്താന്തം എന്തായിരുന്നു?

12. യൗവ്വനം വന്നുദിച്ചിട്ടും ചെറുതായില്ല ചെറുപ്പം ഇങ്ങനെ പറയാൻ കാരണമെന്ത്?

13. മുദിരരതി കമ്പരീ പരിചയ പദവിയോ

വിജനേ വസതിയോ മേ ഗതിയിനി രണ്ടിലൊന്നേ - സന്ദർഭം എന്ത്?

14. അർണ്ണവം തന്നിലല്ലോ നിമ്നഗ ചേർന്നു ഞായം

അന്യഥാ വരുത്തുവാൻ കുന്നു മുതിർന്നീടുമോ - സന്ദർഭം എന്ത്?

15. ചിലദളിത്ഡാകാരം ചെവികളിലംഗാരം

കോകില കൂജിതങ്ങൾ കൊടിയ കർണ്ണശൂലങ്ങൾ - സന്ദർഭം എന്ത്?

16. മിന്നൽക്കൊടിയിറങ്ങി മന്നിലേ വരികയോ

- ഇങ്ങനെ പറയാൻ കാരണമെന്ത്?

17. നമ്മുടെ ചോർ തിന്നുന്നൊരു ദുഷ്ടന്

നമ്മുടെ വൈരികളിൽ ബഹുമാനം - ആരുടെ വാക്കുകൾ?

18. മാറ്റാരിൽ കനിവേറ്റവുമുള്ളൊരു

കൂറ്റാരേക്കാൾ മാറ്റാർ നല്ലൂ - സന്ദർഭം എന്ത്?

St. Xavier's College

19. മുല്ലയിൻമേൽ ആരെങ്കിലും കാഞ്ഞ വെള്ളമൊഴിക്കുമോ? സന്ദർഭം എന്ത്? - ഇങ്ങനെ പറയുന്നതിന്റെ കാരണം?

20. പെയ്യുന്നിതേ വെള്ളില വള്ളിതോറും - കാരണമെന്ത്?

21. പ്രാന്തനാ മരിക്കാതെ മരണമില്ലാതെ എവിടേയ്യോ കഴിയാ എന്നാലോ ജീവിക്കുന്നുന്നൊട്ടു പറയാനുമാകില്ല - സന്ദർഭം എന്ത്?

22. മണ്ടിക്കത്തുന്ന റാന്തരി വിളക്കിന് സബർമതി ദൂരെയാണ് എന്ന നാടകത്തിലുള്ള പ്രാധാന്യമെന്ത്?

(8 × 2 = 16 Marks)

III. ഓരോന്നിനും **120** വാക്കിൽ കവിയാതെ ഏതെങ്കിലും **ആറു** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

23. നളചരിത ഭാഷയുടെ സവിശേഷതകൾ എന്തെല്ലാം?

24. നളൻ ദമയന്തി എന്നിവരുടെ നേരിട്ടു കാണാതെയുള്ള അനുരാഗം അതിവസുന്ദരമായി അവതരിപ്പിക്കുകയാണ് നളചരിതം ആട്ടക്കഥയിൽ - ചർച്ച ചെയ്യുക.

25. ഒരു ഉത്തമ പിതാവിന്റെ ദൗത്യം നിർവ്വഹിക്കുകയാണ് കണ്വമഹർഷി - നാലാമങ്കത്തിന്റെ പശ്ചാത്തലത്തിൽ വിവരിക്കുക.

26. ശകുന്തള ആശ്രമം വിട്ടു പോകുമ്പോൾ ആശ്രമത്തിനുണ്ടാകുന്ന മാറ്റങ്ങൾ എന്തെല്ലാം?

27. നമ്പ്യാരുടെ സാമൂഹിക പരിഹാസം ഘോഷയാത്ര എന്ന ഓട്ടൻതുള്ളലിൽ പ്രതിഫലിക്കുന്നതെങ്ങനെ?

28. ആൾക്കൂട്ടം ബൈസിക്കിൾ തീവ്സിലെ സുപ്രധാന കഥാപാത്രമാണ് - ചർച്ച ചെയ്യുക.

29. പ്രത്യാശയാണ് ബൈസിക്കിൾ തീവ്സ് എന്ന ചലച്ചിത്രത്തിന്റെ അടിസ്ഥാനം - പരിശോധിക്കുക.

30. കടം വാങ്ങൽ വ്യക്തിയെ അങ്ങേയറ്റം ദുരന്തങ്ങളിലേക്ക് തള്ളിയിടുന്നു. രാവുണ്ണി എന്ന നാടകത്തെ മുൻനിർത്തി ചർച്ച ചെയ്യുക.

31. എഴുപതുകളിലെ മലയാള നാടകത്തെപ്പറ്റി ഒരു കുറിപ്പെഴുതുക.

(6 × 4 = 24 Marks)

St. Xavier's College

IV. **മൂന്നു** പുറത്തിൽ കവിയാതെ **രണ്ടു** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

32. അനുരാഗബദ്ധരായ നളനെയും ദമയന്തിയെയും അവരുടെ മനോവ്യാപാരങ്ങളിൽ കൂടി അവതരിപ്പിക്കുകയാണ് ഉണ്ണായി വാര്യർ - ഉപന്യസിക്കുക.

33. സാമൂഹികവിമർശനമാണ് നമ്പ്യാർ കൃതികളുടെ ലക്ഷ്യം - ചർച്ച ചെയ്യുക.

34. ജി. ശങ്കരപ്പിള്ളയുടെ നാടകങ്ങളെപ്പറ്റി ലഘു ഉപന്യാസം തയ്യാറാക്കുക.

35. രണ്ടാം ലോകയുദ്ധം സൃഷ്ടിച്ച കെടുതികളാണ് ബൈസിക്കിൾ തീവ്സ് എന്ന സിനിമ ചർച്ച ചെയ്യുന്നത്. - പരിശോധിക്കുക.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) H – 1792

Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

First Degree Programme under CBCSS

Physics

Core Course I

PY 1341 – ELECTRODYNAMICS

(2018 Admission)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

PART – A

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

1. Define polarization.
2. State Coulomb's law.
3. What is magnetic vector potential?
4. What is Q-factor in AC circuit?
5. What is meant by electrostatic shielding?
6. What is a choke coil?
7. What is meant by electromagnetic induction?
8. What are RL circuits used for?

9. What is the significance of Laplace equation?

10. Give the equation for torque about the center of a "perfect" dipole of infinitesimal length.

(10 × 1 = 10 Marks)

PART – B

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

11. Why magnetic forces cannot do work?

12. Discuss the properties of linear dielectric.

13. Obtain an expression for the potential of a localized charge distribution.

14. Discuss the applications of Ampere's circuital law.

15. Explain Ampere's circuital theorem. Use the theorem to find the magnetic field of a very long solenoid consisting of *n* closely wound turns per unit length on a cylinder or radius R and carrying a steady current I.

16. Discuss motional emf.

17. What is the advantage of the potential formulation?

18. What is electric potential? Show that electric potential is the line integral of the electric field.

19. Define equipotential surfaces. Give its important properties.

20. Obtain Laplace equation.

21. Define electric displacement. Obtain an expression for electric displacement.

22. Explain Biot-Savart Law.

(8 × 2 = 16 Marks)

St. Xavier's College

PART – C

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

23. A capacitor of capacitance 0.1 μF is first charged and then discharged through resistance of 10 mega ohm. Find the time, the potential will take to fall to half its original value.

24. In an experiment to determine high resistance by leakage, a capacitor of 0.2 μF is used. It is fully charged and discharged through a B.G. The observed kick was 12 cm on the scale. The capacitor was fully charged again and allowed to leak through R for 2 sec. The remaining charge in C gave a kick of 6 cm on the same scale when discharged through the B.G. Calculate R

25. Find the vector potential of an infinite solenoid with n turns per unit length, radius R. and current I.

26. A 0.5 μF capacitor is discharged through a resistance of 10 mega ohm. Find the time taken for half the charge on the capacitor to escape.

27. Calculate the polarisation vector of the material which has 100 dipoles per unit volume in a volume of 2 units.

28. A current I is uniformly distributed over a wire of circular cross section, with a radius a. Find the volume current density J. Suppose the current density in the wire is proportional to the distance from the axis, J = ks (for some constant k). Find the total current in the wire.

29. A spherical charge distribution having volume charge density $A\varepsilon_0 e^{-br}(1-br)/r^2$ what is the electric field E on the surface of the sphere?

30. A circuit consists of a non-inductive resistance of 50 ohms, an inductance of 0.3 henry, and a resistance of 2 ohms and a capacitor of 40 micro-farad in series and is supplied with 200 volts at 50 Hz. Find the impedance, the current, lag or lead, and the Power in the circuit.

31. A long straight wire, carrying uniform line charge λ, is surrounded by rubber insulation out to a radius a. Find the electric displacement.

(6 × 4 = 24 Marks)

St. Xavier's College

PART – D

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

32. Derive an expression for energy of a charged capacitor. Show that the dielectric in between the plates of a parallel plate capacitor experiences a force and derive an equation for it.

33. Explain the electrostatic properties of a conductor. Derive an expression for force on surface of a charged conductor.

34. (a) State and explain Ampere's law.

    (b) Derive the expression for the magnetic field due to

        (i) solenoid

        (ii) toroid.

35. With necessary theory obtain electrostatic boundary conditions. Discuss about work and energy in electrostatics.

(2 × 15 = 30 Marks)

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Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, October 2019

First Degree Programme under CBCSS

Complementary Course for Mathematics

PY 1331.1 – OPTICS,MAGNETISM AND ELECTRICITY

(2018 Admission)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. Write down the expression for the optical path differences for constructive and destructive interferences.
2. Which among the following has the higher bandwidth? Red or violet monochromatic light. Give reason.
3. Mention the use of diffraction grating.
4. While observing diffraction at straight edge, only few bands are seen. Why?
5. What are the components of a laser?
6. Draw the refractive index profile of a step index and graded index fibre.
7. Define magnetisation.
8. What are the components of magnetic dipole moment of an atom?

P.T.O.

9. What is the significance of form factor?

10. Q factor determines the degree of selectivity of the circuit while tuning. Explain why?

(10 × 1 = 10 Marks)

SECTION – B

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

11. Distinguish between interference due to wavefront division and amplitude division.

12. What is the correction made on optical path difference on the interference in thin films due to reflected light? Why is it necessary?

13. Briefly explain the methods for producing fringes of equal inclination and equal thickness.

14. If an opaque object is placed in the path of light, there should be illumination in the geometrical shadow region, But this not commonly observed. Explain why?

15. Compare single and double slit Fraunhofer diffraction pattern.

16. How does overlapping of spectral lines occur in diffraction gratings? How can you avoid this?

17. Explain population inversion.

18. Why cladding is necessary in optical Fibres?

19. Compare Curie temperature and Neel's temperature.

20. Why do we prefer choke coil to ohmic resistance to diminish current?

21. Briefly explain the energy losses in transformers.

22. Derive the relation connecting the relative permeability and susceptibility.

(8 × 2 = 16 Marks)

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SECTION – C

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

23. Prove that the fringe width of both bright and dark interference fringes formed by the double slit experiment is the same.

24. A soap film of refractive index 1.34 is illuminated by 600nm light incident at an angle 45°, Find the thickness of the film using the condition for dark fringes.

25. A single slit Fraunhofer pattern is formed with white light. For what wavelength of the light the second maximum in the diffraction pattern coincides with the third maximum in the pattern for 464.2 nm.

26. A circular aperture is illuminated by plane waves of monochromatic light of wavelength 625nm. The diffracted light is received on a distant screen which is gradually moved towards the aperture. If the centre of the circular patch of the first becomes dark when the screen is 0.2m from the aperture, find the diameter of the aperture.

27. An iron rod of 10cm long, 10mm in diameter and of relative permeability 1000 is placed inside a long solenoid wound with 100 turns/ metre. If a current of 0.1A is passed through the rod, find the magnetic moment of the rod.

28. If the critical angle for a fibre made up of silica is 42°, find the refractive index of it. Also find the critical angle when the fibre is immersed in water (n_{water}=1.33).

29. Show that in an ac circuit containing inductance and resistance in series the current lags in phase behind the emf by an angle $\tan^{-1}(L\omega/R)$.

30. A resistance of 100Ω is joined in series with an inductance of 100mH. What capacitance must be put in series with the combination to obtain maximum current? What will be the potential drop across each element of circuit, if it is connected to 230V, 50Hz mains?

31. Find the ratio of the populations of the two states in a laser that produces a light of wavelength 628nm at 27°C.

(6 × 4 = 24 Marks)

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SECTION – D

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

32. Describe the Newton's ring experiment to determine the refractive index of a liquid. Also explain the necessary theory.

33. Give Fresnel's explanation to diffraction of light and its rectilinear propagation.

34. Compare the various magnetic materials with examples.

35. Explain the induction of emf in a coil rotating in a magnetic field, Find the mean, rms and effective value of ac current and voltage during a complete and half cycle.

(2 × 15 = 30 Marks)

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St. Xavier's College

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Reg. No. : .....

Name : .....

Third Semester B.Com. Degree Examination, October 2019

First Degree Programme under CBCSS

Core Course

ADVANCED FINANCIAL ACCOUNTING

(Common for CO 1343/CC 1344 (2014 to 2017 Admission)/CO1342/CX1342/TT1342/HM1342/CC1343 (2018 Admission))

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. What is meant by partnership deed?
2. What is dissolution of firm?
3. What is consignment?
4. What is proforma invoice?
5. What is Joint Venture?
6. Write a short note on Memorandum Joint Venture Account.
7. What are the main types of branches from accounting point of view?
8. What is 'goods in transit'?
9. What are departmental accounts?
10. What is dual pricing?

(10 × 1 = 10 Marks)

P.T.O.

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SECTION – B

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

11. Explain the circumstances under which a firm is dissolved.

12. What is meant by 'fixed capital' of partners?

13. Bring out two important decisions of Garner Vs. Murray.

14. Who is consignee?

15. Name the various methods of recording Joint Venture transactions.

16. Distinguish between joint venture and consignment.

17. What is meant by dependent Branch?

18. What is meant by 'Branch Adjustment Account'?

19. What are inter departmental transfers?

20. List the bases for apportionment of common expenses in departmental accounts.

21. Invoice price of goods sent out is ₹.4,00,000. 4/5th of the goods were sold by consignee at ₹.3,52,000. The rate of commission is 2% upto invoice value and 10% of any surplus above invoice value. Calculate the amount of commission.

22. Calculate invoice price of Goods sent to branch and profit included therein:

    Goods sent to Branch (at cost) ₹.1,20,000

    Goods are invoiced to the Branch at 25% above the cost.

(8 × 2 = 16 Marks)

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SECTION – C

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

23. What is realisation account? How and when is it prepared?

24. Distinguish between consignment and sale.

25. What are the objectives of Branch accounting?

26. What are the advantages of departmental accounting?

27. Pass necessary journal entries for the following transactions at the time of dissolution of the firm

    (a) X, a partner takes over an unrecorded asset (typewriter) at ₹3,000

    (b) Undistributed balance (debit) of Profit and Loss account ₹30,000. The firm has three partners X,Y and Z

    (c) The assets of the firm realised ₹1,25,000

    (d) Creditors paid ₹28,000 in full settlement of their account of ₹30,000.

28. Mr. X provides the following information:

    (a) Goods sent by Mr. X to his agent Mr.Y–10,000 units @ ₹20 per unit.

    (b) Mr. X's forwarding expenses ₹.50,000.

    (c) Agent took delivery and brought goods to his godown after incurring expenses @ ₹1 per unit.

    (d) Goods sold by agent – 7,300 units @ ₹30.

    (e) Agents commission — 6%

    Calculate the amount of closing stock.

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29. X ltd. Provides you the following information:

	Stock as on 1.4.2014	Purchases	Sales
Dept. A	120 units	1,000 units	1,020 units @ ₹20.00
Dept. B	80 units	2,000 units	1,920 units @ ₹22.50
Dept.C	152 units	2,400 units	2,496 units @ ₹25.00

Total purchases for the period is ₹.1,00,000

The rate of gross profit is 20%, same for all the departments.

Prepare departmental trading account for the year 2014-15

30. Give journal entries in the books of Branch A to adjust the following

(a) Head office exp. ₹35,000 allocated to the Branch, but not recorded in Branch Books

(b) Depreciation of branch assets, whose accounts are kept by the Head office not provided earlier for ₹25,000

(c) Branch paid ₹40,000 as salary to a H.O Inspector, but the amount paid has been debited by the branch to salaries account.

(d) A remittance of ₹1,50,000 sent by the branch has not yet been received by Head Office.

31. X and Y entered into a joint venture, agreeing to share profits and losses in the ratio of their respective contributions. X and Y deposited ₹65,000 and ₹32,500 respectively into a joint bank account. Goods bought for ₹75,000. Expenses incurred ₹.10,950. Goods sold for ₹90,000. Goods taken over by X amounted to ₹2,700.

Prepare joint venture account and find out the profit.

(6 × 4 = 24 Marks)

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SECTION – D

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

32. Write short notes on:

(a) Treatment of normal and abnormal losses in consignment

(b) Recurring and non-recurring expenses relevant in consignment

(c) Delcredere and overriding commission in consignment

33. Jeevan and sons has two departments' cloths and readymade clothes. Readymade clothes are manufactured by the firm itself out of clothes supplied by the cloth department at its usual selling rate. From the following figures prepare Departmental Trading and Profit and Loss account and General Profit and Loss account for the year ending 31 December 2017.

	Cloth	Readymade
	(₹.)	(₹.)
Opening stock on 1.1 .2017	3,60,000	60,000
Purchases	29,00,000	20,000
Sales	35,00,000	7,00,000
Transfer to readymade cloth department	4,50,000	–
Manufacturing expenses	–	1,40,000
Closing stock on 31.12.2017	1,00,000	48,000

General expenses incurred for both the department were ₹1,20,000. The stocks in the readymade cloth department may be considered as consisting of 66 2/3% cloth and 33 1/3% other expenses. The cloth department earned profit at the rate of 18% in 2016.

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34. A Delhi merchant has a Branch at Chennai to which he charges out the goods at cost plus 25%. The Chennai Branch keeps its own Sales ledger and transmits all cash received to the Head Office every day. All the expenses are paid from the head Office. The transactions for the Branch were as follows.

	₹
Stock (1 .4.2007) at invoice price	11,000
Debtors (1 .4.2007)	100
Petty cash	100
Cash sales	2,650
Credit sales	23,950
Goods sent to Branch at invoice price	20,000
Collection from Branch debtors	21,000
Goods returned to Head Office at invoice price	300
Bad debts	300
Allowances to customers	250
Returns inwards	500
Cheque sent to Branch:	
Rent	600
Wages	200
Salaries	900
Stock (31.3.2008)	13,000
Debtors (31.3.2008)	2,000
Petty cash (31.3.2008) including miscellaneous Income not remitted	125

Prepare Branch Trading and Profit and Loss account.

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35. Ram and Lal shared profits in the ratio of 2:3. Their Balance Sheet on March 31, 2016 was as follows

Balance sheet

Liabilities	₹	Assets		₹
Creditors	40,000	Cash		16,000
Lal's loan	32,000	Debtors	80,000	
Profit and loss account	50,000	Less: Provision	3,600	76,400
Capital:		Inventory		1,09,600
Lal	1,60,000	Bills receivable		40,000
Ram	2,40,000	Buildings		2,80,000
	5,22,000			5,22,000

Ram and Lal decided to dissolve the firm on the above date. Assets except bills receivable realized ₹4,84,000. Creditors agreed to take ₹38,000. Cost of realisation was ₹2,400. There was an unrecorded motor cycle in the firm and it was sold for ₹10,000. There was a contingent liability of ₹5,000 in respect of outstanding electricity bill. Ram took bills receivable at ₹33,000.

Prepare necessary accounts to close the books of the firm.

(2 × 15 = 30 Marks)

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