G – 2460

(Pages : 3)

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme Under CBCSS

Chemistry

Foundation Course II

CH 1221 : METHODOLOGY AND PERSPECTIVES OF SCIENCES AND GENERAL INFORMATICS

(2017 Admission onwards)

Time : 3 Hours

Max. Marks : 80

PART – A

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

1. Give the difference between science and technology.
2. What are the contributions of Dmitri Mendeleyev?
3. What is the S.I. units of Electric current?
4. Suggest an alternatives for conventional fuels.
5. What is sampling?
6. Who are the winners of Nobel Prize in Chemistry in the year 2018?
7. What is plagiarism?
8. Define ionic product.

P.T.O.

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9. Name one structure drawing software in Chemistry.

10. Name one carcchogenic chemical used in the lab. **(10 × 1 = 10 Marks)**

PART – B

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

11. Distinguish between accuracy and precision.

12. What is data sharing?

13. What is histogram?

14. What is correlation analysis?

15. What is standard deviation?

16. What is virtual lab of MHRD?

17. What is meant by a primary standard in titrimetric analysis?

18. Give two examples of redox indicators?

19. What is INFLIBNET?

20. Explain the basic concepts of IPR.

21. Name four toxic chemicals used in lab.

22. Write the SMILES of cyclohexane and benzene. **(8 × 2 = 16 Marks)**

PART – C

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

23. Write a note on combinatorial chemistry.

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24. What is nanotechnology? Give two important applications of nanomaterials.

25. Explain the term co-precipitation with an example.

26. What are the postulates of Bohr's atom model?

27. Explain the theory of acid-base titrations.

28. Write four important principles of green chemistry.

29. What is NPTEL?

30. What are metallochromic indicators? Give example.

31. Explain copy right and patents. **(6 × 4 = 24 Marks)**

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PART – D

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

32. Explain various types of file format and databases used in cheminformatics.

33. Write short note on :
    (a) common ion effect
    (b) solubility product.
    and explain their applications in inorganic qualitative analysis.

34. Discuss the safety measures in the lab and mention the hazard warning informations.

35. Write short note on the following.
    (a) Microscale analysis
    (b) Redox titrations
    (c) TLC. **(2 × 15 = 30 Marks)**

(Pages : 3) G – 2552

Reg. No. : .....

Name : .....

Second Semester B.A. Degree Examination, May 2019

(Career Related First Degree Programme under CBCSS)

MALAYALAM AND MASS COMMUNICATION

Group 2(a)

Complementary Course – II

MX 1231 : വിവർത്തനപഠനവും സംസ്കാരവും

(2014–2017 admission)

St Xavier's College

Time : 3 Hours Max. Marks : 80

I. ഒന്നോ രണ്ടോ വാക്യത്തിൽ എല്ലാ ചോദ്യങ്ങൾക്കും ഉത്തരമെഴുതുക.

1. ലഭ്യമായതിൽ വെച്ച് ഏറ്റവും പുരാതനമായ വിവർത്തനം.

2. റുബായിയത്തിന് ചങ്ങമ്പുഴ തയ്യാറാക്കിയ പരിഭാഷ.

3. സഞ്ജയൻ വിവർത്തനം ചെയ്ത ഷേക്സ്പിയർ നാടകം.

4. തുടർച്ചയായി ലോകഭാഷകൾ പലതിലേയ്ക്കും വിവർത്തനം ചെയ്യപ്പെട്ട മഹാഗ്രന്ഥം.

5. വിവർത്തനത്തിൽ നഷ്ടപ്പെടുന്നതെന്തോ അതാണ് കവിത എന്ന് പറഞ്ഞതാര്?

6. വായിൽ വെള്ളിക്കരണ്ടിയുമായി ജനിക്കുക എന്ന ശൈലിക്ക് കാരണമായ കൃതി.

7. കേരളവർമ്മ വിവർത്തനം ചെയ്ത ഡച്ച് നോവൽ.

P.T.O.

8. അയ്യപ്പപണിക്കരുടെ അമേരിക്ക എന്ന കവിത വിവർത്തനം ചെയ്തതാര്?

9. 'Black leg' മലയാളത്തിലേക്ക് തർജ്ജമ ചെയ്യുക.

10. 'വിവർത്തനത്തിന്റെ ഭാഷാശാസ്ത്രഭൂമിക' എന്ന ഗ്രന്ഥം രചിച്ചതാര്?

(10 × 1 = 10 Marks)

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

11. സ്രോതഭാഷ, ലക്ഷ്യഭാഷ എന്നിവ പരിചയപ്പെടുത്തുക.

12. രൂപതുല്യവാദം എന്നാലെന്ത്?

13. ടൈറ്റ്ലറുടെ വിവർത്തനതത്ത്വത്രയം വിശദീകരിക്കുക.

14. വിവർത്തനത്തിന് ഡ്രൈഡൻ മുന്നോട്ടുവെക്കുന്ന അടിസ്ഥാനപരമായ മൂന്ന് ശൈലികളേവ്?

15. വിവിധ വിവർത്തനോപകരണങ്ങൾ പരിചയപ്പെടുത്തുക.

16. സർക്കാർശൈലികൾ വിവർത്തനം ചെയ്യുമ്പോൾ ഉണ്ടാകുന്ന പ്രശ്നങ്ങൾ എന്തെല്ലാം?

17. പണ്ഡിതപരിതോഷവാദം എന്നാലെന്ത്?

18. വിവർത്തന പ്രക്രിയയ്ക്ക് യൂജിൻ നിഡ വിഭാവനം ചെയ്യുന്ന മൂന്ന് ഘട്ടങ്ങളേവ്?

19. പാഠം എന്നാലെന്ത്?

20. വിവർത്തനക്ഷമത എന്നാലെന്ത്?

21. ബന്ധഭാഷ എന്നാലെന്ത്?

22. കാറ്റ്ഫോർഡിന്റെ വിവർത്തനനിർവ്വചനം വിശദീകരിക്കുക.

(8 × 2 = 16 Marks)

St. Xavier's College

III. ഏതെങ്കിലും **ആറു** ചോദ്യത്തിന് ഒന്നരപ്പുറത്തിൽ കവിയാതെ ഉത്തരമെഴുതുക.

23. ശാസ്ത്രഭാഷയുടെ പ്രധാന പ്രവണതകളേവ?

24. പ്രധാന കാവ്യവിവർത്തനരീതികളെ പരിചയപ്പെടുത്തുക.

25. നാലപ്പാട്ട് നാരായണമേനോന്റെ 'പാവങ്ങ'ളുടെ തർജ്ജമയുടെ പ്രത്യേകതയെന്ത്?

26. നിഡെയുടെ വിവർത്തനസിദ്ധാന്തങ്ങളിൽ കാണുന്ന ചോംസ്കിയൻ സ്വാധീനം അപഗ്രഥിക്കുക.

27. ബഹുവ്യവസ്ഥാസിദ്ധാന്തം എന്നാലെന്ത്?

28. ഡോലെറ്റിന്റെ പഞ്ചതത്ത്വങ്ങൾ വിശദീകരിക്കുക.

29. ഗോത്രശാസ്ത്രത്തിന്റെയും വിവർത്തനത്തിന്റെയും പ്രശ്നങ്ങൾ സമാനമാണോ? വിശദീകരിക്കുക.

30. ക്യാറ്റ്ഫോർഡിന്റെ ഭാഷാശാസ്ത്രാധിഷ്ഠിത വിവർത്തന സിദ്ധാന്തങ്ങൾ വിശകലനം ചെയ്യുക.

31. സ്ത്രീപക്ഷവിവർത്തന സിദ്ധാന്തങ്ങൾ പരിചയപ്പെടുത്തുക.

(6 × 4 = 24 Marks)

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

32. "വിവർത്തനത്തിൽ നഷ്ടപ്പെടുന്നതെന്തോ അതാണ് കവിത" പരിശോധിക്കുക.

33. വ്യത്യസ്ത സംസ്കാരങ്ങൾ തമ്മിലുള്ള അസമത്വമാർന്ന ബന്ധങ്ങളെ ഏറ്റവും നാടകീയമായി സ്ഥാപിക്കുന്ന ഉദാഹരണസ്ഥലികളാണ് വിവർത്തനം. വിശദീകരിക്കുക.

34. മലയാള വിവർത്തന രംഗത്ത് ഹെർമ്മൻ ഗുണ്ടർട്ട്, കേസരി, നാലപ്പാട്ട് മുതലായവരുടെ സംഭാവനകൾ വിശകലനം ചെയ്യുക.

35. കോളനിയാനന്തര വിവർത്തനസിദ്ധാന്തങ്ങളുടെ സവിശേഷതകൾ വിശകലനം ചെയ്യുക.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3)

G – 2279

Reg. No. : .....

Name : .....

Second Semester B.A./B.Sc. Degree Examination, May 2019

First Degree Programme under CBCSS

Language Course (Additional Language II) – HINDI

HN 1211.1 Fiction, Creative Writing and Communication Skills

(2013 Admission to 2016 Admission)

St. Xavier's College

Time : 3 Hours

Max. Marks : 80

I. एक शब्द या एक वाक्य में उत्तर दीजिए।

1. झूरी के बैलों के क्या नाम है?

2. यशपाल की कहानी न्याय और दण्ड किस संग्रह में संकलित है?

3. सेवा कहानी की प्रमुख समस्या क्या है?

4. 'बाज़ार में रामधन' किसकी रचना है?

5. 'मोहल्ले का मैदान और खाडी युद्ध' कहानी के प्रमुख पात्र का नाम क्या है?

6. रवीन्द्र कालिया की ए.बी.सी.डी किस विधा की रचना है?

7. हिन्दी पत्रकारिता का आरंभ किस वर्ष हुआ?

8. केरल की प्रथम हिन्दी पत्रिका कौन सी है?

P.T.O.

9. समीक्षा का शाब्दिक अर्थ–क्या है?

10. इंटरनेट को हिन्दी में क्या कहते है यह क्या है? **(10 × 1 = 10 Marks)**

II. **किन्हीं आठ** प्रश्नों के लघु उत्तर लिखिए।

11. झुरी के दोनों बैल कहाँ भेजे गए थे और वे वापस क्यों आए।

12. धक्कू ने मेले से क्या खरीदा था और इसका ब्राह्मणों के घर में क्या प्रभाव पडा?

13. 'खितीन बाबू' के जरिए अज्ञेय जी क्या बताना चाहते हैं?

14. सेवा कहानी में ममता कालिया जी ने किस विषय को पाठकों के सामने रखा है?

15. 'मोहल्ले का मैदान और खाडी युद्ध' के प्रमुख पात्र का नाम क्या है उसका संक्षिप्त परिचय दीजिए।

16. खितीन बाबू क्यों भगवान को औध्डदानी कहता है?

17. ए.बी.सी.डी उपन्यास में आधुनिक जीवन की किन किन समस्याओं पर प्रकाश डाला गया है?

18. सूजन कार्य के महत्वपूर्ण तत्व क्या–क्या है?

19. लेख और निबन्ध के 4 प्रमुख भेद बताइए?

20. किसी एक नव संचार माध्यम पर एक टिप्पणी लिखें।

21. पत्रकारिता के चार आधारभूत सिद्धान्त क्या क्या हैं?

22. फीचर क्या है? समझाइए। **(8 × 2 = 16 Marks)**

III. **किन्हीं छः** प्रश्नों के उत्तर करीब 120 शब्दों में दीजिए।

23. 'न्याय और दण्ड' कहानी 'दलित आदमी के मोह भंग की कथा है' स्पष्ट कीजिए।

24. खितीन बाबू के चरित्र की विशेषताओं पर प्रकाश डालिए।

25. ए.बी.सी.डी की नारी पात्र नेहा का चरित्र चित्रण कीजिए।

St. Xavier's College

26. सेवा कहानी के विस्सू का परिचय दीजिए।

27. अमेरिकी संस्कृति में पले निक को क्यों भारतीय संस्कृति ज्यादा पसंद है?

28. फीचर लेखन प्रक्रिया को समझाइए।

29. समाज और समाचार पत्र पर टिप्पणी लिखिए।

30. समीक्षा पर टिप्पणी लिखिए।

31. मोबाइल फोन और संचार पर टिप्पणी लिखिए। **(6 × 4 = 24 Marks)**

IV. **किन्हीं दो** प्रश्नों के उत्तर करीब 250 शब्दों में लिखिए।

32. मलयालम की किसी फिल्म की समीक्षा प्रस्तुत करते हुए फिल्म समीक्षा की प्रक्रिया पर विचार करें।

33. संचार की परिभाषा देते हुए दृश्य-श्रव्य माध्यमों पर लेख लिखें।

34. ममता कालिया की कहानी 'सेवा' का सारांश लिखिए।

35. ए.बी.सी.डी उपन्यास में लेखिका ने प्रवासी भारतीयों के आत्म संघर्ष का चित्रण किया है? समझाइए।

(2 × 15 = 30 Marks)

St. Xavier's College

G – 2291

(Pages : 3)

Reg. No. : .....

Name : .....

Second Semester B.A./B.Sc. Degree Examination, May 2019

First Degree Programme Under CBCSS

English Language

Language Course III

EN 1211.1 : ENVIRONMENTAL STUDIES

(2015 Admission Onwards)

St. Xavier's College

Time : 3 Hours

Max. Marks : 80

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

1. What are the four dynamic constituents of environment?
2. Name the two broad categories of natural resources?
3. What is the function of the ozone layer?
4. What is the theme of "The Poplar-Field"?
5. Define the term ecosystem.
6. What is chemosynthesis?
7. Expand WHO.
8. When was the wildlife protection act passed?
9. Expand EIA.
10. What is the objective of deep ecology?

(10 × 1 = 10 Marks)

P.T.O.

II **Answer any eight questions, each in a short paragraph not exceeding fifty words**

11. Explain the term sustainable development.
12. What does Chief Seattle say about rivers?
13. Explain the role of the youth in the conservation of environment.
14. Examine the concept of ecocriticism.
15. Write a note on vermicomposting.
16. Give a brief description about biodiversity hotspots.
17. Explain watershed management.
18. Describe the efforts of United Nations to protect human rights.
19. Write a short note on rainwater harvesting.
20. Explain the various factors that have led to the rapid growth in human population.
21. Elaborate on the concept of anthropocentrism.
22. Describe the bleak nature in Thomas Hardy's "The Darkling Thrush."

(8 × 2 = 16 Marks)

III **Answer any six questions, each in a short paragraph not exceeding hundred words**

23. Explain the critical environmental issues that affect Kerala.
24. How does Chief Seattle assert that man is an integral part of human nature?
25. Describe the various spheres of earth?
26. Discuss the problem of soil pollution.

St. Xavier's College

27. Write a note on the environmental significance of Western Ghats.

28. Explain the importance of preserving biodiversity.

29. Write a note on the Environmental Protection Act.

30. Discuss the family welfare programmes initiated by the Government of India.

31. Explain the major water conservation strategies.

(6 × 4 = 24 Marks)

IV Answer any two questions in three hundred words

32. Describe the significance and multidisciplinary nature of environmental studies.

33. Analyse Issac Asimov's views on human population and environment.

34. Examine Shashi Tharoor's opinion regarding the ecological consciousness of Indians

35. Discuss the causes and effects of air pollution and the effective strategies that can be adopted to control pollution.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) G – 2511

Reg. No. : .....

Name : .....

Second Semester B.Com. Degree Examination, May 2019

First Degree Programme Under CBCSS

Foundation Course II : CX 1221/TT 1221/HM 1221 (2014 admn. onwards) and

CO 1221/CC 1221(2014 admn. to 2017 admn)

INFORMATICS AND CYBER LAWS

(Common for Commerce/Commerce and Tax Procedure and Practice/Commerce and Tourism and Travel Management/Commerce and Hotel Management and Catering/Commerce with Computer Applications)

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 one mark.

1. What is extranet?
2. What is 'Blog'?
3. What is MALWARE?
4. What do you mean by artificial intelligence?
5. What is Gopher?
6. What do you mean by Biocomputing?

7. Define DRNET.

8. What is cyber ethics?

9. Define Wi-Fi.

10. What is green computing?

(10 × 1 = 10 Marks)

SECTION – B

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

St. Xavier's College

11. Explain the features of Information Technology.

12. What is Wimax?

13. What do you mea by WWW?

14. Briefly explain digital divide.

15. What is broadband?

16. What is information overload?

17. What do you mean by internet protocol?

18. Explain virtual class room.

19. What is cyber stalking?

20. Explain the IT applications in medicine.

21. What is DSL?

22. What do you mean by Dial-up?

(8 × 2 = 16 Marks)

SECTION – C

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

23. What are the difference between data, information and knowledge?
24. What are the different types of cyber crimes?
25. What is SAKSHAT?
26. Explain the benefits of e-society.
27. Explain the limitations of Information Technology.
28. Write a note about 4G networking.
29. Explain the about IT application in defence service.
30. Write a note on stalking.
31. Describe the scope of cyber laws.

(6 × 4 = 24 Marks)

SECTION – D

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

32. Explain the salient features of IT Act 2000.
33. Explain the latest developments in informatics.
34. Describe about cyber laws in India.
35. Explain the role of IT in film and media industry.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) G – 2553

Reg. No. : .....

Name : .....

Second Semester B.A. Degree Examination, May 2019

(Career Related First Degree Programme under CBCSS)

Malayalam and Mass Communication

Vocational Course II

MX 1271 — MALAYALAM JOURNALISM

(2014 Adm. onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

I. Write answer in one word or maximum 2 sentences to the following

1. Sahodaran.
2. Vidhya vinodini.
3. C.N. Kunhiraman.
4. Special interest magazines.
5. Swadheshabhimani.
6. KUWJ.
7. Vidhya Samgraham.
8. Radio mango.
9. Who authored the book kerala Patra Pravarthana Charithram?
10. Devji Bhimji.

(10 × 1 = 10 Marks)

P.T.O.

II. Write short answers to **eight** question each in about 60 words.

11. Briefly discuss the contributions of 'Bhashaposhini' magazine to malayalam of literature and journalism.

12. Comment your views of 'Malayalam news portals'.

13. Online magazines.

14. Basel mission society.

15. Little magazines.

16. Community ratio.

17. Success line.

18. Kesari Balakrishna pillai.

19. FM Broad casting.

20. Kandathil Vaghese mapillai.

21. Critically analyse primitive news house in malayalam news channels.

22. Kerala press academy.

(8 × 2 = 16 Marks)

III. Give short essay type answer to any **six** questions.

23. Discuss the role of Malayam newspapers in Kerala renaissance.

24. Comment on the status of Malayalam newspapers during emergency.

25. Trace the growth, development and present status of social media usage in Kerala.

26. Discuss the role of media in political communicate in Kerala.

St. Xavier's College

27. Films are responsible for mass culture in Kerala. Comment your views.

28. Trace the history of 'Kerala Kaumudi' news paper.

29. Make a personality sketch of 'Kandathil Varghese Mapillai'.

30. Discuss the scope of traditional media in Kerala development.

31. Assess the contributions of Hermann Gundert to Malayalam Literature and Journalism.

(6 × 4 = 24 Marks)

IV. Write answer to any two questions.

32. The layout of front page of a newspaper in very important. Briefly examine the current trends followed by malayalam newspapers in their layout designs.

33. Comment your views of new generation movies in malayalam.

34. Examine the role played by Swadeshabhimani Ramakrishna pillai as a pioneering editor malayalam.

35. Analyse critically the performance of private news channels in Kerala.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) G – 2293

Reg. No. : .....

Name : .....

Second Semester B.A./B.Sc. Degree Examination, May 2019

First Degree Programme under CBCSS

Language Course (Additional Language II) – HINDI

HN 1211.1 Fiction, Short Story and Novel

(2017 Admissions onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

PART – A

I. एक या दो वाक्य में उत्तर लिखिए।

1. 'पूस की रात' किसकी कहानी है?

2. 'पिंजडे की उड़ान' किसका कहानी संग्रह है?

3. अज्ञेय की किस रचना को ज्ञानपीठ पुरस्कार मिला?

4. 'नेलकटर' किसकी रचना है?

5. 'मंगल' किस कहानी का पात्र है?

6. 'हरी बिन्दी' किसकी कहानी है?

7. 'हीली–बोन् की बतखें' किस प्रकार की कहानी है?

8. 'लगता नहीं है दिल मेरा' किसकी रचना है?

P.T.O.

9. 'अबीर' किस रचना का पात्र है?

10. 'परवेज़' कौन है?

(10 × 1 = 10 Marks)

PART – B

II. **किन्हीं आठ** प्रश्नों के उत्तर करीब 50 शब्दों मे लिखिए।

11. प्रेमचन्द के किन्हीं चार उपन्यासों के नाम लिखिए।

12. 'चौधरी पीरबख्श' कौन है?

13. 'कैप्टन दयाल' कौन हैं?

14. 'नेलकटर' कहानी कैसे प्रतीकात्मक बन जाता है?

15. 'हीली' का चरित्र चित्रण कीजिए।

16. किन्हीं चार महिला लेखिकाओं के नाम लिखिए।

17. 'लोग कहते हैं, दूध का दाम कोई नहीं चुका सकता और मुझे दूध का यह दाम मिल रहा है' – संदर्भ क्या है?

18. अज्ञेय किन-किन पत्रिकाओं के संपादक थे?

19. 'हरी बिंदी' कहानी नारी स्वतंत्रता का प्रतीक है – व्यक्त कीजिए।

20. कृष्णा अग्निहोत्री का परिचय दीजिए।

21. सुरैया की माँ कैसे आहत होती है?

22. 'आना इस देश' उपन्यास का उद्देश्य क्या है?

(8 × 2 = 16 Marks)

PART – C

III. **किन्हीं छः** प्रश्नों के उत्तर करीब 120 शब्दों में लिखिए।

23. कहानी सम्राट प्रेमचन्द।

24. मंगल और टामी का संबंध।

St. Xavier's College

25. 'हीली की बदलती हुई मानसिक अवस्थाओं का चित्रण हीली बोन की बतखें में किया है' – इस कथन पर टिप्पणी लिखिए।

26. 'हरी बिन्दी' कहानी का सारांश लिखिए।

27. "नेलकटर मानवीय संबंधों में संवेदना तलाशने की प्रतीकात्मक कहानी है" इस कथन पर विचार कीजिए।

28. मृदुला गर्ग के व्यक्तित्व और कृतित्व पर प्रकाश डालिए।

29. सुरैया का चरित्र-चित्रण कीजिए।

30. 'आना इस देश' उपन्यास की भाषा शैली पर विचार कीजिए।

31. विभाजन की त्रासदी 'आना इस देश' में कैसे चित्रित किया है? **(6 × 4 = 24 Marks)**

IV. **किन्हीं दो** प्रश्नों के उत्तर करीब 250 शब्दों में लिखिए।

32. प्रेमचन्द भारतीय समाज के कथाकार है – 'दूध का दाम' कहानी के आधार पर विचार कीजिए।

33. भारतीय समाज में व्याप्त झूठी प्रतिष्ठा पालन का चित्रण 'पर्दा' कहानी में चित्रित है – व्यक्त कीजिए।

34. 'आना इस देश' की कथा संक्षप में लिखिए।

35. 'आना इस देश' उपन्यास के शीर्षक की सार्थकता पर विचर कीजिए। **(2 × 15 = 30 Marks)**

St. Xavier's College

(Pages : 3) **G – 2512**

Reg. No. : .....

Name : .....

Second Semester B.Com. Degree Examination, May 2019

First Degree Programme Under CBCSS

Complementary Course/Core Course

BUSINESS REGULATORY FRAME WORK

(Common for CO 1231/CX 1231/CC 1231 (2014 Adm to 2017 Admn) and CO 1242/CC 1243 (2018 Admn.)

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. Define 'agreement'.
2. What is a standing offer?
3. Define 'undue influence'.
4. What is a counter offer?
5. Define the term 'Quantum meruit'
6. In which year the sale of goods act was passed?
7. Define bailment.
8. What is caveat emptor?
9. Who is a sub agent?
10. Expand TRAI.

(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 an implied contract?

12. What is wagering agreement?

13. What is fraud?

14. What is discharge of contract?

15. What do you mean by the term 'Exemplary Damages'.

16. What is the object of a contract of indemnity?

17. What are the essentials of bailment?

18. What is an auction sale?

19. Mention any four functions of IRDA act.

20. Who is an alien enemy?

21. When does the nominal damages are awarded?

22. What is a joint promise?

(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 different types of offer.

24. Discuss the essential features of a contract of guarantee.

25. Discuss the duties and liabilities of a finder of lost goods.

26. What are the implied conditions as per the sale of goods act 1930?

27. Distinguish between sale and agreement to sell.

28. Distinguish between contingent contract and wagering contract.

29. Discuss the essentials of ratification.

30. Distinguish between pledge and lien.

31. Describe the different types of Intellectual Properties.

(6 × 4 = 24 Marks)

SECTION – D

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

32. Discuss the different methods of creation of an agency.

33. Explain capacity to contract. Discuss on the persons incapable of entering into a valid contract.

34. Define condition and warranty. Briefly explain the conditions and warranties implied by law in a contract of sale of goods.

35. Explain the Doctrine of Caveat Emptor. What are the exceptions to the Doctrine of Caveat Emptor?

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) G – 2563

Reg. No. : .....

Name : .....

Second Semester B.A. Degree Examination, May 2019

Career Related First Degree Programme under CBCSS

MALAYALAM AND MASS COMMUNICATION

Complementary Course II

MX 1231 : വിവർത്തന പഠനവും സംസ്കാരവും

(2018 admission)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

I. ഒരു വാക്കിലോ പരമാവധി രണ്ടു വാക്യത്തിലോ ഉത്തരം എഴുതുക.

1. തർജ്ജമ ഏതു ഭാഷയിലെ പദമാണ്?

2. 'റുബായ്യാത്ത്'ന് ജി. ശങ്കരക്കുറുപ്പ് തയ്യാറാക്കിയ വിവർത്തനം ഏതാണ്?

3. ബൈബിളിലെ പഴയനിയമം ഏതു ഭാഷയിലാണ് എഴുതപ്പെട്ടത്?

4. കുമാരനാശാന്റെ ശ്രീബുദ്ധചരിതം ഏതു കൃതിയുടെ വിവർത്തനമാണ്?

5. വിവർത്തനചിന്തകൾ - ആരുടെ കൃതിയാണ്?

6. Towards a science of translation - ആരുടെ കൃതിയാണ്?

7. വിവർത്തനത്തിൽ നഷ്ടപ്പെടുന്നതെന്തോ അതാണ് കവിത - എന്ന് അഭിപ്രായപ്പെട്ടതാര്?

8. ആദ്യത്തെ വിവർത്തനമാതൃകയായി പരിഗണിക്കുന്ന ശിലാശാസനം ഏത്?

P.T.O.

9. കേരളഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട് പ്രസിദ്ധീകരിച്ച 'വിവർത്തനം' എന്ന പുസ്തകത്തിന്റെ അവതാരിക എഴുതിയത് ആരാണ്?

10. ബഷീർ കൃതികളുടെ മുഖ്യപരിഭാഷകൻ ആരാണ്?

(10 × 1 = 10 Marks)

II. ഒരു ഖണ്ഡികയിൽ കവിയാതെ **എട്ടു** ചോദ്യത്തിന് ഉത്തരം എഴുതുക.

11. സ്രോതഭാഷ, ലക്ഷ്യഭാഷ ഇവ എന്താണെന്ന് വ്യക്തമാക്കുക.

12. ലിപ്യന്തരണം എന്നാലെന്ത്?

13. യന്ത്രപരിഭാഷ എന്താണ്?

14. ബഹുവ്യവസ്ഥാസിദ്ധാന്തം എന്താണെന്ന് വ്യക്തമാക്കുക.

15. വിവർത്തകനുവേണ്ട യോഗ്യതകൾ എന്തെല്ലാം?

16. തർജ്ജമയുടെ രംഗത്ത് നാലപ്പാട്ട് നാരായണമേനോന്റെ സംഭാവനകൾ വിലയിരുത്തുക.

17. നികഷോപലവാദം - പരിചയപ്പെടുത്തുക.

18. സവിരാമ തർജ്ജമ, അവിരാമ തർജ്ജമ - ഇവ എന്താണെന്ന് വ്യക്തമാക്കുക.

19. ടൈറ്റ്ലറുടെ അഭിപ്രായത്തിൽ വിവർത്തനത്തിന്റെ സാർവ്വലൗകികതത്വങ്ങൾ ഏതെല്ലാം?

20. വിവർത്തനരംഗത്ത് നിഘണ്ടുക്കളുടെ അനിവാര്യതയെന്ത്?

21. 'വിവർത്തകർ ഘാതകരാണ്' - എന്ന നിരീക്ഷണത്തെ വിശകലനം ചെയ്യുക.

22. ശാസ്ത്രകൃതികളുടെ വിവർത്തനം അഭിമുഖീകരിക്കുന്ന പ്രതിസന്ധികൾ എന്തെല്ലാം? വിശദമാക്കുക.

(8 × 2 = 16 Marks)

St. Xavier's College

III. **120** വാക്കിൽ കവിയാതെ **ആറ്** ചോദ്യങ്ങൾക്ക് ഉത്തരം എഴുതുക.

23. നവീന വിവർത്തന സിദ്ധാന്തങ്ങൾ പരിചയപ്പെടുത്തുക.

24. കവിതാവിവർത്തനത്തിൽ ശ്രദ്ധിക്കേണ്ട കാര്യങ്ങൾ എന്തെല്ലാം?

25. വിവർത്തനപഠനം സംസ്കാരപഠനമായി മാറുന്നുണ്ടോ? വിവരിക്കുക.

26. വിവർത്തനങ്ങളിലൂടെയും സ്വതന്ത്രകൃതികളിലൂടെയും വാല്മീകിരാമായണകഥ മലയാളത്തെ സമ്പന്നമാക്കിയതെങ്ങനെ? വിശദമാക്കുക.

27. വിവർത്തനത്തിന്റെ പരിമിതികൾ എന്തെല്ലാം? വിശദീകരിക്കുക.

28. 'വിവർത്തനം കലയും കൗശലവുമാണ്' - വിശകലനം ചെയ്യുക.

29. മലയാളത്തിലെ വിവർത്തന ചരിത്രത്തിൽ ബെഞ്ചമിൻ ബെയ്ലിയുടെ പ്രാധാന്യമെന്ത്? വിവരിക്കുക.

30. യന്ത്രപരിഭാഷയുടെ ഗുണദോഷങ്ങൾ വിലയിരുത്തുക.

31. സാങ്കേതികവിദ്യയുടെ വളർച്ച താരതമ്യസാഹിത്യ പഠനങ്ങളെയും വിവർത്തനരംഗത്തെയും സ്വാധീനിച്ചതെങ്ങനെ?

(6 × 4 = 24 Marks)

IV. മൂന്നു പുറത്തിൽ കവിയാതെ **രണ്ടു** ചോദ്യത്തിന് ഉത്തരം എഴുതുക.

32. വിവർത്തനം മലയാളഭാഷയ്ക്ക് പുതിയ തുറസുകൾ നല്കിയതെങ്ങനെ? വിശദമാക്കുക.

33. വിവർത്തനത്തിൽ കേസരി, നാലപ്പാട്ട്, സഞ്ജയൻ, അയ്യപ്പപ്പണിക്കർ എന്നിവരുടെ സംഭാവനകൾ വിലയിരുത്തുക.

34. വിവർത്തന സിദ്ധാന്തങ്ങളുടെ ചരിത്രം പരിചയപ്പെടുത്തുക.

35. വിവർത്തനസാദ്ധ്യതകൾ താരതമ്യസാഹിത്യപഠനങ്ങളെ സ്വാധീനിച്ചതെങ്ങനെ? വിവരിക്കുക.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) G – 2294

Reg. No. : .....

Name : .....

Second Semester B.A./B.Sc. Degree Examination, May 2019

First Degree Programme under CBCSS

MALAYALAM LANGUAGE

Language Course V – Additional Language

ML 1211.1 : ഗദ്യസാഹിത്യം

(2018 admission)

Time : 3 Hours Max. Marks : 80

I. ഒരു വാക്കിലോ രണ്ടു വാക്യത്തിലോ ഉത്തരം എഴുതുക.

1. ലക്ഷണമൊത്ത ആദ്യ മലയാള നോവൽ ഏത്?

2. മാർത്താണ്ഡവർമ്മ എന്ന നോവൽ എഴുതിയതാര്?

3. വാസനാവികൃതി എന്ന കഥയുടെ കർത്താവ് ആര്?

4. ഭാരതപര്യടനം എഴുതിയതാര്?

5. തകഴിയുടെ രണ്ട് നോവലിന്റെ പേരെഴുതുക.

6. സുന്ദരികളും സുന്ദരന്മാരും എന്ന നോവൽ എഴുതിയതാര്?

7. ക്ലാസ്സിൽ ഒന്നാംസ്ഥാനം അവൾക്ക് നിർബന്ധമായിരുന്നു. ആർക്ക്?

8. കാൽപ്പനികതയ്ക്ക് കേസരി ബാലകൃഷ്ണപിള്ള നിർദ്ദേശിച്ച പേര് എന്ത്?

P.T.O.

St. Xavier's College

9. ജനാധിപത്യത്തെ നിഷ്ക്രിയമാക്കുന്നത് എന്ത്?

10. എഴുത്തുകാരൻ പല ഭാഷ അറിയുന്നവനും പല ഭാഷയിൽ മൗനം പാലിക്കുന്നവനും ആയിരിക്കണമെന്ന് പറഞ്ഞതാര്?

(10 × 1 = 10 Marks)

II. ഒരു ഖണ്ഡികയിൽ കവിയാതെ **എട്ടു** ചോദ്യത്തിന് ഉത്തരം എഴുതുക.

11. കുറച്ചാളുകളെയെങ്കിലും സ്നേഹിക്കാതെ മനുഷ്യന്മാർക്ക് കഴിച്ചുകൂട്ടാൻ കഴിയുമോ? സന്ദർഭം എഴുതി ആശയം വ്യക്തമാക്കുക.

12. മനസ്സിന്റെ ആട്ടം നിന്നതോടെ ആ ദുർബലന്റെ കാൽപെരുമാറ്റവും നിലച്ചു. ആരുടെ കാര്യമാണ് ഇവിടെ പറയുന്നത്? വിശദീകരിക്കുക.

13. കാൽപ്പനികതയുടെ നിർവ്വചനങ്ങൾ ക്രോഡീകരിക്കുക.

14. ഇംഗ്ലീഷുകാരൻ പ്രയോഗിക്കുന്ന മലയാളത്തിന്റെ പ്രത്യേകത എന്ത്?

15. മാധ്യമങ്ങളുടെ ഇന്നത്തെ പ്രധാന ദൗത്യം എന്ത്?

16. ഫലിതം കാഴ്ചപ്പാടിന്റെ മഹത്വത്തിൽ നിന്നു ജനിക്കുന്ന ചിരിയല്ല എന്നു പറയാൻ കാരണം എന്ത്?

17. കാൻസർ രോഗത്തെപറ്റി നിലവിലുണ്ടായിരുന്ന ധാരണകൾ എന്തെല്ലാം?

18. സുഭാഷ് ചന്ദ്രന്റെ തല്പം എന്ന കഥയുടെ രചനാപരമായ പ്രത്യേകതകൾ ആവിഷ്കരിക്കുക.

19. തെറ്റില്ലാത്ത മലയാളം ഉപയോഗിക്കാൻ ശ്രദ്ധിക്കേണ്ട കാര്യങ്ങൾ എന്തെല്ലാം?

20. പത്രലോകത്തിലെ ഇന്നത്തെ അവസ്ഥ വിലയിരുത്തുക.

21. കാൻസറിനോട് പടപൊരുതി വിജയം നേടിയ നൗഷാദിനെപറ്റി എഴുതുക.

22. കാശും പണവും ഇല്ലെങ്കിലും ആ അമ്മയുടെ കുട്ടികളൊക്കെ നല്ല സ്വഭാവമാണെന്ന് പറയാത്ത നാട്ടുകാരില്ല. ഏത് അമ്മയുടെ? വിശദീകരിക്കുക.

(8 × 2 = 16 Marks)

St. Xavier's College

III. **120** വാക്കിൽ കവിയാതെ **ആറ്** ചോദ്യത്തിന് ഉത്തരം എഴുതുക.

23. ഉമ്മാച്ചുവിനെ മായൻ പുനർവിവാഹം ചെയ്യാനുണ്ടായ സാഹചര്യം എന്ത്?

24. ഉമ്മാച്ചുവിന്റെ തറവാട് ഭാഗിക്കാൻ ഇടയായ സാഹചര്യം എഴുതുക.

25. ആദ്യകാല കഥകളുടെ എല്ലാ പ്രത്യേകതകളും ഉൾക്കൊള്ളുന്ന കഥയാണ് ആരാന്റെ കുട്ടി. വിശദമാക്കുക.

26. ദുഃഖത്തിന്റെ തീവ്രത കടൽത്തീരത്ത് എന്ന കഥയിൽ ആവിഷ്കരിക്കുന്നത് എങ്ങനെ?

27. നവോത്ഥാന നോവലുകളെ പറ്റി പ്രതിപാദിക്കുക.

28. മലയാളത്തിലെ കാൽപനികതയെപറ്റി ചുരുക്കി എഴുതുക.

29. ഇ.എം.എസ്. മലയാളഭാഷയെ വിശകലനം ചെയ്യുന്നത് എങ്ങനെ?

30. പാരമ്പര്യത്തെ വെല്ലുവിളിച്ച ചിന്നമ്മുകാണ് ചിന്നമ്മു. വിശദമാക്കുക.

31. ഉതുപ്പാന്റെ വിഷമത്തിന് കാരണമെന്ത്?

(6 × 4 = 24 Marks)

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

32. സ്ത്രീകളോടുള്ള ക്രൂരത അനാവരണം ചെയ്യുന്ന കഥയാണ് കൃഷ്ണഗാഥ. ചർച്ച ചെയ്യുക.

33. മലയാള പ്രതിഭകളുടെ മൗനത്തോടുള്ള താല്പര്യം കെ.പി. അപ്പൻ ആവിഷ്കരിച്ചിരിക്കുന്നത് എങ്ങനെ?

34. ചാപ്പുണ്ണി നായർ എന്ന കഥാപാത്രത്തെ നിരൂപണം ചെയ്യുക.

35. എം.ടി. കഥകളുടെ പൊതുസ്വഭാവം പ്രകടിപ്പിക്കുന്ന ഒരു കഥയാണ് കർക്കിടകം - ചർച്ച ചെയ്യുക.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3)

G – 2513

Reg. No. : .....

Name : .....

Second Semester B.Com. Degree Examination, May 2019

First Degree Programme Under CBCSS

Core Course : CO 1241/CC 1241 : BUSINESS COMMUNICATION AND OFFICE MANAGEMENT

(Common for Commerce/Commerce with Computer Applications)

(2014 Admn. To 2017 Admn.)

Time : 3 Hours

Max. Marks : 80

SECTION – A

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

1. What is decoding?
2. What is proxemics?
3. What do you mean by gestural communication?
4. What is WWW?
5. What is virtual office?
6. What is sign language?
7. What is circular letters?
8. What do you mean by Transactional Analysis?
9. What is tele conferencing?
10. What is SMTP?

(10 × 1 = 10 Marks)

St Xavier's College

P.T.O.

SECTION – B

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

11. Explain the various skills for an office manager.
12. Explain the kinds of business letters.
13. State the different functions of office management.
14. Communication is a mental process. Discuss.
15. What are the channels of communication?
16. What do you mean by paralanguage?
17. What are the capabilities of internet in communication?
18. Discuss the functions of filing system.
19. State the qualities of effective communication.
20. Explain the principles of communication in management.
21. State the importance of business reports.
22. Explain the advantages of oral communication.

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SECTION – C

(8 × 2 = 16 Marks)

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

23. Differentiate intra personal and inter personal communication.
24. State the advantages and limitations of written communication.
25. Explain the importance of business reports.

26. Explain the functions of office.

27. Discuss different types of indexing.

28. Explain different advantages of filing system.

29. What are the essentials of business letters?

30. Explain internet.

31. Briefly explain the different types of communication.

(6 × 4 = 24 Marks)

SECTION – D

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

32. Write a note on ethics in communication

33. Explain resume, its contents and essentials

34. What are the elements of communication process?

35. How can a presentation be made effective?

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) G – 2570

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

(Career Related First Degree Programme Under CBCSS)

Foundation Course BB 1221/ BV 1221 : BIOPHYSICS AND INSTRUMENTATION

(Common for Group 2(a) Botany and Biotechnology (2013 and 2014 Admission) and Group 2(b) Biotechnology (2013 Admission onwards)

Time : 3 Hours Max. Marks : 80

St. Xavier's College

SECTION – A

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

1. What is glaucoma?
2. Define phosphorescence.
3. What is an exothermic reaction?
4. What is Gibbs free energy?
5. Why oil immersion is used in microscopy?
6. What is ATP synthase?
7. What is membrane potential?
8. Mention any radioisotope and its application in biology.
9. What is chemical shift?
10. Define entropy.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

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

11. What is freeze fracture technique?

12. State any four applications of spectrophotometry.

13. State the Zeroth law of thermodynamics.

14. What is hydrogen bonding?

15. State the function of APS and TEMED in electrophoresis

16. Define the numerical aperture of a lens.

17. Where tympanum is located? State its function?

18. Differentiate between magnification and resolution.

19. What is inimunoelectrophoresis?

20. What is the effect of radiations in a biological system?

21. How noise pollution can be reduced?

22. What is meant by absorption spectra and action spectra of photosynthetic pigments?

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION – C

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

23. Differentiate between presbyopia and cataract? How they can be corrected?

24. Give a brief account on Light reception in microbes.

25. Write on the application of radioisotopes in biological research.

26. Write a brief note on polarography.

27. Explain the working of a phase contrast microscope.

28. What is submarine electrophoresis?

29. Write a note on applications of NMR.

30. State the main differences between light and electron microscope.

31. Explain the Mechanism of vision.

(6 × 4 = 24 Marks)

St. Xavier's College

SECTION – D

IV Answer any **two** questions. Each question carries **15** marks (Answer not to exceed three pages)

32. Describe

    (a) Mass spectrometry

    (b) Inter and Intramolecular interactions in biological compounds.

33. Explain the mechanism of ATP formation in a cell.

34. Give a detailed account on electrophoresis.

35. Explain the principle and working of

    (a) Atomic Absorption Spectroscopy

    (b) IR spectroscopy

(2 × 15 = 30 Marks)

(Pages : 3) G – 2306

Reg. No. : .....

Name : .....

Second Semester B.A. Degree Examination, May 2019

First Degree Programme under CBCSS

HISTORY

Core Course II

HY 1241 : CULTURAL FORMATION OF THE PRE-MODERN WORLD

(2013 Admission)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

PART – A

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

1. Lewis Henry Morgan
2. Archaeological excavations
3. Cuneiform
4. Civilisation and culture
5. Harappa
6. Henry Rawlinson
7. Ancient Greece

P.T.O.

8. Stoicism

9. Hijra Era

10. Fief.

(10 × 1 = 10 Marks)

PART – B

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

11. Big bang theory.

12. Pictographic Script.

13. *What happened in History.*

14. Mesopotamia.

15. Confucius.

16. Thucydides.

17. Crusades.

18. Great Bath of Indus.

19. Nature of Medieval Christianity.

20. Chalcolithic Culture.

21. Pyramid of Giza.

22. Pax – Romania.

(8 × 2 = 16 Marks)

St. Xavier's College

PART – C

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

23. Define the pre-modern society and culture.

24. Write about the evolution of human races and their languages.

25. What are the salient features of Egyptian Civilization?

26. Describe the Punic Wars.

27. Discuss the various nature of Indus Script.

28. Trace the cultural contributions of China.

29. Elucidate the nature of medieval guilds.

30. Explain the historical narration of Neanderthal man.

31. Give an account of medieval universities.

(6 × 4 = 24 Marks)

PART – D

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

32. Explain the origin and evolution of Stone Age Cultures.

33. Critically examine the Morgan's theory on the evolution of the universe.

34. Analyse the scientific and philosophical contributions of the Arabs.

35. Discuss the important Feature of Feudalism in the medieval world.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) **G – 2515**

Reg. No. : .....

Name : .....

Second Semester B.Com. Degree Examination, May 2019

First Degree Programme Under CBCSS

Foundation Course

CO 1221/CC 1221 : INFORMATICS AND CYBER LAWS

(Common for CO 1221/CC 1221 (2018 Admn.))

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 MAN?
2. What is a blog?
3. What is a data?
4. Expand BRNET.
5. What is ISDN?
6. What is e-waste?
7. What is digital divide?
8. What is localization?
9. What is spam?
10. What is hacking? **(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 social networking?

12. What is infrared transmission?

13. What is network topology?

14. Distinguish between data and information.

15. Write any two benefits of knowledge management.

16. What are the different forms of data?

17. What is artificial intelligence?

18. What is virtual reality?

19. What is green computing?

20. What is online publishing?

21. What is electronic contract?

22. What is spyware? **(8 × 2 = 16 Marks)**

St. Xavier's College

SECTION – C

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

23. What are the components of information technology?

24. What is e-mail? What are the advantages?

25. What is video conferencing? What are the advantages?

26. What is e-learning? Explain the levels of e-learning.

27. Elaborate the role of IT in national integration.

28. Write a note on the applications of artificial intelligence.

29. What are the objectives of IT Act?

30. Explain the types of cyber crime.

31. Which are the methods of cyber terrorism? **(6 × 4 = 24 Marks)**

SECTION – D

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

32. What is internet? Explain the business applications of internet.

33. What is cybercrime? Explain the nature and scope of cybercrime.

34. What is educational software? Explain the categories of educational software.

35. What is network topology? Explain different topologies.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) G – 2572

Reg. No. : .....

Name : .....

SECOND SEMESTER B.Sc. DEGREE EXAMINATION, May 2019

(CAREER RELATED FIRST DEGREE PROGRAMME UNDER CBCSS)
Common For Group 2 (a) Botany and Biotechnology and Group 2 (b) Biotechnology (Multimajor)

BB 1241/BV 1241.1-BRYOLOGY, PTERIDOLOGY, GYMNOSPERMS AND PALEOBOTANY

(2013 and 2014 Admission)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. Name a pteridophytej which produce sporocarp.
2. What is perigynium?
3. Name the plant from which sago starch is obtained.
4. In Polytrichum how many pyramidal teeth are present in the peristome?
5. Spores of which pteridophytes possess four "spoon shaped elaters
6. Name the fern known as "maiden hair-fern".
7. Who is known as the father of Indian paleobotany?
8. Name the spore producing organ in *Psilotum.*

P.T.O.

9. Give an example of fossil genus belongs to subdivision lycopsida.

10. What is protonema? **(10 × 1 = 10 marks)**

SECTION-B

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

11. Explain the structure of gemmae cup in *Marchantia*.

12. What are coralloid roots? Mention its importance in *Cycas*.

13. What is circinate vernation? Name a gymnosperm where it is found.

14. List out the different types of vegetative reproduction seen in Polytrichum.

15. Mention any four advance features of *Marchantia* over *Riccia*.

16. Why Pinus leaf is said to be dimorphic?

17. Give the economic importance of *Cycas*.

18. Describe ovuliferous scale in *Pinus*.

19. Differentiate apogamy from apospory.

20. Explain the xerophytic characters of *Equisetum* internode.

21. Write the structure and function of ligule in *Selaginella*.

22. Describe the role of bryophytes in soil erosion. **(8 × 2 = 16 marks)**

St. Xavier's College

SECTION-C

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

23. Discuss the affinities of pteridophytes with gymnosperms.

24. Describe the morphological characters of *Rhynia*.

25. With the help of diagram describe the internal structure of *Marsilea* sporocarp.

26. Describe the classification of Gymnosperms by Sporne (1965).

27. Describe the protonema in *Polytrichum*.

28. Describe the morphological nature of *Selaginella* rhizophore.

29. Briefly explain the male gametophyte of *Pinus*

30. Explain the contribution of Birbal Sahni to Indian paleobotany.

31. Explain the evolution of sporophytes in bryophytes. **(6 × 4 = 24 marks)**

SECTION-D

Answer any two questions. Each question carries 15 marks. Answer should not exceed three pages.

32. What is heterospory and seed habit? Illustrate your answer with reference to the life cycle of *Selaginella*.

33. What are fossils? How fossil formation takes place? Describe various types of fossils.

34. Write an essay on the economic importance of bryophytes.

35. Give an account of life cycle of *Gnetum*. What is meant by heteromorphic alternation of generation? **(2 × 15 = 30 marks)**

St Xavier's College

(Pages : 3) G – 2309

Reg. No. : .....

Name : .....

Second Semester B.A. Degree Examination, May 2019

First Degree Programme Under CBCSS

Economics

Core Course II

EC 1241 : METHODOLOGY OF ECONOMICS

(2013-14 Admissions)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – I

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

1. Normative economics.
2. Social science.
3. What do you mean by 'ceterius paribus'?
4. Deductive method.
5. Law of demand.
6. Objectivity in social science.
7. Independent variable.

P.T.O.

8. Cross section data.

9. Laissez faire.

10. Surplus value.

(10 × 1 = 10 Marks)

SECTION – II

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

11. Say's Law of market.

12. Write a note on Institutional school of thought.

13. Review of literature.

14. Differentiate between endogenous and exogenous variable.

15. What do you mean by assumption in theory?

16. Uses of statistics in economic analysis.

17. Differentiate between Micro and Macro economics.

18. Interdisciplinary approach in economic studies.

19. Significance of hypothesis formulation in research.

20. Write a note on universal economic laws with examples.

21. Scope of Economics as a social science discipline.

22. Stock and flow variables.

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION – III

Answer **any six** of the following. Each answer should not exceed **120** words. Each question carries **4** marks.

23. What is an economic model? Explain with examples?
24. What are the different steps and methods involved in formulation of economic theories?
25. What do you mean by data in economics? What are the different sources of data for research?
26. What are the features of Classical economic thought?
27. What are the uses of graphs and diagrams in economics?
28. Critically examine the limitations of economic analysis.
29. Differentiate between objectivity and subjectivity in social science analysis.
30. What are the contributions of Historical school?
31. Discuss the significance and scope of economics in addressing the present issues of the society.

(6 × 4 = 24 Marks)

SECTION – IV

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

32. What is the significance of research? What are the different steps in research report writing?
33. Evaluate the significance of Economics as a social science discipline and how is it related to other branches of social sciences?
34. Discuss the major schools of thought in Economics.
35. Discuss the different methodologies in economics and bring out its merits and demerits.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) G – 2531

Reg. No. : .....

Name : .....

Second Semester B.A./B.Sc. Degree Examination, May 2019

(Career Related First Degree Programme under CBCSS)

Group 2(a)

Language Course: Additional Language – Hindi

HN 1211.3 NOVEL AND SHORT STORY

(2017 Admission onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

I. एक या दो वाक्यों में उत्तर लिखिये।

1. गया के घर से भागने में गायों की मदद किसने और किसप्रकार की?

2. 'खितीन बाबू' कहानी में जेल में लेखक का दोस्त कौन था?

3. ममता की कुटि पर कई वर्षों बाद क्या बना और किसने बनाया?

4. यशपाल का पहला कहानी संकलन कौन सा है?

5. धक्कू मेले में क्या बेचता था?

6. नरोत्तम सहाय के बेटे, बेटे की पत्नी और बच्चों के नाम क्या हैं?

7. रुचि द्वारा प्रस्तुत किये जाने वाले कार्यक्रमों के नाम क्या थे?

8. अदामिनी हिंदुस्तानी स्त्री की गुलामी की नींव किसे मानती हैं?

P.T.O.

9. किस युद्ध में विपिन होकर हुमायूँ ममता की शरण में आया था?

10. रुचि की सहेलियों कौन-कौन थीं? **(10 × 1 = 10 Marks)**

II. किन्हीं **आठ** प्रश्नों के उत्तर लगभग 50 शब्दों में दीजिए।

11. हीरा और मोती ने काँजी हाउस के जानवरों की रक्षा कैसे की?

12. ममता क्यों दुखी थी?

13. खितीन बाबू का व्यक्तित्व कैसा था?

14. धक्कू के साथ गुल्ली-डंडा खेलने में लेखक को क्या लाभ था?

15. नरोत्तम सहाय की पत्नी को क्या हुआ था?

16. 'गेटवेल कार्ड' और 'नटशेल' में बात कहना आधुनिक जीवन की किस विड़ंबना को संकेतित करता है?

17. 'सेवा' कहानी में पड़ोसियों की दिखावे की आत्मीयता का पर्दाफाश लेखिका ने किस प्रकार किया है?

18. गगन की आदतें बिगाड़ने में प्रभाकर की क्या भूमिका थी?

19. पति का घर छोड़ कर आने पर माँ क्या सीख देती है।

20. रुचि माँ के रूप में अपने को नाकामयाब क्यों महसूस करती है?

21. आज की लड़कियों को शादी का फ्रेम दमघोंटू क्यों महसूस होता है?

22. सर्वेश को गगन कैसे मिलता है?

(8 × 2 = 16 Marks)

III. किन्हीं **छह** प्रश्नों के उत्तर लगभग 120 शब्दों में दीजिए।

23. 'अगर वे भी ईंट का जवाब पत्थर से देना सीख जाते, तो शायद सभ्य कहलाने लगते।' संदर्भ सहित व्याख्या कीजिए।

24. खितीन बाबू अद्भुत संकल्प शक्ति के धनी थे। सप्रमाण व्याख्या कीजिये।

25. गाँव के उच्च वर्ग का धक्कू की जात वालों के साथ कैसा व्यवहार था?

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26. 'सेवा' कहानी में वृद्धावस्था की किन समस्याओं को उभारा गया है?

27. 'ममता' कहानी में किन भारतीय आदर्शों को प्रस्तुत किया गया है?

28. सर्वेश नारंग ने पत्र में रुचि के कार्यक्रम की क्या शिकायत की थी?

29. रुचि जैसी शहरों में अकेली रहने वाली लड़कियाँ किन समस्याओं का सामना करती हैं?

30. सितारों के जीवन में मीडिया के अतिरिक्त हस्तक्षेप को उपन्यास में किस प्रकार चित्रित किया गया है?

31. रुचि और सर्वेश ने किस प्रकार की प्रणय-प्रणाली निर्मित की?

(6 × 4 = 24 Marks)

IV. किन्हीं **दो** प्रश्नों के उत्तर लगभग 250 शब्दों में दीजिए।

32. 'दो बैलों की कथा' कहानी की विशेषताओं का वर्णन कीजिए।

33. 'ममता' कहानी की समीक्षा कीजिए।

34. 'सपनों की होम डेलीवरी' उपन्यास के आधार प्र वर्तमान समाज में परिवार के महत्व को समझाइये।

35. 'सपनों की होम डेलीवरी' उपन्यास की शिल्पगत विशेषताओं का विश्लेषण कीजिए।

(2 × 15 = 30 Marks)

St. Xavier's College

G – 2592

(Pages : 3)

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

(Career Related First Degree Programme Under CBCSS)

Group 2(a) Botany and Biotechnology

BB 1221 : Biophysics and Instrumentation

(2015 admission onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

PART – A

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

1. What is an irreversible reaction?
2. State the function of mercapto ethanol in electrophoresis .
3. What is a darkfield microscope?
4. Define monochromatic light.
5. Differentiate between near and far infrared regions.
6. What is a flourophore. Give an example.
7. What is zwitterion? Give an example.
8. Define oxidative phosphorylation.
9. Differentiate between resolution and magnification.
10. What is visible spectrum?

(10 × 1 = 10 Marks)

P.T.O.

PART – B

Answer **any eight** questions. Answer not to exceed one paragraph.

11. Write any four differences between electrone microscopy and light microscopy.

12. What is discontinuous gel electrophoresis?

13. How a band is visualised in Autoradiography?

14. What is meant by force measurement in AFM?

15. Write a note on the structure of ATP synthase.

16. How ketosis occurs in the body?

17. How imnmnoelectrophoresis is performed?

18. What is conductive loss of hearing?

19. How cryofixation is done in electrone microscopy?

20. What is the function of organ of corti?

21. What is free energy?

22. Siting an example, state the role of electrone acceptors in respiration.

(8 × 2 = 16 Marks)

St Xavier's College

PART – C

Answer **any six** questions. Answer not to exceed 120 words.

23. What are the health hazards of radiation?

24. Write a note on the structure and function of internal ear.

25. Briefly explain radiotracer technique.

26. What is mass spectrometry.

27. Write a note on Atomic absorption spectroscopy

28. Briefly explain agarose gel electrophoresis.

29. What is differential centrifugation?

30. How image is formed in TEM?

31. Explain the working of a pH meter.

(6 × 4 = 24 Marks)

PART – D

Answer **any two** questions. Answer not to exceed **3** pages.

32. Give an account of the following :

    (a) ER spectroscopy

    (b) AFM

33. Write an account on the mechanism of vision.

34. Explain principle and functioning of X–ray crystallography.

35. Describe the principle, instrumentation and applications of UV/visible spectrophotometry.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) G – 2312

Reg. No. : .....

Name : .....

Second Semester B.A. Degree Examination, May 2019

First Degree Programme Under CBCSS

Complementary Course

PS 1231 : INTRODUCTION TO POLITICAL THEORY

Common for Philosophy, Economics, History, English, Islamic History and Sociology

(2013-2016 Admissions)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

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

1. Surplus value.
2. Hijarat.
3. Bi-Cameral Legislature.
4. Real Executive.
5. Rule of Law.
6. Human Rights.
7. Bi-Party system.
8. Democracy.

P.T.O.

9. Truth

10. Political Party.

(10 × 1 = 10 Marks)

II. Answer in a paragraph. Answer **any eight** questions.

11. What is Judicial Review?

12. What is the merits and demerits of Uni-Cameralism?

13. What is meant by Third Generation of Human Rights?

14. Examine the Gandhian concept of Trusteeship.

15. What is Administrative Law?

16. What are the differences between Gandhism and Marxism?

17. Explain the concept of Dialectics.

18. Examine Gandhian concept of Sarvodaya.

19. What is Class Struggle?

20. Examine the differences between Pressure groups and Political parties.

21. Distinguish between Positive and Negative Liberty.

22. What is Initiative?

(8 × 2 = 16 Marks)

III. Short Essay (not to exceed 120 words) Answer **any six** questions.

23. Discuss the basic principles of Gandhism.

24. Bring out the functions of Legislature.

25. Give an account of various types of Interest Groups.

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26. Explain UDHR and its importance.

27. Describe the functions of Political party.

28. Discuss the composition of SHRC.

29. Examine the features of Liberalism.

30. Examine kinds of Executive.

31. Explain the functions and significance of Judiciary.

(6 × 4 = 24 Marks)

IV. Essay questions. Answer **any two** questions.

32. Critically examine the role and functions of NHRC in safeguarding human rights of the marginalized section.

33. Elucidate the basic principles of Marxism.

34. Examine the types of Party system.

35. Discuss the importance of Pressure Groups and Interest Groups in modern democracy.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3)

G – 2593

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

Career Related First Degree Programme Under CBCSS

GROUP 2(a) : BOTANY AND BIOTECHNOLOGY

CORE COURSE BB 1241 / BV 1241.1 : ENVIRONMENTAL STUDIES

(2015 ADMN ONWARDS)

(COMMON FOR GROUP 2(a) BOTANY AND BIOTECHNOLOGY AND GROUP 2(b) BIOTECHNOLOGY)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

PART – A

Very short answer type. Answer in one or two sentence.

Answer **all**.

1. What are mangrove vegetations?
2. Define social forestry.
3. Expand IPCC.
4. What is smog?
5. Define soil erosion.
6. Define acid rain.

P.T.O.

7. What are estuaries?

8. What is EFL?

9. Define phytogeography.

10. What are endemic species?

(10 × 1 = 10 Marks)

PART – B

Short answer questions. Answer in one paragraph.

Answer **any eight.**

11. Explain ecological pyramids.

12. Write notes on rain water harvesting.

13. What are biosphere reserves?

14. Define deforestation. Mention any two impacts of deforestation on ecosystem.

15. Write short notes on hot spots of biodiversity.

16. Differentiate ecology from environmental sciences.

17. What are pnuematophores? Mention their function.

18. Write any four morphological adaptations of hydrophytes.

19. Write short notes on mineral resources of India.

20. Mention any four roles of individuals in conservation of natural resources.

21. What is meant by green house effect?

22. Define eutrophication. Mention any two effects of eutrophication.

(8 × 2 = 16 Marks)

St Xavier's College

PART – C

Short essay – Answer should not exceed 120 words.

Answer **any six**.

23. Differentiate between renewable and non-renewable resources with examples.
24. Write note on various environmental protection acts in our country.
25. Describe the values of biodiversity.
26. Write on the ecological significance of nalophytes.
27. Explain global warming with its consequences.
28. Describe the morphological and anatomical adaptions of xerophytes.
29. Explain the structure and functions of ecosystem.
30. Write note on biogeochemical cycles and its types.
31. Write notes on various types of biotic interactions.

(6 × 4 = 24 Marks)

PART – D

Essay type. Answer **any two** questions.

32. Discuss various causes of biodiversity loses.Mention the strategies adopted to conserve biodiversity in India.
33. Write an essay on phytogeographical regions and vegetational types in India.
34. Write an essay on global environmental issues and their management aspects.
35. Explain the various *in situ* and *ex situ* biodiversity conservation strategies.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3)

G – 2360

Reg. No. : .....

Name : .....

Second Semester B.A. Degree Examination, May 2019

First Degree Programme under CBCSS

HISTORY

Core Course II

HY 1241 : CULTURAL FORMATION OF THE PRE-MODERN WORLD

(2014 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

PART – A

Answer **all** questions in one or two sentences each:

1. Gordon Childe
2. Ziggurats
3. Microlith
4. Bronze dancing girl
5. Homo erectus
6. Socrates
7. Lascaux Caves
8. *Principles of Biology*

St. Xavier's College

P.T.O.

9. Charlamagne

10. Pericles

(10 × 1 = 10 Marks)

PART – B

Answer **any eight** from the following not to exceed one paragraph.

11. Manor

12. Spartacus

13. Rosetta Stone

14. Shamash

15. Hippocrates

16. Kalibangan

17. Henreich Schleeman

18. Silk Route

19. Odacer

20. Tartars

21. Chalcolithic age

22. Uruk

(8 × 2 = 16 Marks)

PART – C

Answer **any six** of the following not to exceed 120 words.

23. Discuss about the formation of legal system in ancient Egypt.

24. What are the reasons for the non – decipherment of Indus script?

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25. Analyse the features of Western European Feudalism.

26. Bring out the major characteristics of Neolithic Revolution.

27. Briefly explain the peculiarities of Chinese writing system.

28. Give an account of the trade relations of Roman Empire.

29. Examine the development of literature in ancient Greece.

30. Bring out the significance of the ancient city of Memphis.

31. Explain the development of monastic orders in medieval Christianity.

(6 × 4 = 24 Marks)

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PART – D

Long Essays

Answer **any two** of the following.

32. Critically analyse the cultural contributions of Islam.

33. Explain the factors that led to the decline of Roman Empire.

34. 'Discovery of Indus Valley Civilization increased the depth and veracity of ancient Indian history.' Substantiate the statement.

35. Analyse the progress of humanity through various stages of Stone Age.

(2 × 15 = 30 Marks)

(Pages : 3) **G –2594**

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

(Career Related First Degree Programme under CBCSS)

Group 2 (a) Botany and Biotechnology

BB 1271 : MICROBIAL METABOLISM, GENETICS AND DISEASES

(2015 Admission Onwards)

Time : 3 Hours Max. Marks : 80

St. Xavier's College

SECTION – A

Answer **all** questions in a word 1 or 2 sentences :

1. Name any passive process for the uptake of solutes into a bacterial cell.
2. Define a autotroph.
3. What is the function of bacterial carotenoids?
4. In which life cycle the bacteriophage DNA integrates into the host genome?
5. Which organism produces the botulinium toxin?
6. What is meant by a stringer plasmid?
7. What is meant by an auxotroph?
8. Name the causative organism of tuberculosis.
9. Name the virus which cause chickenpox.
10. What is the role of F pilus in conjugation?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

Answer **any eight** questions. Answer not to exceed 1 paragraph.

11. What are phycobiliproteins?

12. Write a short note on bacterial chlorophyll.

13. Briefly describe the nutritional classification of bacteria.

14. What are relaxed plasmids?

15. What is plasmid mediated resistance?

16. Name any two engineered plasmid vectors.

17. What is the difference between F+ and F- bacterial cells?

18. Give an account of the replica plating techniques.

19. What is the causative organism of Dengue fever. Briefly describe the symptoms.

20. What disease is caused by Shijella? Describe the main symptoms.

21. Name two soil borne infections and causative organisms.

22. Name the causative organism and symptoms of Polio.

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION – C

Answer **any six** questions. Answer not to exceed 120 words.

23. Explain the tricarboxylic acid cycle.

24. Write a short note on bacteriochlorophyll.

25. Write note the lactic acid fermentation in bacteria.

26. Briefly describe the importance of induced mutations in genetic engineering.

27. Describe the glycolysis in bacteria.

28. Describe the Griffith's experiment and its importance.

29. Give an account of two neurotropic viral diseases affecting human?

30. Discuss the various methods to prevent the water and food borne infections.

31. Write a note on Staphylococcal food poisoning.

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions. Answer not to exceed 3 pages.

32. Explain the various photosynthetic pigments and the mechanisms of photosynthesis in bacteria.

33. Write an essay on the major dermatoviral diseases affecting human with its causative organisms and symptoms.

34. Give a detailed account on the electron transport and oxidative phosphorylation in bacteria.

35. Describe the mechanism of horizontal gene transfer during bacterial conjugation. Compare transformation and transduction.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) G – 2380

Reg. No. : .....

Name : .....

Second Semester B.A. Degree Examination, May 2019

First Degree Programme under CBCSS

Economics

Core Course II

EC 1241 : MICRO ECONOMICS I

(2015 Admission onwards)

Time : 3 Hours Max. Marks : 80

St. Xavier's College

SECTION – I

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

1. Opportunity cost
2. Indifference curve
3. Production function
4. Engel curve
5. Mixed economy
6. Law of supply
7. Income effect
8. Cross elasticity of demand
9. Price mechanism
10. Marginal cost

(10 × 1 = 10 Marks)

P.T.O.

SECTION – II

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

11. Explain Production possibility curve.

12. State law of demand.

13. Define consumer surplus.

14. What do you mean by economies of scale.

15. Write a note on Cobb- Douglas Production function.

16. Explain producer's equilibrium.

17. Explain price elasticity of demand.

18. Explain Iso-cost line.

19. Why are the AVC and ATC curves 'U' shaped.

20. What is meant by Demand forecasting.

21. Why Indifference curves are Convex to the origin.

22. Distinguish between Micro Economics and Macro Economics.

(8 × 2 = 16 Marks)

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SECTION – III

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

23. State and explain the law of diminishing marginal utility.

24. What are the properties of Isoquant.

25. Explain Revealed Preference theory.

26. Explain different methods of Demand forecasting.

27. Explain Giffen Paradox.

28. Briefly explain the nature and scope of Micro economics.

29. Elucidate the traditional theory cost

30. Briefly explain the law of returns to scale.

31. Why does demand curve slopes downward?

(6 × 4 = 24 Marks)

SECTION – IV

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

32. Distinguish between Hicks and Slutsky approach to the measurement of income and substitution effect.

33. State and explain the Law of variable proportion. Which is the best stage in this law and why?

34. Critically examine the ordinal utility theory of consumer behaviour.

35. Explain the different methods of measuring price elasticity of demand.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 3) G – 2387

Reg. No. : .....

Name : .....

Second Semester B.A. Degree Examination, May 2019

First Degree Programme under CBCSS

Complementary Course

PL 1232 : COMPARATIVE RELIGION

(2017 Admission onwards)

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 questions carries 1 mark.

1. Nirvana
2. Liberation
3. Henotheism
4. Polytheism
5. Stages of Vedic religion
6. Rituals
7. Inter-religions understanding

P.T.O.

8. Nastika system

9. Atheism

10. Moksa.

(10 × 1 = 10 Marks)

SECTION – B

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

11. Define monism.

12. Explain pantheism.

13. Role of prayer in worship.

14. Write an account on rebirth.

15. What is meant by 'world order'?

16. What is the meaning of religious tolerance?

17. Explain Deism.

18. Write short note on worship.

19. Examine secularism.

20. Examine sanatanadharma.

21. What is universal religion?

22. Examine the significance of Bhagavad Gita.

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION – C

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

23. Explain monotheism.

24. Write an account on Nirvana.

25. Describe liberation.

26. Briefly describe the need of comparative study of religions.

27. Give an account on the concept 'Zakat' in Islam.

28. Examine the concept life after death.

29. What is religious consciousness? Discuss.

30. Describe on the relation between religion and social life.

31. Examine the role of rituals and worship in different religious.

(6 × 4 = 24 Marks)

SECTION – D

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

32. Write an essay on secularism.

33. Religious conflicts destructs the development of Nations – Discuss.

34. Elaborate the various theories of God.

35. Examine the concepts of freedom of will, karma and rebirth in the content of Indian philosophy.

(2 × 15 = 30 Marks)

St Xavier's College

(Pages : 4) G – 2445

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme under CBCSS

Complementary Course for Chemistry/Polymer Chemistry

MM 1231.2 : Mathematics II

INTEGRATION, DIFFERENTIAL EQUATIONS AND ANALYTIC GEOMETRY

(2014-2017 Admns)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – I

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

1. Evaluate $\int^{3} \sqrt{x^2}\,dx$.

2. Find the average value of the function $f(x) = \sin x$ over the interval $[0, \pi]$.

3. A particle moves with acceleration $a(t) = -2\,m/s^2$ and has velocity $V_0 = 3\,m/s$ at time t = 0. Find the displacement of the particle during the time interval $1 \le t \le 4$.

4. Solve $y' = \frac{xy}{2}$.

5. Check whether the differential equation $(x^3 + 3xy^2)dx + (3x^2y + y^3)dy$ is exact? Justify your answer.

6. Find a general solution of $4y'' + 4y' - 3y = 0$.

P.T.O.

7. Define conic section.

8. What is the latus rectum of the ellipse $3x^2 + 4y^2 = 48$?

9. What is the reflection property of a parabola?

10. Obtain the semi focal axis and semi conjugate axis of the hyperbola $9x^2 - 16y^2 = 144$.

(10 × 1 = 10 Marks)

SECTION – II

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

11. A projectile is fired vertically upwards with an initial velocity of 49 m/s from a tower of 150 m high. How long will it take the projectile to hit the ground? What will be its speed at impact?

12. Find the area of the region enclosed by the curves

    $x = \sin y, x = 0, y = \pi/4$ and $y = 3\pi/4$?

13. Derive the formula for the volume of a sphere of radius r.

14. Find the arc length of the curve $x = \cos 2t, y = \sin 2t, 0 \le t \le \pi/2$.

15. Solve $y' = x^2 - 2x + 2$.

16. Solve $xyy' = x^2 + y^2$.

17. Obtain the general solution of the equation $y'' - 6y' + 25y = 0$.

18. Obtain the particular integral of the equation $y' - 5y = 3e^x - 2x + 1$.

19. Find the equation of the ellipse whose minor axis is 4 and the distance between the foci is 2.

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20. A hyperbola has for its asymptotes the straight lines $2x - y - 3 = 0$ and $3x + y - 7 = 0$ and passes through the point (1, 1). Find its equation.

21. Find the equations to the directrices of the ellipse $2x^2 + 3y^2 = 6$.

22. Find the condition that the line $lx + my = 1$ is a normal to the parabola $y^2 = 4ax$.

(8 × 2 = 16 Marks)

SECTION – III

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

23. Evaluate the iterated integral $\int_0^1 \int_0^{\sqrt{1-x^2}} (x^2 + y^2)\, dy\, dx$ by converting to polar coordinates.

24. Find the area of the surface generated by revolving the parametric curve $x = t, y = 2t^2, 0 \le t \le 1$, about the y-axis.

25. Evaluate the triple integral $\iiint_G xy^2 \sin z\, dV$ where G is the set of points satisfying $-1 \le x \le 1, 0 \le y \le 1, 0 \le z \le \pi/2$.

26. Solve $(2x + 5y + 1)\, dx - (5x + 2y - 1)\, dy = 0$.

27. Obtain the general solution of $y' + y \tan x = y^3 \sec x$.

28. Solve $y'' - y' - 2y = \sin 2x$.

29. Find the vertex, focus, equation of the axis and directrix of the parabola $(y + 3)^2 = 2(x + 2)$.

30. Describe the graph of the equation $9x^2 - 16y^2 + 18x + 32y - 151 = 0$.

31. Find the locus of the point of intersection of perpendicular tangents to the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$.

(6 × 4 = 24 Marks)

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SECTION – IV

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

32. (a) Find the area in the first quadrant which is inside the circle $r = 4\cos\theta$ and outside the Lemniscate $r^2 = 8\cos 2\theta$.

(b) Use cylindrical coordinates to find the volume of the solid enclosed by the paraboloid $z = x^2 + y^2$ and the plane $z = 9$.

33. (a) Find the orthogonal trajectory of coaxil circles $x^2 + y^2 + 2gx + c = 0$ where g is the parameter.

(b) Solve $\frac{d^3y}{dx^3} + 2\frac{d^2y}{dx^2} + \frac{dy}{dx} = e^{2x} + \sin 2x$.

34. (a) Prove that the line tangent to the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ at the point (x_1, y_1) has the equation $\frac{xx_1}{a^2} + \frac{yy_1}{b^2} = 1$.

(b) Find the equation to the hyperbola with foci (5, 2), (- 3, 2) and eccentricity 2.

35. (a) A planet has eccentricity e = 0.249 and semi major axis a = 39.5 AU.

(i) Find equation of its orbit in polar coordinate system

(ii) Find the period T in years

(iii) Find the perihelion and aphelion distances.

(b) Find the eccentricity and distance from the pole to the direcrix and sketch the graph of $r = \frac{6}{2 + \cos\theta}$.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) **G – 2561**

REG. No. : .....

Name : .....

Second Semester B.A. Degree Examination, May 2019

Career Related First Degree Programme under CBCSS

MALAYALAM AND MASS COMMUNICATION

Core Course – III

MX 1241 : പരിസ്ഥിതി പഠനം : സിദ്ധാന്തവും ആവിഷ്ക്കാരവും

(2015 – 2017 Admissions)

Time : 3 Hours Max. Marks : 80

I. ഒരു വാക്കിലോ പരമാവധി രണ്ടു വാക്യത്തിലോ ഉത്തരം എഴുതുക. എല്ലാ ചോദ്യത്തിനും ഉത്തരമെഴുതണം.

1. ഇക്കോളജി എന്നാലെന്ത്?

2. സലീം അലി ഏതു പരിസ്ഥിതി പഠനശാഖയുമായി ബന്ധപ്പെട്ട വ്യക്തിയാണ്?

3. 'ഒറ്റവയ്ക്കോൽ വിപ്ലവം' - ആരുടെ കൃതി?

4. ലോകപരിസ്ഥിതിദിനം എന്നാണ്?

5. എൻഡോസൾഫാൻ വിഷയം പ്രമേയമാക്കി അംബികാസുതൻ മാങ്ങാട് രചിച്ച നോവൽ ഏത്?

6. ഇക്കോ ഫെമിനിസം എന്ന സങ്കല്പം അവതരിപ്പിച്ചതാര്?

7. മുകേബുക്ചിൻ ഏതു വാദത്തിന്റെ വക്താവായാണ് അറിയപ്പെടുന്നത്?

P.T.O.

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8. എം.എസ്. സ്വാമിനാഥൻ ഏതു മേഖലയുമായി ബന്ധപ്പെട്ട വ്യക്തിയാണ്?

9. ഇപ്പോഴും വികസനപദ്ധതികളൊന്നും നടപ്പാക്കിയിട്ടില്ലാത്ത സ്ഥലങ്ങളിൽ നടപ്പാക്കാനുദ്ദേശിക്കുന്ന പദ്ധതികളുടെ പേര്?

10. കേരളം മുതൽ ഗുജറാത്ത് വരെ വ്യാപിച്ചു കിടക്കുന്ന പർവ്വതനിരകൾ ഏതാണ്?

(10 × 1 = 10 Marks)

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

11. ലിത്തോസ്ഫിയർ എന്നാലെന്ത്?

12. ഖനനം മൂലം സംഭവിക്കുന്ന പ്രധാന മലിനീകരണങ്ങൾ ഏവ?

13. എന്താണ് ആഗോള താപനം?

14. ആവാസവ്യവസ്ഥ - നിർവ്വചിക്കുക.

15. മരുപ്രദേശങ്ങൾ നേരിടുന്ന പ്രധാന ഭീഷണികൾ ഏവ?

16. നീർത്തടപരിപാലനം എന്നതുകൊണ്ട് അർത്ഥമാക്കുന്നതെന്ത്?

17. പുൽമേടുകളുടെ പ്രാധാന്യം എന്ത്?

18. മനുഷ്യരുടെ ആരോഗ്യത്തിൽ പരിസ്ഥിതിക്കുള്ള പ്രാധാന്യമെന്ത്?

19. പരിസ്ഥിതി, ആരോഗ്യം എന്നീ മേഖലയിൽ വിവരസാങ്കേതിക വിദ്യയുള്ള പങ്കെന്ത്?

20. എന്താണ് എ.ച്ച്.ഐ.വി. എയ്ഡ്സ്? അതിനെ എങ്ങനെ പ്രതിരോധിക്കാം?

21. നഗരമാലിന്യങ്ങളും വ്യവസായ മാലിന്യങ്ങളും എന്തെന്നു വ്യക്തമാക്കുക.

22. വർഗ്ഗവൈവിധ്യം എന്നാലെന്ത്?

(8 × 2 = 16 Marks)

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III. **120** വാക്കിൽ കവിയാതെ **ആറ്** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

23. വായുമലിനീകരണം ജൈവവ്യവസ്ഥയെ എങ്ങനെ ബാധിക്കുന്നു?

24. ജലമലിനീകരണത്തിന്റെ കാരണങ്ങൾ എന്തൊക്കെ?

25. ജൈവകൃഷി എന്നാലെന്ത്? വിശദമാക്കുക.

26. 'അംബപേരാറേനി മാറിപ്പോമോ
ആകുലയാമൊരഴുക്കുചാലായ്''
- വിശദീകരിക്കുക.

27. ''വിഷവാതമേല്ലാത്ത
വിഷവാണി കേൾക്കാത്ത
വിഷനീർ കുടിക്കാത്ത
നാടെവിടെ മക്കളേ''
- ആശയമെന്ത്?

28. പുനസ്ഥാപിത ഊർജ്ജ വിഭവങ്ങളും പുനസ്ഥാപിതേതര ഊർജ്ജവിഭവങ്ങളും എന്തെന്ന് വ്യക്തമാക്കുക.

29. എന്താണ് ഓസോൺ പാളി? അതിന്റെ തകർച്ചകൊണ്ടു സംഭവിക്കുന്ന ദോഷങ്ങൾ എന്തൊക്കെ?

30. കീടനാശിനികൾ സൃഷ്ടിക്കുന്ന പ്രയത്നങ്ങൾ എന്തൊക്കെ?

31. മലിനീകരണം പ്രതിരോധിക്കാൻ വ്യക്തിപരമായി കൈക്കൊള്ളേണ്ട നടപടികൾ എന്തൊക്കെ?

(6 × 4 = 24 Marks)

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

32. ഒരു പക്ഷിക്കുഞ്ഞിന്റെ മരണം എന്ന നാടകത്തിൽ ആവിഷ്കൃതമാകുന്ന പാരിസ്ഥിതിക ദർശനം വ്യക്തമാക്കുക.

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33. പരിസ്ഥിതിയും സാമൂഹ്യപ്രശ്നങ്ങളും എന്ന വിഷയത്തെ ആസ്പദമാക്കി ഉപന്യാസം തയ്യാറാക്കുക.

34. പ്രകൃതി സ്നേഹിയായ മങ്കുവിന്റെ ജീവിതം എസ്.വി. വേണുഗോപൻ നായർ ചിത്രീകരിക്കുന്നതെങ്ങനെ?

35. ആണവോർജ്ജം ഉപയോഗപ്രദവും വിനാശകാരിയുമാണ് - ചർച്ച ചെയ്യുക.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) G – 2283

Reg. No. : .....

Name : .....

Second Semester B.A./B.Sc. Degree Examination, MAY 2019

First Degree Programme under CBCSS

Language Course (Additional Language) – Latin

LT 1211.1 : Translation and Communication in Latin

(2013 Admission onwards)

Time : 3 Hours Max. Marks : 80

PART – A

Responde omnibus :

Delige verbum aptissimum.

1. Aper in silva ———— (est, sunt, sum)
2. Regina poetae coronam ———— (dat, dant, dare)

Indica verum (T) an falsum (F).

3. The river Garonne separates the Gauls from the Aquitani.
4. There are six cases in Latin.

Scribe quod non aptum.

5. Ad, Cum, in, Et.
6. Regina, Ancilla, Agricola, stella.

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Redde Latine.

7. Water delights the sailors.

8. To the moon.

Redde Anglice

9. Post mortem.

10. Agricolae estis.

(10 × 1 = 10 Marks)

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PART – B

Responde octo de datis.

Explica significationem in lingua Anglica.

11. Laborare est orare.

12. Labor Omnia vincit.

Scribe diversitatem inter verba.

13. 'Lex scripta' and 'Lex non scripta'.

14. 'Corpus juris' and 'Corpus delicti'.

15. Adequa in sequential.

(a) Cum – Noun

(b) Bonus – Preposition

(c) Rosa – Verb

(d) Amare – Adjective

Consture sententiam utens verbo.

16. Dare

17. Laborare

Redde Anglice :

18. Rex donum dei bene amabat. Midas multum aurum facere vult. In aurum arbores alta atque terram aquamque vertebat. Ob donum suum deum laudavit. Aurum potius quam sapientiam habere mavult.

19. Conjuga 'Habere' in praesens.

20. Corrige sententiam : Temporibus antiquis erant rex, midas.

Declina singulariter et pluraliter.

21. Bellum, i

22. Labor, oris.

(8 × 2 = 16 Marks)

PART – C

Responde sex de datis :

Explica sententias datas.

23. Caritas patience est benigna est.

24. Rex donum die bene amabat.

25. 'Id donum rogavi, sed non est donum bonum'.

26. Tertiam qui ipsorum lingua Celtac, nostra Galli appellantur.

27. Venite, venite in Bethlehem.

St. Xavier's College

Redde in Latinam linguam.

28. Love is patient, love is kind. It does not envy, it does not boast, it is not proud. It does not dishonor others, it is not self-seeking, it is not easily angered, it keeps no record of wrongs.

29. In ancient time there was a king called Midas. The name of the king was famous because he was the friend of Bacchus. Once Bacchus was captured by enemies. He was liberated by Midas. Bacchus was indeed happy.

Redde in Anglicam linguam.

30. Studio sapientia crescit: Magna cum laude: Audi alteram partem: Aqua vitae: Reginae peota sumus: Herba in silva est: Ancillae, aram ornate: Rosarum spinae puellam vulnerant.

31. Meum et tuum: Dominus genero praemium dat: Dominus amicos filii laudat: Angelus domini in templum venit. Hortus vester est plenus rosarum: Asini et equi in silva sunt: Agricolarum puellae laborant: Mensam ornat.

(6 × 4 = 24 Marks)

PART – D

Responde duo de datis :

32. 'Caritas numquam excidit' Discuss.

33. 'Adeste, Fideles' as a hymn of angels.

34. Discuss Latin declensions and conjugations as foundations for the study of this classical language.

35. Temporibus antiquis _____(1)_____ (eramus, erant, erat) rex, Midas. Nomen regis erat _____(2)_____ (clarus, clarum, clara) quod amicus Bacchi erat. Bacchus ab _____(3)_____ (hostes, hostium, hostibus) captus era. A Mida _____(4)_____ (liberatus, liberate, liberatum) erat. Bacchus vero fuit _____(5)_____ (laeti, laetis, laetus). Bacchus _____(6)_____ (eius, eorum, ei) nuntiavit: 'donum _____(7)_____ (dabis, dabimus, dabo)'. Hoc regi gratum _____(8)_____ (erant, eramus, erat). _____(9)_____ (Donum, donis, donourum) accepit. Postea multa in _____(10)_____ (aurus, aura, aurum) vertebantur, si ea tangebat. Rex donum _____(11)_____ (deus, deis, dei) bene amabat. Midas multum aurum facere _____(12)_____ (vult, volo, volucerunt). In aurum _____(13)_____ (arboribus, arbores, arbor) alta atque terram auamque vertebat. Ob donum suum _____(14)_____ (deum, deo, deam) laudavit. Aurum potius quam _____(15)_____ (sapientia, sapientiae, sapientiam) habere mavult.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) G – 2464

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019.

First Degree Programme under CBCSS

Complementary Course

CH 1231.1/CH 1231.2 — PHYSICAL CHEMISTRY — I

(Common for Physics and Geology)

(2017 admn onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. Calculate the pH of 0.025 N HNO_3 assuming 100% ionization.

2. Calculate the degree of hydrolysis of 0.2 m sodium acetate solution in water. (K_a of acetic acid $= 1.8 \times 10^{-5}$, $K_w = 1 \times 10^{-14}$).

3. Give an example of endothermic reaction.

4. Define buffer solution.

5. Define the term – spontaneous process.

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6. Define free energy.

7. What is levelling effect?

8. Define chemical equilibrium.

9. What is meant by reversible reaction?

10. Define pH.

(10 × 1 = 10 Marks)

SECTION – B

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

11. Write the Henderson equation for acidic buffer and explain the terms.

12. Calculate the hydronium and hydroxyl ion concentrations of a solution having pH 10.27.

13. Calculate K_p for the reaction

$$A(g) + B(g) \rightleftharpoons C(g) + D(g)$$

If ΔG° for the reaction is $-3435\ kJmol^{-1}$.

14. ΔH and ΔS for the reaction $2NO(g) + O_2(g) \rightarrow 2NO_2(g)$ at 700 k are respectively –112.9 kJ and $-145.5\ Jk^{-1}$. Calculate the free energy change and predict whether the reaction is spontaneous or not at 700 k.

15. Define heats of reaction at constant volume and constant pressure.

16. What are exothermic reactions? Give examples.

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17. What is meant by the term standard state?

18. State Hess's law.

19. Define Enthalpy of hydration.

20. Write the equation for calculation of pH from E.M.F. measurements.

21. Define degree of hydrolysis. Write an example of a salt of strong base and weak acid.

22. Define standard free energy change for a reaction.

(8 × 2 = 16 Marks)

SECTION – C

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

23. State and explain the second law of thermodynamics.

24. Define enthalpy. How is the enthalpy change in a process related to free energy change?

25. Derive Henderson equation for acidic buffer. Name any two applications.

26. Derive the equation for the relation between K_w and K_h of a salt of strong acid and weak base.

27. Write short note on hydrolysis of salts.

28. Write short note on bond energy.

29. Explain any two applications of Hess's law.

30. Write short note on buffer capacity and buffer action.

31. State the first law of thermodynamics and give the mathematical expression of the law.

(6 × 4 = 24 Marks)

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SECTION – D

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

32. Define equilibrium constant. What are the factors which influence the value of equilibrium constant? Derive the relation between K_p and K_c.

33. (a) Discuss any four concepts of acids and bases. What are conjugate acid – base pair?

    (b) Derive the equation for hydrolytic constant of a salt of weak acid and weak base.

34. (a) Write short note on enthalpy of neutration.

    (b) Derive Kirchoff equation.

35. (a) Write short note on : (i) Entropy (ii) Spontaneous process.

    (b) State and explain the Chatelier's principle.

(2 × 15 = 30 marks)

St. Xavier's College

(Pages : 4) G – 2587

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

Career Related First Degree Programme Under CBCSS

2 (a) – Botany and Biotechnology

Complementary Course

BB 1231 : GENERAL BIOCHEMISTRY

(2014 Admission onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

PART – A

(Very short answer type – maximum two sentences) Answer **all** questions :

1. Which monosaccharide is used as the preferred source of energy for brain cells?
2. How are galactose and fructose related to each other?
3. What is the product of a reaction of a fatty acid with alkali?
4. Which phospholipid is present in the mitochondrial membrane?
5. What is a nucleoside?
6. What is meant by denaturation of proteins?
7. What is meant by polarity of DNA?

P.T.O.

8. Name the enzyme that catalyzes the change in location of the functional group from one position to another within a compound.

9. What is a coenzyme?

10. What is an active site?

(10 × 1 = 10 Marks)

PART – B

(Short answer questions – not to exceed one paragraph) Answer **any eight** questions.

11. Write a note on optical isomerism.

12. What are epimers?

13. What are triglycerides? Give the structure of a simple and a mixed triglyceride.

14. Define iodine number and its significance.

15. What are zwitter ions? Draw the zwitter ion form of any one amino acid.

16. Write the significance of saponification number.

17. Write a note on the secondary structure of proteins.

18. What are essential aminoacids?

19. What is a nucleotide?

20. What is meant by catalytic activity of enzymes?

21. Write the michaclis – Mention equation.

22. Define enzyme inhibition.

(8 × 2 = 16 Marks)

St. Xavier's College

PART – C

(Short essay – not to exceed 120 words)

Answer **any six** questions.

23. Describe the structure and properties of cellulose.

24. Write the ring structure of any two monosaccharides.

25. Explain the importance of Acrolein test.

26. Describe the structure and functions of phospholipids.

27. Comment on the colour reactions of sterols.

28. How are aminoacids classifed? Explain.

29. Elaborate on fibrous and conjugated proteins.

30. Write a note on the structure of pyrimidines.

31. Give the structure of poly nucleotide-DNA.

(6 × 4 = 24 Marks)

PART – D

(Long essay)

Answer **any two** questions.

32. Describe the structure and important properties of starch and glycogen.

33. Explain the structure of cholesterol and ergosterol.

34. Explain the various factors affecting enzyme activity.

35. Discuss the various method used for amino acid analysis of proteins.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4)

G – 2288

Reg. No. : .....

Name : .....

Second Semester B.A./B.Sc. Degree Examination, May 2019

First Degree Programme under CBCSS

MALAYALAM LANGUAGE

Language Course V – Additional Language

ML 1211.1 : ഗദ്യസാഹിത്യം

(2014 admission to 2017 admission)

Time : 3 Hours

Max. Marks : 80

St. Xavier's College

I. ഒരു വാക്കിലോ പരമാവധി രണ്ടു വാക്യത്തിലോ ഉത്തരം എഴുതുക.

1. 'ചെറുകഥ ഇന്നലെ, ഇന്ന്' എന്ന കൃതിയുടെ കർത്താവ് ആര്?

2. 'ചിദംബരസ്മരണ' ആരുടെ കൃതിയാണ്?

3. 'ബിരിയാണി' എന്ന കഥ എഴുതിയതാര്?

4. 'അദ്ദേഹത്തിനെപ്പറ്റി എന്റെ മനസ്സിൽ തോന്നിയിരുന്ന പരിഭവവിചാരങ്ങൾ സൂര്യനെ കണ്ട ഇരുട്ടിന്റെ അനന്തരഗതി അനുഷ്ഠിച്ചു' ആരെക്കുറിച്ചാണീ പരാമർശം?

5. 'അവിടുത്തെ മകനെ വീണ്ടെടുത്തു തരുവാൻ ഞാനാളാവുമോ? ആ ഉച്ചക്കഞ്ഞി പോലും എന്റെ വരുതിയിലല്ല' ആരാണിങ്ങനെ ചിന്തിക്കുന്നത്?

6. 'ഇതാ ഇവിടം വരെ' എന്ന സിനിമയുടെ സംവിധായകനാര്?

7. കവിതയുടെ മൂലഘടകങ്ങൾ എന്ന ലേഖനത്തിന്റെ കർത്താവ് ആര്?

P.T.O.

8. 'ജീവിതത്തിന്റെ പുസ്തകം' എന്ന നോവൽ രചിച്ചതാര്?

9. 'മാധവാ ഇന്നെങ്കിലും നിന്നോട് സംസാരിക്കാൻ പറ്റിയില്ലെങ്കിൽ .... അദ്ദേഹം പകുതിവെച്ച് നിർത്തി' - ആര്?

10. പൂതനക്കൃഷ്ണൻ എന്ന പേരിലറിയപ്പെടുന്ന കഥകളി നടനാര്?

(10 × 1 = 10 Marks)

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

11. കഥാകൃത്ത് ഗന്ധർവ്വസ്നേഹിതനെ അവതരിപ്പിക്കുന്നതെങ്ങനെ?

12. 'മനുഷ്യപുത്രി'യിൽ നേതാവ് തന്റെ സർവ്വപരിപാടികളും വിസ്മരിച്ചുപോയതെപ്പോൾ?

13. 'കടയനെല്ലൂരിൽ അത്തരം മനുഷ്യരില്ല' ഏതു തരം മനുഷ്യർ?

14. വണ്ടിക്കാളകളെ എണീപ്പിക്കാൻ വണ്ടിക്കാരൻ പ്രയോഗിച്ച സൂത്രമെന്ത്?

15. ലോലയുടെ മാതാപിതാക്കളെപ്പറ്റിയുള്ള പരാമർശമെന്ത്?

16. ചെറുകഥയുടെ നാലു പ്രത്യേകതകൾ എഴുതുക.

17. മാധവന് അച്യുതന്മാമയോട് സംസാരിക്കാൻ കഴിയാതെ ബുദ്ധിമുട്ടിക്കുന്നതെന്തൊക്കെയെന്നാണ് കഥാകൃത്ത് പറയുന്നത്?

18. മാരാരുടെ അഭിപ്രായത്തിൽ 'മാമ്പഴ'ത്തിന്റെ ഹൃദയാവർജ്ജകതയ്ക്കു കാരണമെന്ത്?

19. 'പണം മുടക്കുന്നത് അവരാകകൊണ്ട് ഞങ്ങൾ അതിനെക്കുറിച്ച് പരാതിപ്പെടേണ്ട ആവശ്യമുണ്ടായിരുന്നില്ല' എന്താണിവിടെ പരാമർശിക്കുന്നത്?

St. Xavier's College

20. ശിവാജി ഗണേശന്റെ കൊട്ടാരത്തിന്റെ ഗോവണി കയറുമ്പോൾ ബാലചന്ദ്രൻ ചുള്ളിക്കാട് വിറച്ചു പോയതെന്തുകൊണ്ട്?

21. സുകുമാർ അഴീക്കോടിന്റെ അഭിപ്രായത്തിൽ എന്താണു കവിത?

22. മഴയുടെ ശബ്ദം ബാലചന്ദ്രന് എപ്രകാരമാണ് അനുഭവപ്പെട്ടത്?

(8 × 2 = 16 Marks)

III. **120** വാക്കിൽ കുറയാതെ **ആറെണ്ണത്തിന്** ഉത്തരമെഴുതുക.

23. വേണ്ടപ്പെട്ടവരുടെ ആഗ്രഹത്താൽ ചികിത്സയ്ക്കു പോകുമ്പോഴും ചങ്ങമ്പുഴയുടെ മനോഭാവം എന്തായിരുന്നു?

24. 'യഥാർത്ഥ കവിത ആത്മാവിൽ നിന്ന് ഉളവാകുമ്പോൾ കൃത്രിമ കവിത ബുദ്ധിയിൽ നിന്നു ജനിക്കുന്നു' എന്നു പറയുന്നതെന്തുകൊണ്ട്?

25. 'ഈ ബാലഭാവനയുടെ രൂപവത്കരണമായി മാമ്പഴത്തെ വീക്ഷിക്കേണ്ടിയിരിക്കുന്നു' - വിശദമാക്കുക.

26. 52 × 32 എന്ന കഥ ഉത്തരാധുനികകഥയുടെ ഏതെല്ലാം സ്വഭാവങ്ങൾ പ്രകടമാക്കുന്നു?

27. ആറാംകാലത്തിലെ നാരായണൻകുട്ടിയുടെ അവതരണം എപ്രകാരമാണ്?

28. ബാലചന്ദ്രൻ കണ്ട കടയനെല്ലൂർ ഗ്രാമത്തെ വിവരിക്കുക.

29. കഞ്ഞാത്തലമ്മയുടെ മുന്നിൽ പശ്ചാത്താപ വിവശനായി ഗോവിന്ദൻ കുട്ടി ചിന്തിക്കുന്നതെന്തൊക്കെ?

30. ടി. പദ്മനാഭന്റെ കഥകളുടെ വ്യതിരിക്തത എന്ത്?

31. ബാലചന്ദ്രൻ ചുള്ളിക്കാടും സുഹൃത്തുക്കളും ശിവാജി ഗണേശന്റെ മുമ്പിൽ ലജ്ജിച്ചു തലതാഴ്ത്തിയ സംഭവമെന്ത്?

(6 × 4 = 24 Marks)

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

32. ആധുനികതയുടെ അടയാളങ്ങൾ ഒരു ദളിത് യുവതിയുടെ കദനകഥയിൽ എപ്രകാരം ആവിഷ്കരിച്ചിരിക്കുന്നു?

St. Xavier's College

33. കഥാകാരനെന്ന നിലയിലും ചലച്ചിത്രകാരനെന്ന നിലയിലും പി. പത്മരാജന്റെ സംഭാവനകൾ വിലയിരുത്തുക.

34. എം.എൻ. വിജയൻ 'മാമ്പഴം' എന്ന കവിതയുടെ മനഃശാസ്ത്രനിരൂപണം നിർവഹിച്ചിരിക്കുന്നതെപ്രകാരം?

35. മലയാളച്ചെറുകഥയുടെ സമകാലാവസ്ഥ പരിശോധിക്കുക.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) G – 2469

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme under CBCSS

Complementary Course for Mathematics

ST 1231.1 : PROBABILITY AND RANDOM VARIABLES

(2018 Admission)

Time : 3 Hours Max. Marks : 80

St. Xavier's College

SECTION – A

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

1. Define random variable $\bar{a}$ with suitable example.
2. If two events A and B are disjoint, show that $P(A \cup B) = P(A) + P(B)$.
3. Define independence of events with example.
4. Define a posteriori probability.
5. What is the classical definition of probability?
6. Mention any two properties of probability mass function of a discrete random variable.
7. Define the probability density function of a continuous random variable.
8. Define mathematical expectation of a random variable.
9. Distinguish between raw moments and central moments.
10. For two independent random variables X and Y, show that $M_t(X + Y) = M_t(X).M_t(Y)$.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

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

11. Four students are selected from 5 boys and 3 girls. What is probability that the selected group contains only boys?

12. Using axioms of probability, show that $P(\overline{A}) = 1 - P(A)$.

13. If an unbiased coin is tossed 5 times, find the probability that all of them are not head.

14. Define conditional probability of two events A and B with suitable examples.

15. If two events A and B are independent, show that the events $\overline{A}$ and $\overline{B}$ are independent.

16. When will you say that several events are mutually exclusive and exhaustive. Also give an example.

17. Distinguish between discrete and continuous random variables.

18. If a random variable X has the pdf $f(x) = kx$, $x = 1,2,3,4,5$, find the values of k. Also find $P(X \geq 4)$

19. If a random variable X has pdf $f(x) = \frac{1}{3}$, $x = 1, 2, 3$, find the distribution of the random variable $Y = 2X + 3$.

20. For a random variable X, show that $\mu_0 = 1$ and , $\mu_1 = 0$, where μ_r represents the rth central moment of X.

21. For two independent random variables, show that $E(XY) = E(X).E(Y)$.

22. Define moment generating function of a random variable. Show by an example that it does not exists always.

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION – C

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

23. Define statistical regularity and explain how probability can be defined using this property.

24. A bag contains 3 red, 6 white and 7 blue balls. What is the probability that two balls drawn are white and blue?

25. A dice is biased so that the chance of happening the even number is twice as that of an odd number. If the dice is thrown two times, what is the probability that sum of the two numbers thrown is an even number?

26. A bag contains four tickets with numbers 112,121,211,222. One ticket is drawn and the number is noted. Let A_1 be the event that the first digit of the number in the drawn ticket is one. Similarly A_2 and A_3 are the events that second and third digits of the number in the drawn ticket is one. Examine whether A_1, A_2 and A_3 are independent.

27. A continuous random variable X had pdf $f(x) = Ax^2$, $0 < x < 1$. Determine the value of A and find $P\left[\frac{1}{3} < X < \frac{2}{3}\right]$.

28. The joint pdf of two random variables X and Y is

$$f(x, y) = \frac{1}{27}(x + 2y),\ x = 0, 1, 2;\ y = 0, 1, 2.$$

(a) Find the marginal density functions of X and Y.

(b) Find the conditional distribution of Y given $X = x$.

29. If a random variable X has pdf $f(x) = 1$, $0 < x < 1$, find the distribution of $Y = -2\log(X)$.

30. State and prove Cauchy - Schawrtz inequality.

31. A random variable X has pdf $f(x) = \lambda e^{-\lambda x}$, $0 < x < \infty$. Find the moment generating function and hence its mean and variance.

(6 × 4 = 24 Marks)

St. Xavier's College

SECTION – D

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

32. (a) Define axiomatic definition of probability.

(b) A man forgets the last digit of a telephone number and he dials the last digit at random.What is the probability of calling no more than three wrong numbers?

33. (a) State and prove Baye's theorem.

(b) There are two identical boxes contains 5 white and 4 red balls, 4 white and 6 red balls. A box selected at random and a ball is drawn from it. If the drawn ball is red, what is the probability that it is from the second box?

34. (a) Define the distribution function of a random variable. What are its important properties.

(b) A random variable X has the following probability density function

X:	-2	-1	0	1	2	3
$p(x)$:	0.1	k	0.2	$2k$	0.3	k

Find the value of k and also find the distribution function of X.

35. (a) Define the variance of a random variable and covariance between two random variables.

(b) If the joint density function of a bivariate random variable (X, Y) is

$$f(x, y) = \begin{cases} 2 - x - y, & 0 < x < 1, \quad 0 < y < 1 \\ 0, & \textit{otherwise} \end{cases}$$

Find the variance of X and Y and covariance between X and Y.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) G – 2389

Reg. No. : .....

Name : .....

Second Semester B.A. Degree Examination, May 2019.

First Degree Programme under CBCSS

Complementary Course

PS 1231 : INDIAN GOVERNMENT AND POLITICS

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

(2017 Admission onwards)

Time : 3 Hours Max. Marks : 80

PART – A

Answer **all** questions. Each question carries 1 mark. Answer in two or three sentences :

1. Single Citizenship.

2. Republic.

3. Universal Adult Franchise.

4. Habeas Corpus.

5. 42nd Amendment.

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6. Cabinet.

7. Ordinance Raj.

8. Single Largest Party.

9. Right to Education.

10. Post Election Alliance

(10 × 1 = 10 Marks)

St. Xavier's College

PART – B

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

11. Parliamentary system.

12. Right against exploitation.

13. Cultural and Educational Rights.

14. Right to Religion.

15. Right to Constitutional Remedies.

16. Composition of Rajya Sabha.

17. Role of Speaker.

18. Vice – President of India.

19. Council of Ministers.

20. High Courts.

21. UPA.

22. Election Commission of India.

(8 × 2 = 16 Marks)

St. Xavier's College

PART – C

Answer **any six** questions. Each question carries 4 marks. Each answer should not exceed 120 words.

23. Constituent Assembly.

24. Right to freedom.

25. Preamble.

26. Right to Equality.

27. Directive principles of State Policy.

28. Fundamental Duties.

29. Functions of Rajya Sabha.

30. Role of Prime Minister.

31. One Party Dominance.

(6 × 4 = 24 Marks)

PART – D

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

32. Discuss the composition powers and functions of Lok Sabha.

33. How the President of India is elected? Explain his powers and functions.

34. Explain the composition powers and functions of Supreme Court of India.

35. Write an essay on Indian Electoral process.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) G – 2470

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme under CBCSS

Complementary Course

PY 1231.1 – THERMAL PHYSICS AND STATISTICAL MECHANICS

(For Mathematics)

(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 carries **1** mark.

1. Define the term macro state with the help of an example.
2. Explain phase space of a system.
3. State Rayleigh-Jeans law.
4. Explain the term thermodynamic probability.
5. State Kelvin statement of second law of thermodynamic.
6. Give the Planck's quantum postulates.
7. Why does the temperature of a gas decrease, When it is expanded adiabatically?

P.T.O.

8. Explain the term isentropic of curves of constant entropy.

9. Define the term entropy.

10. Explain the term Isothermal process.

(10 × 1 = 10 Marks)

PART – B

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

11. Distinguish between canonical and grand canonical ensemble.

12. Obtain an expression for the change in entropy when ice changes in to steam.

13. Deduce the expression for work done during adiabatic processes.

14. Mention the effective ways to increase Carnot's engine efficiency.

15. Define coefficient of thermal conductivity. What are its dimensions?

16. Explain the temperature dependence of a black body radiation.

17. Derive the equation for isothermal Elasticity.

18. State Wiedemann-Franz law.

19. Show that the slope of an adiabatic is γ times the slope of the isothermal.

20. Show that entropy remains constant in a reversible process.

21. Explain the concept of entropy and disorder.

22. Define the term efficiency of a heat engine.

(8 × 2 = 16 Marks)

St. Xavier's College

PART – C

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

23. A bar of length 30 cm and uniform area of cross section 5 cm^2 consists of two halves AB of copper and BC of iron welded together at B. The end A is maintained at 200°C and the end C at 0°C. The side's of the bar are thermally insulate. Find the rate of flow of heat along the bar when the steady state is reached. Thermal conductivity of copper is 0.9 and thermal conductivity of iron is 0.12 CGS units.

24. Air at N.T. P is compresses adiabatically to half its volume. Calculate the change in its temperature.

25. A card is drawn from a well shuffled pack of 52 cards. Calculate the probability for this card to be either a king or a queen. There are 4 kings and 4 queens in a set of cards.

26. One gram molecule of a gas expands isothermally to four times of its volume. Calculate the change in its entropy in terms of the gas constant.

27. Calculate the work done when a gram molecule of an ideal gas expands isothermally at 50°C to double its original volume. Given R = 8.3 J/deg mole.

28. Calculate the surface temperature of sun and moon if the wavelength corresponding of the maximum intensity of radiations from them are 4753Å and 14 μ_m respectively. (Wien's constant b = .2898 centimeter kelvin).

29. The opposite faces of a meal plate of 0.2 cm thickness are at a difference of temperature of 100°C and the area of the plate is 200 sq.cm. Find the quantity of heat that will flow through the plate in one minute if, $K = 0.2$ CGS units.

30. Calculate the work done when one litre of a mono atomic perfect gas at N.T.P is compressed adiabatically to half its volume, $\gamma = 1.67$.

31. Calculate the change in entropy when 10 kg of water at 150°C is converted into steam at the same temperature. Given Latent heat of steam = 540 cal/gram.

(6 × 4 = 24 Marks)

St. Xavier's College

PART – D

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

32. Describe with necessary theory, the construction and working of a diesel engine. Deduce the efficiency of a diesel engine in terms of the temperature between which it works.

33. State and derive Maxwell-Boltzmann distribution law and hence show that $n(E)dE = \frac{2N}{\sqrt{\pi}}\left(\frac{1}{KT}\right)^{3/2} E^{1/2} e^{-E/KT}.dE$. When $n(E)dE$ is the number of molecules with energies E and $E + dE$.

34. With necessary theory explain how thermal conductivity of a bad conductor is determined by Lee's disc method.

35. (a) Discuss the distribution of energy in the spectrum of black body on the basis of the spectrum obtained in the experiment performed by Lummer and Pringsheim.

    (b) Deduce Wien's displacement law for the distribution of energy in black body spectrum.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) G – 2407

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme under CBCSS

Complementary Course

PY 1231.1 HEAT AND THERMODYNAMICS

(For Mathematics)

(2013-2017 Admissions)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

PART – A

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

Each question carries 1 mark.

1. Explain the temperature dependence of black body radiation.
2. Define Weidmann and Franz law.
3. Explain the term emissive power of a body.
4. State Planck's radiation law.
5. What is the first law of thermodynamics? Give its limitations.
6. Mention the effective ways to increase Carnot's engine efficiency.
7. What do you meant by quasi-static process?

P.T.O.

8. Define the term entropy.

9. Explain change of entropy in adiabatic process.

10. Explain the concept of available energy and entropy.

(10 × 1 = 10 Marks)

PART – B

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

11. Define coefficient of thermal conductivity. What are its dimensions?

12. Give the Planck's quantum postulates.

13. What is the effect of temperature on thermal conductivity?

14. Define the term solar constant.

15. Discuss the term isothermal process.

16. Derive the equation for adiabatic elasticity.

17. Show that the slope of an adiabatic is γ times the slope of the isothermal.

18. What is the Plank's statement of second law thermodynamics?

19. What is T-S diagram? What is importance of T-S diagram?

20. Obtain an expression for the change in entropy when ice changes into steam.

21. State the principle of increase of entropy.

22. What is an indicator diagram? State its importance.

(8 × 2 = 16 Marks)

St. Xavier's College

PART – C

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

23. Two plates of the same dimensions but of different thermal conductivities K_1 and K_2 are welded together to form a single plate of double thickness. Show that the equivalent thermal conductivity K is given by $K = \frac{2K_1 K_2}{K_1 + K_2}$.

24. What is the wavelength at which human body radiates maximum energy? Given $b=2.898X10^{-3}$ mK temperature of human body is 37 °C.

25. Calculate the black body temperature of the sun. Given that Stefan's constant is 1.37×10^{-12} cal/cm^2/s. Solar constant is 2.3 cal/cm^2/minute radius of the sun is 3.5×10^{10} cm. Distance between the sun and the earth is 1×10^{13} cm.

26. A Carnot's engine whose temperature of the source is 200K takes 100 calorie of heat at this temperature and rejects 75 calorie of heat to the sink. What is the temperature of the sink? Calculate the efficiency of the engine.

27. Calculate the change in entropy when 10 kg of water at 150°C is converted into steam at the same temperature. Given Latent heat of steam = 540 cal/gram.

28. Efficiency of a Carnot's cycle change from 1/6 to 1/3 when source temperture is raised by 100K. Calculate the temperture of the sink.

29. State and explain Rayleigh-Jeans law.

30. Show that there is always an increase of entropy in an irreversible cycle.

31. Deduce the expression for work done during adiabatic processes.

(6 × 4 = 24 Marks)

St. Xavier's College

PART – D

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

32. With necessary theory explain how thermal conductivity of a bad conductor is determined by Lee's disc method.

33. (a) Discuss the distribution of energy in the spectrum of black body on the basis of the spectrum.

    (b) Deduce Wien's displacement law for the distribution of energy in black body spectrum.

34. Describe with necessary theory, the construction and working of an Otto engine. Deduce the efficiency of an Otto engine in terms of the temperature between which it works.

35. Calculate the work done in a Carnot's Cycle of operations. Deduce the efficiency of a Carnot's engine in terms of the temperatures between which it works.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) G – 2471

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme under CBCSS

Physics

Core Cource

PY 1241 : HEAT AND THERMODYNAMICS

(2018 Admission)

Time : 3 Hours Max. Marks : 80

St. Xavier's College

SECTION – A

Answer **all** questions in a word or a sentence. Each question carries **1** mark. :

1. State Wiedemann-Franz law.
2. Define coefficient of thermal conductivity.
3. State Kelvin's statement of second law of thermodynamics.
4. What are the essential parts of a Carnot engine?
5. Why white clothes are preferred in summer?
6. Define solar constant.
7. State Zeroth law of thermodynamics.
8. Give the principle of pressure cooker.
9. State two demerits of diesel engine.
10. What is a PV diagram?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

Answer any **eight** questions in **2** or **3** sentences. Each question carries **2** marks.

11. Distinguish between isothermal and adiabatic processes.

12. Explain the effect of pressure on the boiling point of a liquid.

13. Distinguish between first order and second order phase transitions.

14. Obtain the relation for the work done in an adiabatic process.

15. Explain how temperature of the Sun can be calculated from solar constant.

16. Show that entropy remains constant in a reversible process.

17. Draw the indicator diagram for the diesel cycle.

18. Discuss the theory of radial flow of heat.

19. Give the principle of refrigerator.

20. How entropy is related to available energy?

21. Draw the experimental setup for determining Stefan's constant.

22. What are the conditions for a system to be in thermodynamic equilibrium?

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION – C

Problem - Write all relevant formulae, all important steps carry separate marks.

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

23. A quantity of dry air at 27°C and 1 atmosphere pressure is suddenly compressed to half of its original volume. Find the final :

    (a) pressure and

    (b) temperature. (γ = 1.4).

24. One mole of a gas at 87°C expands isothermally until its volume is doubled. Calculate the work done. $R = 8.3\ J\ mol^{-1}K^{-1}$.

25. A Carnot's engine whose low temperature reservoir is at 7°C has an efficiency of 50°/s. It is desired to increase the efficiency to 60%. By how much should the temperature of the source be increased?

26. One grain molecule of a gas expands isothermally to six times its volume. Calculate the change in entropy in terms of the gas constant.

27. Calculate the depression in 'the melting point of ice produced by one atmosphere increase of pressure. Given latent heat of ice = 3.36×10^5 J/kg and specific volume of 1 gram of ice and water at 0°C are 1.091 cm^3 and 1.00 cm^3 respectively.

28. Calculate the change in entropy when 5 kg of water at 100° C is converted into steam at the temperature. Latent heat of steam = 2268×10^3 J/kg.

29. One kilogram of water at 40 degree Celsius is mixed with 2 kilogram of water at 80 degree Celsius. Calculate the change in entropy of the system. Specific heat capacity of water is equal to 4180 J kg^{-1} K^{-1}.

30. The temperature of a perfectly blackbody is 600 K and area of its radiating surface is 2×10^{-3} m^2. Find the energy radiated in 10 minutes. ($\sigma = 5.7 \times 10^{-8} Wm^{-2}K^{-4}$).

31. A cubical ice box of side 50 cm has a thickness of 5 cm. If 5 kg of ice is put in the box, estimate the amount of ice remaining after 5 hours. Outside temperature is equal to 50°C. The thermal conductivity of the material of the box is equal to 0.01 $Wm^{-1}K^{-1}$ Latent heat of fusion of ice, L = 335×10^3J/kg.

(6 × 4 = 24 Marks)

St. Xavier's College

SECTION – D

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

32. Explain first law of thermodynamics. Obtain the relation $C_p - C_v = R$, for specific heats of an ideal gas.

33. Describe the working of an Otto engine. Derive an expression for its efficiency. .

34. Describe an experiment to determine the thermal conductivity of a poor conductor by Lee's disc method.

35. Define entropy. What is its physical significance? What is T-S diagram? Draw the T-S diagram of reversible Carnot's cycle and derive an expression for the efficiency of a Carnot engine.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) **G – 2410**

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme under CBCSS

Complementary Course for Physics

MM 1231.1 : MATHEMATICS II – INTEGRATION AND VECTORS

(2013 Admission)

Time : 3 Hours Max. Marks : 80

St. Xavier's College

SECTION – I

Answer all questions. Each question carries 1 mark.

1. Find the average value of $f(x) = \sin x$ over $[0, \pi/2]$.

2. Solve the differential equation $\frac{dy}{dx} = \frac{1}{(2x)^3}$; $y(1) = 0$.

3. Suppose that a particle moves on a co-ordinate line so that its velocity at time t is $v(t) = 2t - 4\ m/s$. Find the displacement of the particle during the time interval $0 \le t \le 6$.

4. Find the area between the curve $y = \sin \pi x$ and the x–axis over the interval $[0, 1]$.

5. Find the path described by the moving particle with position vector $\vec{r}(t) = 3t^2\vec{i} + 2t\vec{j}$.

P.T.O.

6. Find $\vec{r}(t)$, if $\vec{r}(t) = 3\vec{i} + 2t\vec{j}$ and $\vec{r}(1) = 2\vec{i} + 5\vec{j}$.

7. Prove that $\vec{F}(x, y) = x\vec{i} + y\vec{j}$ is a conservative field and find the scalar potential.

8. Find the directional derivative of $f(x, y) = xy^2$ at $P(2, 1)$ in the direction of $\vec{a} = 4\vec{i} - 3\vec{j}$.

9. Use the fundamental theorem of work integrals to evaluate the work done by the force field $\vec{F} = (x, y) = y\vec{i} + x\vec{j}$ on a particle that moves from (0,0) to (1,1).

10. What is meant by an solenoida vector field?

(10 × 1 = 10 Marks)

SECTION – II

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

11. A stone is thrown downwards with an initial speed of 96 ft/sec from a height of 112ft. Assume that a free fall model applies how long will it take for the stone to hit *the* ground and what is its speed at the time of impact?

12. A particle moves with acceleration -2 m/sec^2 on s-axis and velocity 3 m/sec at t=0. Find the displacement of the particle during the time interval, $1 \le t \le 2$.

13. Find the function f such that $f''(x) = x + \cos x$, $f(0) = 1$, and $f'(0) = 2$.

14. Find the area of the region enclosed between $y = x^2$ and $y = 4x$.

15. Evaluate $\int \frac{3x}{\sqrt{4x^2 + 5}}\, dx$.

16. Suppose that the velocity function of a particle moving along a co-ordinate line is $v(t) = 6t + 1$. Find the average velocity of the particle over the time interval, $1 \le t \le 5$ by integration.

17. Sketch the line segment represented by the vector equation

$$\vec{r}(t) = (1-t)(\vec{i} + \vec{j}) + t(\vec{i} - \vec{j});\ 0 \le t \le 1$$

St. Xavier's College

18. Prove that $curl\,(\vec{F}+\vec{G}) = curl\,\vec{F} + curl\,\vec{G}$.

19. Prove that $div\,\vec{r} = 3$.

20. Verify that the *vector* field $\vec{F}(x, y) = e^y\vec{i} + xe^y\,\vec{j}$ is a conservative field in the entire $x-y$ plane.

21. Determine the constant a so that $\vec{F}(x, y, z) = 2(x, y)\,\vec{i} + (y-z)\,\vec{j} + a(z-x)\,\vec{k}$ is solenoidal.

22. Use divergence theorem to find the outward flux of the vector field $\vec{F}(x, y, z) = 2x\vec{i} + 3y\,\vec{j} + z^2\,\vec{k}$ across the unit cube.

(8 × 2 = 16 Marks)

SECTION – III

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

23. Use double integral to find the area of the region enclosed between the parabola $y = \frac{1}{2}x^2$ and the line $y = 2x$.

24. Find the length of the cardioid $r = a(1-\cos\theta)$.

25. Find the area of the region that is inside the cardioid $r = 4 + 4\cos\theta$, and outside the circle $r = 6$.

26. Find the area of the surface generated by revolving the portion of the curve $y = x^2$ between $x = 1$ and $x = 2$ about the y-axis.

27. Find the volume of the elliptic cylinder $x^2 + 9y^2 = 9$ bounded by the planes $z = 0$ and $z = x + 3$.

28. Use spherical co-ordinates to find the volume of the solid G bounded above by the sphere $x^2 + y^2 + z^2 = 16$ and below by the cone $z = \sqrt{x^2 + y^2}$.

29. Prove that $curl\,(grad\,\phi) = 0$ where ϕ is a scalar point function.

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30. A particle moves in space so that its position vector at time t is $\vec{r}(t) = \sin t\,\vec{i} + \cos t\,\vec{j} + t\vec{k}$. Find the tangential and normal unit vector at $t_0 = 0$.

31. Find the curvature $k(t)$ for the curve $x = 3\cos t$, $y = 4\sin t$, $z = t$ at $t = \pi/2$.

(6 × 4 = 24 Marks)

SECTION – IV

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

32. (a) Evaluate $\iint_R x\sqrt{1-x^2}\,dA$ over the region, $R = \{(x, y); 0 \le x \le 1, 0 \le y \le 1\}$.

(b) Use a double integral to find the volume of the solid bounded above by the planes $z = 4 - x - y$ and below by the rectangle $0 \le x \le 1$, $0 \le y \le 2$.

33. Find the maximum height, flight time and range of a projectile fired from the origin over horizontal ground at an initial speed of 500 m/sec and a launch angle of 45°. Where will be the projectile 10 seconds later?

34. (a) Evaluate the integral $\oint_C (e^x + y^2)dx + (e^y + x^2)dy$, where C is the boundary of the region between $y = x^2$ and $y = x$.

(b) Use divergence theorem to find the outward flux of the vector field $\vec{F}(x, y, z) = x^3\vec{i} + y^3\vec{j} + z^3\vec{k}$ across the surface of the region enclosed by the hemisphere $z = \sqrt{a^2 - x^2 - y^2}$ and the plane $z = 0$.

35. Find the work performed by the vector field $\vec{F}(x, y, z) = x^2\vec{i} + 4xy^3\vec{j} + y^2x\vec{k}$ on a particle that traverses the rectangle C in the plane $z = y$, with vertices $(0, 0, 0)$, $(1, 0, 0)$, $(0, 3, 3)$ and $(1, 3, 3)$.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) **G – 2472**

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme Under CBCSS

Complementary Course for Physics

MM 1231.1 : MATHEMATICS II – CALCULUS WITH APPLICATIONS IN PHYSICS – II

(2018 Admission)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – I

Answer **all ten** questions are compulsory, each carries 1 mark each :

1. Find the modulus of $z = -4 + 3i$.
2. Define principal argument of a complex number.
3. Find all second order partial derivatives of $f(x,y,z) = (x+y)(3x+y)$.
4. Find total derivatives of $z = xe^{x-y}$.
5. Verify the exactness of the differential $xdy + 3ydx$.
6. Show that $(y+z)dx + xdy + xdy + xdz$ is an exact differential form.
7. Find $\int_0^1 \int_0^2 \int_0^3 dx\,dy\,dz$.

P.T.O.

8. If $\vec{r}(t) = \cos t\,\hat{i} + \sin t\,\hat{j} + 3t^3\hat{k}$ then $\frac{d\vec{r}}{dt}$.

9. If $F(x,y,z) = xyz\,\hat{i} + yz\hat{j} + xz\hat{k}$. Find *DivF* at $(-1, 1, 1)$.

10. If $F(x,y,z) = (x+2)\hat{i} + y\hat{j} + z\hat{k}$. Find *curl F*. **(10 × 1 = 10 Marks)**

SECTION – II

Answer any **eight** questions, each carries 2 marks each :

11. Verify the result $|z_1 + z_2| = |z_1| + |z_2|$ for $z_1 = -2 + 4i$ and $z_2 = 2 + 3i$.

12. Find conjugate z^* of $z = w^{3y+2ix}$ where $w = x + yi$.

13. If $z = re^{i\theta}$, then find the value of $z^n + \frac{1}{z^n}$.

14. Show that $\cos ix = \cosh x$.

15. Show that $\cosh^2 x - \sinh^2 x = 1$.

16. Given that $x(u) = 1 + au$ and $y(u) = bu^3$, where a & b are constants. Find rate of change of $f(x,y) = xe^{-y}$ with respect u.

17. Show that the function $f(x,y) = xy$ has a saddle point at $(0, 0)$.

18. Suppose $f(x,y,z)$ be a function defined on a region V in space. Write the formula to find the average value of f in V and hence calculate average of $f(x,y,z) = 8xyz$ over the cube bounded by $x = 0$, $x = 1$, $y = 0$, $y = 1$, $z = 0$ and $z = 1$.

19. Find $\int_0^1 \int_0^x xy\,dy\,dx$.

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20. If $\varphi(x,y,z) = xyz$, find $grad\,\varphi$.

21. Find Laplacian of $\varphi(x,y) = e^x \cos y$.

22. Verify whether the vector field $F(x,y,z) = yz\hat{i} + xz\hat{j} + xy\hat{k}$ is irrotational or not.

(8 × 2 = 16 Marks)

SECTION – III

Answer any **six** questions, each carries 4 marks each :

23. Find the principal values of (a) $z = \ln(-i)$ (b) $z = i^{-2i}$.

24. Find the solution of the equation $z^3 = 1$.

25. Solve the hyperbolic equation $\cosh x - 5\sinh x - 5 = 0$.

26. Find the Taylor's theorem to find a quadratic approximation of $f(x,y) = xe^y$ about the origin.

27. The temperature of a point (x,y) on a unit circle is given by $T(x,y) = 1 + xy$ find the temperature of the two hottest point on the circle.

28. Find the area enclosed by the curves $y = x^2$ and $x = y^2$ using the concept of double integral.

29. If $x = r\sin\theta\cos\varphi$, $y = r\sin\theta\sin\varphi$ and $z = r\cos\theta$ then find $\dfrac{\partial(x,y,z)}{\partial(r,\theta,\varphi)}$.

30. Show that $curl(grad\varphi) = 0$ for any scalar field φ.

31. If $F(x,y,z) = x^2y^2z^2\hat{i} + y^2z^2\hat{j} + x^2z^2\hat{k}$ then find $\nabla\cdot(\nabla\times F)$. **(6 × 4 = 24 Marks)**

St. Xavier's College

SECTION – IV

Answer any **two** questions, each carries 15 marks each :

32. Find a closed-form expression for the inverse hyperbolic functions.

(a) $y = \sinh^{-1} x$

(b) $y = \tan^{-1} x$

(c) $\frac{d}{dx}\sinh^{-1} x$.

33. (a) Find the point $P(x,y,z)$ closest to origin lies on the plane $2x + y - z = 5$.

(b) The plane $x + y + z = 1$ cuts the cylinder $x^2 + y^2 = 1$ in an ellipse. Find the point on the ellipse that lies closest and farthest from origin.

34. (a) Evaluate the double integral $I = \iint_R (a + \sqrt{x^2 + y^2})\,dx\,dy$ where R is the region bounded by the circle $x^2 + y^2 = a^2$.

(b) Find the average value of the function $f(x,y,z) = xyz$ over the cube bounded by the coordinate planes, $x = 2$, $y = 2$ and $z = 2$.

35. (a) If φ is any scalar field and A is any vector field, show that $\nabla \times (\varphi A) = \nabla\varphi \times A + \varphi \nabla \times A$.

(b) Show that $\nabla \cdot (\nabla\phi \times \nabla\varphi) = 0$ where ϕ and φ are scalar fields.

(c) If $r = \left[x\hat{i} + y\hat{j} + z\hat{k}\right]$, the find ∇r^n, for $n \in N$. **(2 × 15 = 30 Marks)**

St Xavier's College

(Pages : 4) **G 2411**

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme under CBCSS

Complementary Course II for Physics/Geology

CH 1231.1/ CH 1231.2 - Principles of Chemistry-II

(2013 –2016 Admissions)

Time : 3 Hours Max. Marks : 80

St. Xavier's College

Section – A

Answer all questions :

Answer in one word to maximum of two sentences

Each question carries one mark

1. How many α and β particles will be emitted when $_{84}Po^{218}$ changes to $_{82}Pb^{206}$.
2. Which isotopes are used in radiocarbon dating and rock dating?
3. Which of the following will show Raman spectrum: HCl, CS_2, CCl_4, Br_2?
4. Distinguish between stokes and antistokes lines.
5. What do you meant by zero point energy?
6. Illustrate a typical concentration cell, represent it and give Nernst equation for EMF of the cell.

P.T.O.

7. Give two important applications of EMF measurements.

8. Define ionic product of water.

9. Give two examples of redox indicators.

10. What are secondary standards?

(10 × 1 = 10 Marks)

Section – B

Short answer type (Not to exceed one paragraph)

Answer any EIGHT questions from the following

Each question carries two marks

11. Explain with an example the term artificial transmutation.

12. What is meant by radioactive equilibrium? Illustrate with an example

13. What do you mean by chemical shift? What is TMS?

14. What is Raman effect?

15. Sketch the normal modes of vibrations of CO_2?

16. What is galvanisation? Mention its purpose.

17. What is N.H.E? How is it constructed? Represent it in the conventional manner.

18. What is meant by passivity?

19. Methyl orange is not suitable for the titration of weak acid v_s strong base. Why?

20. Calculate the normality of 10% solution of NaOH

21. What are indeterminate errors? Illustrate with an example.

22. What is the theory of acid-base indicators?

(8 × 2 = 16 Marks)

St. Xavier's College

Section – C

Short essay (Not to exceed 120 words)

Answer any SIX questions from the following

Each question carries four marks

23. Discuss on the application of radio isotopes in medicine.

24. Write notes on proton, neutron and deutron induced reactions with suitable examples.

25. Briefly explain the principle behind Hydrogen bomb.

26. Discuss the principle of IR spectroscopy.

27. Sketch and explain the low resolution and high resolution NMR spectra of ethanol.

28. Explain the principle and application of potentiometric titration.

29. Derive the Nernst equation for the electrodes in a Daniel cell.

30. What are Fuel cells? Explain H_2-O_2 Fuel cell.

31. Define standard deviation, variance and coefficient of variation.

($6 \times 4 = 24$ Marks)

St. Xavier's College

Section – D

Long essay

Answer any two questions from the following

Each question carries fifteen marks

32. Describe how we can determine the age of carbonaceous material by Radio carbon dating? A freshly cut piece of wood gives 16100 counts of β emission per minute per kg. An old piece of wood gives 13200 counts per minute per kg. Calculate the age of the wood. The half life period of ^{14}C is 5568 years.

33. Discuss electronic spectroscopy and different types of electronic transitions.

34. Define transport number. Describe a method for determining transport number of silver ion.

35. How are errors classified? How will you detect and minimise determinate errors?

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) G – 2474

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme under CBCSS

Complementary Course

MM 1231.2 : MATHEMATICS — II – CALCULUS WITH APPLICATIONS IN CHEMISTRY - III [FOR CHEMISTRY AND POLYMER CHEMISTRY)

(2018 Admission)

Time : 3 Hours Max. Marks : 80

St. Xavier's College

Section – I

All 10 questions are compulsory, each carries 1 mark each.

1. Find f_{xx} and f_{yy} of the function $f(x,y) = x^2y^2$.
2. If $w = e^x$ and $x = t^3$ then to find $\frac{dw}{dt}$.
3. Sum the series 1 to 100 inclusively.
4. Find $\sum_{n=0}^{n=9} ar^n$.
5. Define alternating series.
6. Define irrotational vector field.
7. If $F = e^{xyz}(\hat{i} + \hat{j} + \hat{k})$ then find $div\, F$.
8. Define the gradient vector field of a scalar field φ.

9. Evaluate $\int_0^{2x}\int_0^{} 2xy\,dx\,dy$.

10. If $x = r\cos t$ and $y = r\sin t$ then find $\frac{\partial(x,y)}{\partial(r,t)}$.

Section – II

Answer any **eight** questions, each carries 2 mark each.

11. Show that $xy^2dx + y^2x\,dy$ is exact differential.

12. If $f(x,y) = (x+y)^2$ then find $xf_x + yf_y$.

13. Given that $x(u) = 1 + au$ and $y(u) = bu^3$, where a and b are constants. Find rate of change of $f(x,y) = xe^{-y}$ with respect u.

14. State D'Alembert's ratio test on convergence of a series.

15. Using Integral test verify whether the series $\sum_{n=1}^{\infty}\frac{1}{\left(n-\frac{3}{2}\right)^2}$ convergent or not.

16. Show that the series $\sum_{n=1}^{\infty}\frac{1}{(n)^n}$ is convergent.

17. Find the Laplacian of $\varphi = x^3y^2z$.

18. If $\varphi = xyz$ then show that $\nabla \times \nabla_{\varphi} = 0$.

19. Find the length of the curve traced by the vector function. If $\vec{r}(t) = 2t\hat{i} + (3t)\hat{j} + (1-t)\hat{k}$ from $t = 0$ to $t = 2$.

20. Evaluate $\int_0^{a}\int_{y=0}^{\sqrt{a^2-x^2}} xy\,dy\,dx$.

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21. Evaluate $\int_0^1 \int_0^{1-x} \int_0^{x+y} \frac{z}{(x+y)^2} dz\,dy\,dx$.

22. State Pappu's second theorem.

Section – III

Answer any **six** questions, each carries 4 mark each.

23. Find Taylor's theorem to find a quadratic approximation of $f(x,y) = \sin x \sin y$ about the origin.

24. The temperature of a point (x,y) on a unit circle is given by $T(x,y) = 1 + xy$. Find the temperature of the two hottest point on the circle.

25. Determine the range of x for which the power series $P(x) = 1 + 2x + 4x^2 + 8x^3 + \ldots$ converge.

26. Using Maclaurin series find a power series expansion for $f(x) = \log(1+x)2$.

27. The position vector of a particle at time t is given by $\vec{r}(t) = 2t^2\hat{i} + (3t-2)\hat{j} + (3t^2-1)\hat{k}$. Find (a) Unit tangent vector $\hat{t}$ at $t=1$ (b) Speed at $t=1$ (c) acceleration $\vec{a}$ at $t=1$.

28. Find curl and divergence of $F = x^2y^2\hat{i} + y^2z^2\hat{j} + x^2z^2\hat{k}$ at (1, 1, 1)

29. For the function $\varphi = x^2y + yz$ at the point (1, 2, –1). Find its rate of change with distance in the direction $\vec{a} = \hat{i} + 2\hat{j} + 3\hat{k}$. At this same point what is the greatest possible rate of change with distance and which direction does it occurs.

30. Find the volume of the region bounded by the paraboloid $z = x^2 + y^2$ and the plane $z = 2y$.

31. A tetrahedron is bounded by three coordinate surface and the plane $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$ and has density $\rho(x,y,z) = 1 + \frac{x}{a}$. Find the average density.

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Section – IV

Answer any two questions, each carries 15 marks each.

32. (a) Find the greatest and smallest value of $f(x,y) = xy$ which takes the values on ellipse $x^2 + 4y^2 = 8$.

(b) Find the point closest to the origin on the line of intersection of the planes $y + 2z = 12$ and $x + y = 6$.

33. Determine the convergence of the following series

(a) $\sum_{n=1}^{\infty} \frac{1}{\left(n - \frac{3}{2}\right)^2}$

(b) $\sum_{n=1}^{\infty} \frac{1}{n!+1}$

(c) $\sum_{n=1}^{\infty} (-1)^n \frac{1}{n}$

34. (a) Find and expression for a volume element in spherical polar coordinates and hence calculate the moment of inertia about the diameter of a uniform sphere of radius 'a'.

(b) Evaluate the double integral $I = \iint_R \left(a + \sqrt{x^2 + y^2}\right) dx\, dy$ where R is the region bounded by the circle $x^2 + y^2 = a^2$.

35. (a) Find the expression for the equation of the tangent plane and normal line to the surface $\varphi(x,y,z) = c$ at the point P with coordinates (x_0, y_0, z_0). Hence find the equation of tangent plane and normal line to the surface of the sphere $x^2 + y^2 + z^2 = a^2$ at $(0, a, 0)$

(b) Show that $\nabla \cdot (\nabla\phi \times \nabla\varphi) = 0$ where ϕ and φ are scalar fields.

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(Pages : 4) **G – 2414**

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme Under CBCSS

Chemistry

Foundation Course

CH 1221 : METHODOLOGY AND PERSPECTIVES OF SCIENCES AND GENERAL INFORMATICS

(2013 – 2016 admission)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions

Answer in one word to maximum of two sentences

Each question carries one mark

1. What is a scientific law?
2. What is meant by the term scientific observation?
3. How do scientific creativity originate?
4. Who introduced atomic theory of matter?
5. Who synthesized first organic compound?
6. Define information.
7. What does INFLIBNET stand for?

P.T.O.

8. What is the difference between median and mean?

9. What do you mean by plagiarism?

10. Represent the SMILES notation of benzene.

(10 × 1 = 10 Marks)

SECTION – B

Short Answer type (Not to exceed one paragraph)

Answer **any eight** questions from the following.

Each question carries two marks

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11. Give a brief explanation of knowledge.

12. Explain the process and product concept of science.

13. What are repeatability and reproducibility?

14. What is the importance of chemistry in physics?

15. What is the main contribution of Antoine Lavoisier's in science?

16. What are softwares? How they are classified? Give examples.

17. What are scientific methods?

18. What is correlation coefficient?

19. What is mean by standard deviation?

20. Explain the inductive method of scientific creativity.

21. What is operating system of a computer?

22. Give names of any four journals in chemistry.

(8 × 2 = 16 Marks)

SECTION – C

Short essay (not to exceed 120 words)

Answer **any six** questions from the following

Each question carries four mark

23. What distinguishes hypothesis from theory? Explain

24. Explain documentation of experiments.

25. What are different branches of chemistry?

26. Explain enquiry vs discovery approach.

27. Distinguish copy right and patents.

28. Explain the terms citation and Key words of a science journal.

29. Write a note on contributions of John Dalton in science revolution.

30. Explain the file formats MOL, SDF, CML and PDB.

31. What are the various measures of toxicity of chemicals?

(6 × 4 = 24 Marks)

SECTION – D

Long essay

Answer **any two** questions from the following

Each question carries fifteen marks

32. Explain the components essential for preparing a research article in chemistry.

33. Explain the basics of cheminformatics and their applications?

34. (a) How data, information and knowledge differ? Explain.

    (b) Discuss the internet resources available for virtual learning.

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35. What are the major contributions of

(a) Robert Boyle

(b) Dmitri Mendeleev

(c) Michael Faraday and

(d) Marie Sklodowska- Curie in science?

(2 × 15 = 30 Marks)

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(Pages : 4) G – 2475

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme under CSCSS

Complementary Course

PY 1231.2- THERMAL PHYSICS

(For Chemistry)

(2018 Admission)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

PART – A

Very Short answer type (Answer in one or two sentences)

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

1. Why do we consider diffusion as an irreversible process?
2. Express the Fick's law as a differential equation and explain the terms used.
3. Define absorptivity.
4. What are the features of radiant exitance of a blackbody?
5. Why does it not matter how the radiation takes place in the Lee's disc experiment to find the thermal conductivity of a bad conductor?
6. What are the factors on which the rate at which when a rod gets heated before the steady state is reached?
7. State Wiedemann Franz law.

8. What is the nature of entropy in reversible and irreversible processes?

9. Arrange the following engines working between the same temperature in the descending order of efficiency. Diesel, Carnot, Otto.

10. What is an intensive variable?

(10 × 1 = 10 Marks)

PART – B

Short answer type (Answer in one paragraph)

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

11. Explain Graham's law of diffusion in liquids.

12. Check whether the following process is reversible or irreversible. Give explanation. infinitesimal changes of pressure and volume of gas adiabatically.

13. Adiabatic curves on the PV diagram are called isoentropics. Explain why?

14. How does a Carnot's engine differ from any practical engine?

15. State the postulates of Planck's quantum hypothesis.

16. What is an indicator diagram? What is its use?

17. Explain why adiabatic compression causes heating.

18. Explain internal energy and its origin.

19. What are the features of diffusion?

20. Explain the significance of entropy.

21. What happens to the entropy when the work done against the friction between sliding surfaces is converted to heat?

22. List the features of the macroscopic *properties of a system.*

(8 × 2 = 16 Marks)

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PART – C: Short essay

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

23. A plate of iron is exposed to carburizing atmosphere on one side and a decarburizing atmosphere on the other side at 600°C. If a steady state condition is reached, calculate the diffusion flux of carbon through the plate if the concentrations of the carbon at positions 4 and 8 mm beneath the carburizing surface are 1 and O.6kgm^3 respectively. Assume a diffusion coefficient of $2x10^{-11}$ m^2s^{-1} at this temperature.

24. Air at 27°C is suddenly compressed to 2 times of its original volume. Find the resulting change in temperature. For air γ =1.4.

25. A Carnot's engine is made to work between ice point and steam point, then between 0°C and -100°C, Compare the efficiencies.

26. For a Diesel engine the adiabatic compression ratio is 16 and the combustion expansion ratio is 5. Find the efficiency of the engine if γ =I.4.

27. How much does the entropy change when 100g of water at 30°C is heated to 90°C. Specific heat capacity of water 4186$Jkg^{-1}K^{-1}$.

28. Find the expressions for isothermal and adiabatic elasticity.

29. A body at 1250°C emits maximum intensity of wavelength 2000nm. If the sun emits maximum intensity for 490nm, what would be the temperature of the sun?

30. Calculate the energy radiated per minute from the filament of an incandescent lamp at 2000°C if the surface area is $5.0x10^{-5}$ m^2 and its relative emittance is 0.80. Stefan's constant=5.67 x 10^{-8} Wm^{-2} K^{-4}.

31. What is Rayleigh Jeans law? Dkerive it from Planck's law.

(6 × 4 = 24 Marks)

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PART – D: Essay

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

32. With necessary theory describe the working of petrol engine and derive the expression for its efficiency.

33. Explain isothermal and adiabatic processes? Obtain the expressions for the work done in adiabatic and isothermal processes.

34. With necessary theory explain the Lee's disc method for finding the conductivity of bad conductors.

35. Discuss the PV diagram and TS diagram of a Carnot's engine and their physical significance. How can you find out the efficiency of the engine in both cases?

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) **G – 2415**

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme under CBCSS

Complementary Course for Chemistry/Polymer Chemistry

MM 1231.2 : MATHEMATICS II – INTEGRATION, DIFFERENTIAL EQUATIONS AND ANALYTIC GEOMETRY

(2013 Admission)

St. Xaviers College

Time : 3 Hours Max. Marks : 80

SECTION – I

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

1. Integrate $\operatorname{cosec} x$.

2. Solve $\frac{dy}{dx}\tan y = \sin(x+y)+\sin(x-y)$.

3. State the equation of the normal to the parabola $y^2 = 4ax$.

4. What is the equation of the latus rectum of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$?

5. Solve $y''+4y'+4y=0$.

6. Solve $\sqrt{1+x^2}dy+\sqrt{1+y^2}dx=0$.

7. Find the particular integral of $y''-3y'+2y=e^x$.

P.T.O.

8. Find the equation of the ellipse whose major axis is 10 and minor axis is 8.

9. Find the average value of the function f(x) = $\sqrt{x}$ over the interval [1, 4]

10. What is an equilateral hyperbola? What is its importance?

(10 × 1 = 10 Marks)

SECTION – II

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

These questions carry 2 marks each.

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11. Solve the initial – value problem $\frac{dy}{dx} = \cos x$, $y(0) = 1$.

12. Use the discriminant to identify the graph of $8x^2 - 3xy + 5y^2 - 7x + 6 = 0$.

13. Find the new co-ordinates of the point (2, 4) if the coordinate axes are rotated through an angle of θ = 30°.

14. Find the relation connecting rectangular and cylindrical co-ordinates.

15. Find a polar equation in the form $r\cos(\theta - \theta_0) = r_0$ for the line $\sqrt{3}x - y = 1$.

16. Prove that the tangents at the extremities of a diameter of the ellipse are parallel to the diameter conjugate to it.

17. Suppose that a point moves along some unknown curve $y = f(x)$ in the xy-plane in such a way that at each point (x, y) on the curve, the tangent line has slope x^2. Find an equation for the curve given that it passes through the point (2, 1).

18. Find the area of the region enclosed by $x = y^2$ and $y = x - 2$, integrating with respect to y.

19. Derive the equation of a rectangular hyperbola using the fact that its axes are in equal length and hence show that its asymptotes are at right angles.

20. What do you mean by an operator and operational methods?

21. What is the general form of a second–order linear differential equation? When we say that it is homogeneous?

22. Find an equation for the parabola that has its vertex at (1, 2) and its focus at (4, 2).

(8 × 2 = 16 Marks)

SECTION – III

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

These questions carry 4 marks each.

23. State the Kepler's law.

24. Find the equation of the hyperbola with foci $(\pm 2, 0)$ and eccentricity $\frac{3}{2}$.

25. The polar equation of a conic is $r = \frac{12}{3+3\sin\theta}$. Identify the conic and find its directrix.

26. Find the area of the region in the plane enclosed by the cardioid $r = 2(1+\cos\theta)$.

27. Describe the graph of the equation $y^2 - 8x - 6y - 23 = 0$.

28. Find the volume of the solid that is obtained when the region under the curve $y = \sqrt{x}$ over the interval [1, 4] is revolved about the x-axis.

29. Find the area under the curve $y = \log x$ between the x-axis and the ordinates at $x = a$ and $x = b$ given that $1 < a < b$.

30. A particle moves along a circular path in such a way that its x– and y-coordinates at time t are $x = 2\cos t$, $y = 2\sin t$. Find the instantaneous velocity and speed of the particle at time t.

31. A glider is soaring upward along the helix $r(t) = (\cos t)i + (\sin)j + tk$. How long is the glider's path from $t = 0$ to $t = 2\pi$.

(6 × 4 = 24 Marks)

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SECTION – IV

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

These questions carry **15** marks.

32. (a) Find the orthogonal trajectories of family parabolas $y^2 = 4a(x+a)$, where a is the parameter. Prove that it is self orthogonal?

(b) Solve $(D^2 + D + 1)y = e^{3x} \sin 4x$.

33. (a) Find the area of the region that is enclosed by the parabola $y = 2 - x^2$ and the line $y = -x$. Also sketch the region bounded by the area.

(b) Find the area of the surface that is generated by revolving the portion of the curve $y = x^3$ between $x = 0$ and $x = 1$ about the x-axis.

34. (a) Find the condition that the line $lx + my + n = 0$ to be a normal to the hyperbola $\left(\frac{x^2}{a^2}\right) - \left(\frac{y^2}{b^2}\right) = 1$.

(b) Show that the feet of the normals from a given point to the ellipse $\left(\frac{x^2}{a^2}\right) + \left(\frac{y^2}{b^2}\right) = 1$ lie on a conic passing through the centre of the ellipse and the given point.

35. (a) Evaluate the triple integral $\int_0^1 \int_0^1 \int_0^1 (x^2 + y^2 + z^2)\,dz\,dy\,dx$.

(b) Use a triple integral to find the volume of the solid within the cylinder $x^2 + y^2 = 9$ and between the planes $z = 1$ and $x + z = 5$.

(2 × 15 = 30 Marks)

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(Pages : 4)

G – 2487

Reg. No. : .....

Name : .....

Second Semester B.Com. Degree Examination, May 2019

First Degree Programme under CBCSS

Language Course (Additional Language II) – HINDI

HN 1211.2 Poetry, Translation, Technical Terminology and Communication

(2013 Admission to 2016 Admission)

Time : 3 Hours

Max. Marks : 80

I. एक या दो शब्दों में उत्तर दें।

1. कबीर के गुरु का नाम क्या है?

2. सूरदास किस भक्तिधारा के कवि हैं?

3. जयशंकर प्रसाद जी की पहली कहानी 'ग्राम' किस पत्रिका में छापी थी?

4. निराला का पूर्ण नाम लिखिए।

5. मुक्ति कविता के कवि का नाम लिखिए।

6. Public interest के लिए हिन्दी शब्द लिखिए।

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P.T.O.

7. चश्मदीद गवाह के लिए अंग्रेज़ी शब्द लिखिए।

8. Mass Communication को हिन्दी में क्या कहते हैं?

9. हिन्दी के प्रथम समाचार पत्र का नाम लिखिए।

10. मुद्रण की शुरुआत कहाँ हुई? **(10 × 1 = 10 Marks)**

II. **किन्हीं आठ** प्रश्नों के लघु उत्तर लिखिए।

11. कबीर निंदक को निकट ही रखने के लिए क्यों कहते हैं?

12. गुरु और गोविन्द दोनों यदि सामने खड़े हैं तो कबीर सबसे पहले किसके पैर पड़ेंगे और क्यों?

13. श्रीकृष्ण को दूध पिलाने के लिए यशोधरा क्या कहती है?

14. 'मुक्ति' कविता के पिताजी क्या नौकरी करते थे और उनके अवकाश प्राप्त हुए कितने साल हुए हैं?

15. 'शोकगीत' के रचनाकार की राय में जब उनकी कविता और चर्चित कहानी लिखने का समय था तब वे क्या कर रही थीं?

16. संचार के प्रमुख तीन तत्व क्या हैं?

17. मुद्रण समाचार माध्यम क्या है? उसे अंग्रेजी में क्या कहते हैं?

18. ई-मेल खाते के तीन भाग कौन-कौन से हैं?

19. संचार के किन्हीं दो दृश्य-श्रव्य माध्यमों के नाम हिन्दी और अंग्रेजी में लिखिए।

20. निम्न शब्दों के लिए हिन्दी शब्द लिखिए।

(a) Key Board (b) Face Value

21. निम्न शब्दों के अंग्रेजी शब्द लिखिए।

(a) प्रकाशाधीन (b) विकेन्द्रीकरण

22. 'Please treat it as most urgent' इसका हिन्दी अनुवाद कीजिए। **(8 × 2 = 16 Marks)**

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III. किन्हीं छः प्रश्नों के उत्तर करीब 120 शब्दों में दीजिए।

(हरेक खंड से एक एक उत्तर अनिवार्य है।)

खण्ड – क

23. 'मुक्ति' नामक कविता में कवि अपने जीवन की किस स्थिति का वर्णन करते है?

24. किरण कविता में जयशंकर प्रसाद पाठकों के समक्ष क्या-क्या प्रश्न रखते हैं?

25. कवि निराला का परिचय देते हुए बताइए कि 'तोडती पत्थर' नामक कविता में पाठकों के सामने किसको प्रस्तुत किया है?

खण्ड – ख

26. जनसंचार के मुख्य कार्य क्या हैं?

27. संचार साधनों का वर्गीकरण किस तरह किया जा सकता है?

खण्ड – ग

अंग्रेजी में अनुवाद कीजिए।

28. शिक्षितों की बेकारी का मुख्य कारण दोषपूर्ण शिक्षा-प्रणाली है। दुर्भाग्य से भारत के स्कूलों और कालेजों में जो शिक्षा दी जाती है, वह साहित्यिक और तात्विक है? स्नातकों का बडे पैमाने पर उत्पादन होता रहता है। पर व्यावहारिक जीवन में उनकी ज़्यादा माँग नहीं है। इसका इलाज यही है कि शिक्षा-पद्धतियों में सुधर किया जाए। शिक्षा के सुधार के साथ-साथ नये-नये काम शुरू किये जाएँ। योजना आयोग ने बेकारी से जूझने केलिए व्यापक कार्यक्रम तैयार किया है।

(शिक्षित = educated, बेकारी = unemployment, शिक्षा = education, बड़े पैमाने = in large scale, माँग = demand, इलाज = solution (treatment), शिक्षा-पद्धति = education system, सुधार = reform, योजना आयोग = planning commission, जूझना = to struggle)

29. समाचार पत्र व्यापार की उन्नति का अच्छा साधन है। उससे जितना अधिक विज्ञापन हो सकता है, उतना और किसी साधना से नहीं। यदि एक व्यापारी अपने माल की बिक्री बढ़ाना चाहता है तो उसे अपने माल का खूब विज्ञापन करना चाहिए। व्यापार में अधिक लाभ तभी होता है, जब व्यापारी का माल अधिक बिकता है, माल तभी ज़्यादा बिकता है, जब व्यापारी की दूकान को दूर=दूर के लोग ज़्यादा जानते है। व्यापारी अपना माल बेचने केलिए घर-घर नहीं घूम सकता और लोगों को अपने माल का परिचय नहीं दे सकता। यह काम विज्ञापन द्वारा ही संभव है।

(समाचार पत्र = news paper, व्यापार = business, विज्ञापन = advertisement, माल = things, लाभ = profit, द्वारा = through, संभव = possible)

St. Xavier's College

खण्ड – घ

हिन्दी में अनुवाद कीजिए।

30. We must take plenty of exercise. To make the body strong we must take it. The parts that are most used become the strongest, and those we use the least will be the weakest. The arms of black smith are very strong because he uses them so much. Ours are weaker than his because we used, so much less, The boy who works and plays in open air grows strong and healthy, but the boy who sits indoors and does not take exercise grows up to be a weak and unhealthy man.

(Exercise = व्यायाम, Healthy = स्वस्थ, Parts = अंग, Blacksmith = लुहार, Indoor = घर में)

31. Means of transport and communication are very essential for the smooth working and the further development of the economic life of a country. It has been highly observed that "if agriculture and industry are the body and the bones of a national organism, communication are its nerves." Kipling goes further and says: 'Transport is Civilization'. The importance of well-developed means of transport and communication is all the greater in a country like India. Agriculture, industry, trade or any other economic activity depends in a very large measure on the development of the means of transport and communication.

(Means = साधन, Transport = यातायात (परिवहन), Smooth = working = सुचारु कार्य-प्रणाली, Highly observed = पूर्ण सत्य है, Bone = हड्डी, Nerves = धमनियाँ, Large measure = विस्तृत रूप से)

(6 × 4 = 24 Marks)

IV. किन्हीं दो प्रश्नों के उत्तर करीब 250 शब्दों में दीजिए।

32. जनसंचार की परिभाषा देते हुए उसके लाभ पर प्रकाश डालिए।

33. इन्सान और कुत्ते कविता का सारांश लिखिए।

34. किन्हीं दो इलोक्ट्रोनिक जनसंचार माध्यमों के महत्व पर प्रकाश डालिए।

35. कात्यायनी की कविता शोकगीत का सारांश लिखिए।

(2 × 15 = 30 Marks)

St Xavier's College

(Pages : 4) G – 2416

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme under CBCSS

Complementary Course

PY 1231.2 : THERMAL PHYSICS

(For Chemistry and Polymer Chemistry)

(2013 – 2017 Admissions)

Time : 3 Hours Max. Marks : 80

PART – A

Very Short answer type (Answer in one or two sentences)

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

1. Define diffusion in solutions.
2. Give the mathematical statement of Fick's law.
3. What are the factors on which the thermal radiation emitted by a body depends?
4. Lampblack is conidered to be a black body. Why?
5. What is thermal diffusivity?
6. What is the change in entropy in a reversible process?

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7. What are heat sources?

8. Give Kelvin's statement of second law of thermodynamics.

9. What is the significance of Stefan's law?

10. Draw the TS diagram for a Carnot's engine.

(10 × 1 = 10 Marks)

PART – B

Short answer type (Answer in one paragraph)

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

11. Discuss the features of diffusion.

12. What is the purpose of sandwiching the experimental disc between 2 copper discs in the Lee's disc experiment?

13. Check whether the following process is reversible or irreversible. Give explanation. Heat transfer between two bodies which are at the same temperature.

14. Distinguish between internal and external combustion engines.

15. Why does TS diagram be important in the working of actual engines?

16. Show that for the Carnot's cycle, the entropy change of the working substance is zero.

17. Compare Diesel engine and Otto engine.

18. Explain the super-fluidity of He.

19. State the first law of thermodynamics and give its significance.

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20. Why does the efficiency of a heat engine can never be 100%?

21. What are the postulates of Planck's quantum hypothesis?

22. What are the considerations to be made in determining solar constant?

(8 × 2 = 16 Marks)

PART – C

Short essay

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

23. A steel tank contains hydrogen at a constant pressure of 10 atm with vacuum outside. The hydrogen concentration at the inner surface of the tank is $8 kgm^{-3}$. The diffusion coefficient of hydrogen at room temperature is $10^{-9}\ m^2s^{-1}$. Calculate the rate at which hydrogen escapes through the wall of the tank, which has a thickness of 4 mm.

24. Calculate the change in entropy when 100 g of ice at 0°C is converted to Steam at 100°C. Given latent heat of fusion of ice = $3.3472 \times 10^5 Jkg^{-1}$, the specific heat capacity of water. 4184 Jkg^{-1}, latent heat of vapourisation of water = $2.259 \times 10^6\ Jkg^{-1}$.

25. For a Diesel engine the adiabatic compression ratio is 15 and the combustion expansion ratio is 4. Find the efficiency of the engine if $\gamma = 1.4$.

26. Show that the adiabatic curve is steeper than the isothermal curve at a point where the two curves intersect each other.

27. A Carnot's engine is working between 27°C and boiling point of water. What is its efficiency? Compare the efficiency of another Carnot's engine working between 27°C and ice point.

28. Air at 20°C is suddenly compressed to ¼ of its original volume. Find the resulting rise in temperature. For air $\gamma = 1.4$.

29. Find the change in entropy when a perfect gas expands isothermally and adiabatically.

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30. Compare the surface temperature of sun and moon. The maximum intensity of emission is at 490 nm for sun and 14 μm for moon. The Wien's constant is 2.898×10^{-3} mK.

31. A black body with temperature 227°C is put in an evacuated enclosure whose walls are blackened and maintained at 27°C. What is the net amount of energy lost by the body per second per unit area? Stefan's constant = 5.67×10^{-8} $Wm^{-2} K^{-4}$.

(6 × 4 = 24 Marks)

PART – D

Essay

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

32. Design an experiment with theory to measure the thermal conductivity of rubber.

33. What is first order phase transition? Represent it graphically. Derive Clausius Clapeyron latent heat equation.

34. Explain the working of a Carnot's engine and find the efficiency.

35. Derive a relation between pressure, volume and temperature of a perfect gas undergoing adiabatic changes.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) G – 2493

Reg. No. : .....

Name : .....

Second Semester B.Com. Degree Examination, May 2019

First Degree Programme under CBCSS

Language Course

Additional Language II – Malayalam

ML 1211.2 : കവിത, കഥ, ഉപന്യാസം, വിവർത്തനം

(2014 admission – 2017 admission)

Time : 3 Hours Max. Marks : 80

I. ഒരു വാക്കിലോ പരമാവധി രണ്ടു വാക്യത്തിലോ ഉത്തരം എഴുതുക.

1. ജി. ശങ്കരക്കുറുപ്പിന് ജ്ഞാനപീഠം ലഭിച്ചത് ഏത് കൃതിക്കാണ്?

2. 'ഉച്ചമയക്കം' എന്ന പേരിൽ മലയാളത്തിലേക്ക് വിവർത്തനം ചെയ്യപ്പെട്ട മാർക്വേസിന്റെ ചെറുകഥ ഏതാണ്?

3. 'മൂടുപടത്തിൽ' എന്ന കഥയിലെ നായികയുടെ പേരെന്ത്?

4. 'അശോക' എന്ന രചനയുടെ പശ്ചാത്തലം എവിടെയാണ്?

5. 'ഈ യുഗത്തിന്റെ സാമൂഹ്യശക്തി' എന്ന് കവി വിശേഷിപ്പിക്കുന്നത് ആരെയാണ്?

6. കാമ്പിശ്ശേരി കരുണാകരൻ ഏതു പത്രത്തിന്റെ എഡിറ്ററായിരുന്നു?

7. 'സോദരന്മാരിലെ പോരൊരു പോരല്ല

സൗഹൃദത്തിന്റെ കലങ്ങിമറിയലാം' - എന്നത് ആരുടെ വരികളാണ്?

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8. ''തത്ത്വബോധിനി' എന്ന പത്രിക നടത്തിയത് ആരായിരുന്നു?

9. ഇംഗ്ലീഷിലേക്ക് വിവർത്തനം ചെയ്യുക.

മിന്നുന്നതെല്ലാം പൊന്നല്ല.

10. മലയാളത്തിലേക്ക് വിവർത്തനം ചെയ്യുക.

The grass is always greener on the other side.

(10 × 1 = 10 Marks)

II. ഒരു ഖണ്ഡികയിൽ കവിയാതെ **എട്ടു** ചോദ്യത്തിന് ഉത്തരം എഴുതുക.

11. 'രാധ രാധമാത്രം' എന്ന കഥയിലെ ദാർശനികപ്രശ്നമെന്താണ്?

12. 'മരിച്ചവർ കരയരുത്. നമ്മൾ മറ്റുള്ളവരെ കരയിപ്പിക്കുകയേ ചെയ്യാവൂ' - സന്ദർഭമെഴുതുക.

13. 'ഉർസുല' എന്ന കഥാപാത്രത്തെക്കുറിച്ചുള്ള കോവിലന്റെ അഭിപ്രായങ്ങളേവ?

14. ആശാന്റെ കവിതയിൽ സ്വാതന്ത്ര്യം ഒരു മൂല്യമാണെന്ന് രാഘവവാര്യർ അഭിപ്രായപ്പെടുന്നത് എന്തടിസ്ഥാനത്തിലാണ്?

15. കാണികളും നടനും തമ്മിലുള്ള അകലം കുറയ്ക്കാൻ നാടകത്തിൽ നടന്ന പ്രധാന പരീക്ഷണങ്ങൾ എന്തെല്ലാമാണ്?

16. 'പറുദീസാനഷ്ടം' എന്ന ശീർഷകത്തിന്റെ പൊരുളെന്ത്?

17. 'ഇല്ലിതിൽ കവിഞ്ഞാവശ്യമായി-

ട്ടില്ലതിനന്യതത്ത്വവിചാരം' - വിശദീകരിക്കുക.

18. 'ഹൃദയത്തിന്റെ താക്കോൽ' എന്ന കഥയിൽ സൂചിതമാവുന്ന ജീവിതസത്യം എന്താണ്?

19. 'പിന്നെക്കോടാലികൾ പൊങ്ങിയില്ല

നിന്നപാടെല്ലാരും നിന്നുനോക്കി' - സന്ദർഭമേത്?

St. Xavier's College

20. 'അശോക'യിൽ ആവിഷ്ക്കരിക്കപ്പെട്ട അടിസ്ഥാന പ്രശ്നങ്ങൾ എന്താണ്?

21. മലയാളത്തിലേക്ക് വിവർത്തനം ചെയ്യുക.

India, due to its geographical location and geological formation, is highly prone to disasters. Its long coastline, snow-clad peaks and high mountain ranges and the perennial rivers in the north, combine to add to this problem.

22. ഇംഗ്ലീഷിലേയ്ക്ക് വിവർത്തനം ചെയ്യുക.

ബുധനാഴ്ച രാത്രി എല്ലാ ബുധനാഴ്ചകളിലും ചെയ്യുന്നതുപോലെ അച്ഛനമ്മമാർ സിനിമ കാണാൻ പോയി. വീടിന്റെ സർവ്വാധികാരികളായി മാറിയ കുട്ടികൾ എല്ലാ കതകുകളും ജനലുകളും അടച്ചിട്ട് സ്വീകരണമുറിയിലെ വിളക്കുകളിൽ ഏറ്റവും പ്രകാശമുള്ള ഒരെണ്ണം പൊട്ടിച്ചു. പൊട്ടിയ ബൾബിൽ നിന്ന് തണുത്ത വെള്ളത്തിന്റെ കുത്തൊഴുക്ക് പോലെ സ്വർണ്ണപ്രകാശം കുതിച്ചുചാടി പുറത്തേക്കൊഴുകാൻ തുടങ്ങി.

(8 × 2 = 16 Marks)

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

23. 'ആനയും അൽപ്പം തെലുങ്കും' എന്ന ലേഖനത്തിൽ മാതൃഭാഷയെക്കുറിച്ചുള്ള ലേഖകന്റെ അഭിപ്രായങ്ങളേവ?

24. മാർക്വേസിന്റെ രചനകളിൽ തെളിഞ്ഞു കാണുന്ന കൊളംബിയൻ ജീവിതത്തിന്റെ സവിശേഷതകൾ ഏവ?

25. നാടകവും ചലച്ചിത്രവും തമ്മിലുള്ള പ്രധാനപ്പെട്ട അന്തരം എന്താണ്?

26. പൗരസ്ത്യവാദം എന്നാലെന്ത്?

27. 'സ്വപ്നങ്ങൾ വിൽക്കുന്ന സെയിൽസ്മാൻ' എന്ന ചെറുകഥയ്ക്ക് ആസ്വാദനം തയ്യാറാക്കുക.

28. 'കുട കൈയിൽ കിട്ടിയാൽ കൊടുക്കാത്തവർ, തരത്തിന് നിങ്ങളുടെ കുടൽ കൈയിൽ കിട്ടിയാൽ തട്ടിക്കൊണ്ടു പോകുകയില്ലെന്നുള്ളതിന് എന്താണുറപ്പ്'- സന്ദർഭം വിവരിക്കുക.

29. ആത്മീയവും ഭൗതികവുമായ വീക്ഷണങ്ങളുടെ സമന്വയം ടാഗോറിൽ സാധ്യമായതെങ്ങനെയാണ്?

30. ഇംഗ്ലീഷിലേയ്ക്ക് വിവർത്തനം ചെയ്യുക

തനിക്ക് അയാളെ അറിയുകയില്ലെങ്കിലും അഗ്നിക്ക് തന്നെ അറിയാമായിരിക്കും. അല്ലെങ്കിൽ അയാൾ എന്തിനാണ് തനിക്ക് അടിയന്തിരമായി ഒരു സന്ദേശം അയച്ചത്? വളരെ പ്രധാനപ്പെട്ട ചില കാര്യങ്ങൾ തന്നോട് പറയുവാനുണ്ട് എന്ന് അറിയിച്ചത്? പരിചയമില്ലാത്ത ഒരാളോട് ആരെങ്കിലും പ്രധാനപ്പെട്ട കാര്യങ്ങൾ പറയുമോ? അഗ്നിക്ക് തീർച്ചയായും തന്നെ അറിയാം.

St. Xavier's College

31. മലയാളത്തിലേക്ക് വിവർത്തനം ചെയ്യുക.

The girl was thirteen or fourteen years old. Her clothes betrayed her poverty. Her hair hung in a heavy stream down her back. Her eyes were large. They had a sad expression. I watched her when she was not looking so that she would not notice. My lunch was served as she was finishing hers. The waitress brought her the bill. Bills are paid at the desk as one goes out. The desk is near the door.

(6 × 4 = 24 Marks)

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

32. ഇതിഹാസ സന്ദർഭങ്ങളെ സ്ത്രീപക്ഷത്ത് നിന്നുകൊണ്ട് വായിക്കാനുള്ള ശ്രമമാണ് 'അശോക' - സമർത്ഥിക്കുക.

33. 'ചന്ദനക്കട്ടിൽ' എന്ന കവിതയിൽ തെളിയുന്ന കേരളീയതയുടെ അടയാളങ്ങൾ എന്തെല്ലാമാണ്?

34. ടാഗോറിന്റെ വ്യക്തിത്വത്തെക്കുറിച്ചുള്ള ഗുപ്തൻ നായരുടെ അഭിപ്രായങ്ങൾ സംഗ്രഹിക്കുക.

35. സമകാല ജീവിതത്തിന്റെ ഹൃദയരാഹിത്യത്തെ വിമർശിക്കുന്ന രചനയാണ് 'പറുദീസാനഷ്ടം'. - വിമർശിക്കുക.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) G – 2442

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme Under CBCSS

Complementary Course for Mathematics

ST 1231.1 : RANDOM VARIABLES AND ANALYSIS OF BIVARIATE DATA

(2014-17 Admissions)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. Write the necessary and sufficient condition for a function is said to probability mass function.

2. Two random variables are said to be independent if _____.

3. Define discrete random variables.

4. Let $F(x,y)$ represents the distribution function of (X,Y), then $F(+\infty,+\infty) =$ _____.

5. If the third central moment is positive then the shape of the frequency curve will be _____.

6. If $E(X) = 2$, then $E(3X+1) =$ _____.

7. Let X and Y be two independent random variables with MGF $M_X(t)$ and $M_Y(t)$ respectively, then $M_{X+Y}(t)$ _____.

P.T.O

8. Write the normal equations for $Y = aX^b$.

9. Range of correlation coefficient is _____.

10. Let $b_{XY} > 1$, then b_{YX} is _____. **(10 × 1 = 10 Marks)**

SECTION – B

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

11. Define probability mass function.

12. Define conditional density.

13. Write the properties of a characteristic function.

14. Define conditional expectation.

15. Explain principle of least square.

16. Show that the correlation coefficient is invariant under location transformation.

17. Write the properties of scatter diagram.

18. What are the two regression lines, explain?

19. Define Spearman rank correlation.

20. Explain the transformation of a discrete random variable.

21. Write the properties of correlation coefficient.

22. What is relation connecting correlation coefficient and regression coefficients?

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION – C

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

23. For a pair (X,Y) of continuous random variables, show that $E(X+Y)=E(X)+E(Y)$.

24. Let X be a r.v with $f(x)=2e^{-2x}$, $x>0$ and $f(x)=0$, elsewhere. Obtain mean and variance of X.

25. State and prove addition theorem of expectation.

26. The joint probability distribution of two random variables is given by $f(x,y)=k(2x+y)^2$ for $x=0,1,2$ and $y=-1,0,1$. Find the conditional distributions of X given $Y=-1$ and Y given $X=1$.

27. Two r.v's X and Y have the joint p.d.f given by $f(x,y)=Kx^2y^3$, $0<x<y<1$, $f(x,y)=0$, elsewhere. Find the value K.

28. Derive the normal equations for $Y=ae^{bX}$.

29. Distinguishing between linear and curve *i*–linear fitting.

30. Find spearman rank correlation for the following data :

X	14	16	17	19	14	13	16
Y	10	11	12	10	13	13	10

31. Find the correlation coefficients from the two regression equations $5X+3Y=21$ and $3X+4Y=12$.

($6 \times 4 = 24$ Marks)

St. Xavier's College

SECTION – D

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

32. Let X be discrete random variable function $f(x) = p(1-p)^x$, for $0 < p < 1$, $x = 0, 1, 2, \ldots; 0$, otherwise. Then

    (a) Show that $f(x)$ be probability mass function

    (b) Find Mean and variance

    (c) Find the distribution for $Y = X + 1$.

33. Let $f(X,Y) = K, 0 < x < y < 1; 0$, otherwise, be a bivariate probability density function of (X, Y). Then find

    (a) Correlation between X and Y

    (b) $E[\{X \mid Y\}]$

    (c) $P[X = Y]$.

34. Fit the model $Y = aX^b$ for the following data :

X	9	16	13	16	12	19	9	13	14
Y	10	11	13	15	11	13	10	12	11

35. The following data relate to the height of the plants and the weight of yield per plot recorded from 9 plots. Calculate the regression coefficients and hence correlation coefficient.

Height (in cms)	28	32	26	31	37	26	36	34	47
Frequency	72	78	67	89	92	69	76	70	89

(2 × 15 = 30 Marks)

St Xavier's College

(Pages : 4) **G – 2500**

Reg. No. : .....

Name : .....

Second Semester B.Com. Degree Examination, MAY 2019.

First Degree Programme under CBCSS

Language Course (Additional Language) — LATIN

LT 1211.2 TRANSLATION AND COMMUNICATION SKILLS IN LATIN

(2015 Admission Onwards)

St. Xaviers College

Time : 3 Hours Max. Marks : 80

PART – A

Responde omnibus

I. Delige verbum aptissimum.

1. Vaccae in silvis ———————— (sum, es, sunt).

2. Magister ———————— (discipuli, discipulis, discipulos) laudat.

II. Indica verum (T) an falsum (F).

3. Volenti non fit injuria means hear the other side.

4. Fiat justitia, ruat coelum means let right be done, though the heavens fall.

III. Scribe quod non aptum.

5. Venire, ire, tenere, munire.

6. Cadere, monstrare, ornare, pugnare.

IV. Qui dicit sequential verba.

7. 'Tu non pulcherrima es. Ego te pulchrior sum'. (Venus, Minerva, Iuno)
8. Beati mundo corde: quoniam ipsi Deum videbunt. (St. Peter, St. Paul, Jesus Christ.)

V. Imple loca vacua propria verba.

9. Vir gladio aprum _____ (vulnerat, vulneramus, vulnerant).
10. Regina fabri mensam _____ (laudant, laudo, laudat).

(10 × 1 = 10 Marks)

PART – B

Responde octo de datis

VI. Explica sententiam et significationem verba insequentia.

11. Caveat emptor.
12. Audi alteram partem.
13. Mensa et thoro.
14. Corpus delicti.

VII. Scribe Anglica verba quae derivantur de verbis datis.

15. Animal
16. Labor
17. Natio
18. Amare

VIII. Corrige sententiam.

19. Sagittae signiferum vulnerat.
20. Poeta reginam monstrant.

IX. Scribe diversitatem inter verba.

21. Lex et lux
22. Regere et monere.

(8 × 2 = 16 Marks)

St. Xavier's College

PART – C

Responde sex de datis.

X. Explica sententias datas.

23. 'Si autem me elegeris, ' inquit 'ego tibi famam et gloriam maximam dabo.
24. 'Sine dubio' inquit, 'ego pulcherrima sum'
25. Beati paupers spiritu: quoniam ipsorum est regnum cælorum.
26. Beati pacifici: quoniam filii Dei vocabuntur.

XI. Redde in Latinam linguam.

27. The queen is coming Into the school. The fanners are working in the forest. The poets are coming out of the wood. The water is coming under the table. He is working under the road. The cows are coming through the forest. The farmers do not destroy the forests. The maid servant adorns the queen with a crown.
28. Blessed are the pure in heart, for they shall see God. Blessed are the peace makers, for they shall be called sons of God. Blessed are those who are persecuted for righteousness for theirs is the kingdom of heaven.

XII. Redde in Anglicam linguam.

29. Angelus domini in templum venit. Discipuli non aurum, sed praemia habent. Bella filias reginae terrent. Regina amat. Rosae delectant. Dominus amicos filii Laudat. Filius agno aquam dat. Doctus medicus aegram puellam curat.
30. Civitas nostra ab hostibus delebatur. In schola pueri a magistris docentur. Fulgura in caelo ab omnibus videbantur. Leo igne et fulgure tenetur.
31. Faber vester in templo sacro laborat. Liber Petri in cubiculo meo est. Piger discipulus librum non amat. Ancilla, pulchram rosam da amico meo.

(6 × 4 = 24 Marks)

PART – D

Responde duo de datis

32. How did Paris solve the problem of the Goddesses?

33. Explain the sermon on the mountain and its relevance today.

St. Xavier's College

34. Vir longam _____[1]_____ (eistolis, epistolae, epistolam) ad reginam mittit.

_____[2]_____ (Parvus, parvas, Parvi) pueri sub mensa ludunt.

Pueri, cum amicis vestris in _____[3]_____ (horto, hotum, hotus) ludite.

Domine, servus _____[4]_____ (tuum, tuae, tuus) mendacium dicit.

Magister, parvus _____[5]_____ (purorum, pueris, puer) in aquam cadit.

Dues mundum _____[6]_____ (regis, regimes, regit).

_____[7]_____ (stultus, stultorum, Stulti) asini pulchram lunam non vident.

Equi reginae in _____[8]_____(altus, altas, altam) aquam cadunt.

Dic, "Deus _____[9]_____ (sum, es, est) Bonus."

Puer, epistolam. _____[10]_____ (meus, meis, meam) ad reginam mitte.

35. Regina cum poeta in scholam _____[1]_____ (venimus, veniunt, venit).

Puellae per silvam ad _____[2]_____ (scholam, schola, scholarum) veniunt.

Poeta cum _____[3]_____ (nautarum, nautis, nauta) ad reginam venit.

Puellae post _____[4]_____ (scholam, schola, scholarum) aquam potant.

_____[5]_____ (Ancillae, Ancillis, Ancillas) rosis aram ornat.

Agricola in silva _____[6]_____ (laborant, laboramus, laborat).

Regina ex _____[7]_____ (scholarum, scholis, schola) venit.

Agricola hasta _____[8]_____ (Nauta, nautis, nautam) vulnerat.

_____[9]_____ (Filia, filiis, Filiae) rosis reginam delectant.

Aqua sub _____[10]_____ (via, viarum, viam) venit.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) G – 2443

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme under CBCSS

PHYSICS

Foundation Course – II

PY 1221 – CLASSICAL MECHANICS

(2014 – 2017 Admissions)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions each carries 1 mark.

1. State and explain Newton's first law of motion.

2. Write the equation of motion of a particle subjected to a resistive force.

3. State conservation of energy.

4. The homogeneity of space implies that the linear momentum is a constant of motion. Substantiate.

5. Define inverse square law of force.

6. Write the equations of motion under central force.

7. Define laboratory reference frame.

P.T.O.

St. Xavier's College

8. Define scattering cross section.

9. What are constraints?

10. State the principle of virtual work done.

(10 × 1 = 10 Marks)

SECTION – B

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

11. Explain the motion of a projectile with no resistance.

12. How does Newton's second law govern the behavior of

    (a) linear Momentum

    (b) angular momentum.

13. Briefly explain the rotational invariance of space.

14. Discuss two body central force problem.

15. Outline the general properties of central force motion.

16. State and explain Kepler's laws of planetary motion.

17. What are generalized coordinates? Why are they called so?

18. Derive an expression for the period of oscillation of a simple pendulum using Lagrange's equation.

19. Distinguish between holonomic and nonholonomic constraints.

20. Distinguish between conservative and dissipative forces.

21. Using Lagrange equation Newton's second law.

22. Compare Lagrangian approach over Newtonian approach.

(8 × 2 = 16 Marks)

St. Xavier's College

SECTION – C

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

23. Find the potential energy associated with the force $F = -y^2 z\vec{i} - x\vec{j} - xy\vec{k}$.

24. Obtain the equation of motion of a particle moving in a constant force.

25. Masses of 4,3 and 1 kg are located at positions $3\vec{j} + 2t^2\vec{k}$, $3t\vec{i} - 3\vec{k}$ and $4\vec{u} + t^2\vec{j}$ respectively. Find the position of the centre of mass and the angular momentum of the system about the origin at $t = 2s$.

26. Find Lagrang's equation of motion of the bob of a simple pendulum.

27. Obtain the equation of motion of a particle of mass m in a potential $V(x, y, z)$ in spherical polar coordinates.

28. Show that the centre of mass of the system of particles on which the external force is acting behaves like a particle whose mass is equal to the total mass of the system and is acted upon by the total external force F.

29. The eccentrity of earths orbit is 0.0167. Calculate the ratio of maximum and minimum speeds of the earth in its orbit.

30. A particle of mass m is falling under the action of gravity near the surface of the earth.If the force due to the friction of the air is directly proportional to its instantaneous velocity,calculate the velocity and position of mass as a function of time.

31. The mean distance of Earth from the Sun is 149.8 x 106 km and the mean distance of Mercury from the Sun is 57.9 x 106 km. The period of Earth's revolutions is 1 year, what is the period of Mercury's revolution?

(6 × 4 = 24 Marks)

St Xavier's College

SECTION – D

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

32. Explain the Keplers problem of planetary motion and hence deduce it.

33. Obtain the Lagranges equations of motion using D'Alembert's principle for holonomic system.

34. Demonstrate how a two body central force motion is reduced into one body problem.

35. Obtain the period of oscillation of a compound pendulum using Lagrange's equation.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) G – 2501

Reg. No. : .....

Name : .....

Second Semester B.Com. (Hindi) Degree Examination, May 2019

First Degree Programme under CBCSS

Additional Language II

HN 1211.2 POETRY, TRANSLATION, TECHNICAL TERMINOLOGY AND COMMUNICATION

(2017 Admission onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

I. प्रत्येक प्रश्न का एक या दो वाक्यों में उत्तर लिखिए।

1. कबीर भक्ति की किस धारा के कवि हैं?

2. सूरदास के गुरु कौन हैं?

3. बिहारी की रचना का नाम लिखिए।

4. 'आंसू' किसकी रचना है?

5. साहित्य अकादमी पुरस्कार से विभूषित दिनकर की रचना का नाम लिखिए।

6. 'तुलना पत्र' शब्द का समानार्थी अंग्रेजी शब्द लिखिए।

7. 'Supreme Court' केलिए प्रयुक्त समानार्थी हिंदी शब्द लिखिए।

P.T.O.

8. भावों की समाहार शक्ति किस कवि की रचना में देखने को मिलता है?

9. 'अष्टछाप' किस भक्ति धारा के कवियों का नाम है?

10. गोरख पांडे किस विचारधारा के कवि हैं?

(10 × 1 = 10 Marks)

II. किन्हीं आठ सवालों के उत्तर पचास शब्दों में लिखिए।

11. मानव के जन्म के बारे में कबीर क्या कहते हैं?

12. सूरदास गोपियों के विरह का वर्णन कैसे करते हैं?

13. 'विधवा' कविता के कथ्य पर प्रकाश डालिए।

14. "कनक कनक ते सौगुनी, मादकत अधिकाय

वा खाए बौराय जग, या पाए बौराय।।" इस दोहे का भाव समझाइए।

15. ले चल वहाँ भुलावा देकर कविता का भाव समझाइए।

16. तकनीकी शब्द किसे कहा जाता है?

17. गोरख पांडे के कवित्व पर विचार कीजिए।

18. कबीर पाखंड का सूब विरोध करते थे - इस पर अपनी राय व्यक्त कीजिए।

19. यह मनुज, ब्रह्मांड का सबसे सुरम्य प्रकाश/कुछ छिपा सकते न जिससे भूमि या आकाश-इन पंक्तियों का आशय समझाइए?

20. एकलव्य कौन है?

21. माला फेरत जग मुआ, मिटा न मन का फेरा/कर का मन का डार दे, मन का मन का फेर - आशय बताइए।

22. निराला के कृतित्व का परिचय दीजिए।

(8 × 2 = 16 Marks)

St. Xavier's College

III. निम्नलिखित दो खंडों से किन्हीं छह सवालों के उत्तर 120 शब्दों में दीजिए। प्रत्येक खंड से कस से कम एक सवाल का जवाब देना अनिवार्य है।

खंड - क

23. सूर की भाषागत विशेषताएँ क्या है?

24. गोरख पांडेय की कविता में चर्चित जीवन पर विचार कीजिए।

25. 'ले चल वहां भुलावा दकर' कविता का मूल्यांकन कीजिए।

खंड - ख

26. निम्नलिखित हिंदी शब्दों के समानार्थी अंग्रेजी शब्द लिखिए।

आयकर विभाग, अभिलेख, अनुपात, मनोनीत

27. निम्नलिखित अंग्रजी शब्दों के समानार्थी हिंदी शब्द लिखिए।

Audit, Tender, Honorarium, Quorum.

खंड - ग

28. हिंदी में अनुवाद कीजिए।

Books are our friends. They always help us. When we are in difficulty they show us the right path. In sorrow they give us comfort. They are always with us. Some of our friends remain with us only in the days of happiness. When sorrow comes they leave us alone. They are not true friends. But books are not like them. They are our true friends.

29. Kerala is the smallest state in South India. The state is famous for its natural beauty. Tourist come to India to enjoy this beauty. Kerala greenery is very attractive. The beautiful land between the sahyadri and the Arabian Sea is full of beautiful trees and plants. There are so many small rivers in Kerala.

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खंड – घ

30. अंग्रेजी में अनुवाद कीजिए।

समाज का जीवंत इतिहास साहित्य है। समाज की अनुभूतियां और संघर्ष ही साहित्य है। समाज से परे साहित्य की कल्पना नहीं की जा सकती है। साहित्य भूत, वर्तमान और भविष्य का संगम है। वह समाज की अक्षय और अमर शक्ति है। जिस जाति के पास जितना समृद्ध साहित्य है, वह जाति उतनी ही उन्नत और श्रेष्ठ है। इस तरह साहित्य समाज की कसौटी है।

31. पर्यावरण के प्रदूषण पर नियंत्रण रखना अत्यंत आवश्यक है। यदि ऐसा नहीं किया गया तो समस्त मानव जाति के लिए भयानक खतरा उत्पन्न हो जाएगा। प्रदूषण को रोकने केलिए कानून बनाना उतना आवश्यक है, उतना ही महत्वपूर्ण है उन कानूनों को कार्यान्वित करना। जनता को प्रदूषण की समस्या से भलीभांति अवगत कराना चाहिए। **(6 × 4 = 24 Marks)**

IV. किन्हीं दो प्रश्नों के 250 शब्दों में उत्तर लिखिए।

32. सूर के पदों के कथ्य-शिल्प की विशेषताओं पर प्रकाश डालिए।

33. बिहारी के दोहों की विशेषताओं पर प्रकाश डालिए।

34. आधुनिक हिंदी कविता में जीवन का प्रतिपादन किस प्रकार हुआ है?

35. छायावादी कविता की प्रमुख प्रवृत्तियों पर एक निबंध तैयार कीजिए। **(2 × 15 = 30 Marks)**

St. Xavier's College

(Pages : 4) G – 2516

Reg. No. : .....

Name : .....

Second Semester B.Com. Degree Examination, May 2019

First Degree Programme under CBCSS

Complementary Course

CO1231/CC1231/CX1231 : BUSINESS MATHEMATICS

(Common for CO 1231/CC 1231/CX 1231)

(2018 Admn)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

All the first 10 questions are compulsory. Each question carries 1 mark.

1. Find the sum of $\frac{2}{3}+\frac{6}{15}+\frac{3}{5}$.

2. Evaluate $\frac{3}{5}\times\left(\frac{-4-1}{6}\right)+\frac{5}{2}$

3. Find the value of $14P_4$.

4. Define a symmetric matrix.

5. Evaluate the determinant of the square matrix $\begin{bmatrix}4 & 1\\ 3 & 2\end{bmatrix}$.

6. Write the power set of the set $A=\{3,4\}$.

7. Solve the equation $14y-18=13$.

P.T.O.

8. What is annuity ?

9. Solve the quadratic equation $x^2 - 5x + 6 = 0$.

10. Find the derivative of $y = x^2 + \frac{1}{x} + 7$. **(10 × 1 = 10 Marks)**

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

11. Prove that $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$ where $A = \{1, 3, 4, 7\}$ $B = \{2, 3, 4, 8\}$ and $C = \{1, 3, 4, 9\}$.

12. If $nC_2 = 10$. Find n.

13. Sum of two numbers is 95. If one exceeds the other by 15. Find the numbers.

14. If $A = \begin{bmatrix} 5 & 3 \\ 4 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} 6 & 8 \\ 9 & 1 \end{bmatrix}$ find $2A + 3B$.

15. Evaluate $\begin{vmatrix} x & 1 & 2 \\ 2 & x & 2 \\ 3 & 1 & x \end{vmatrix}$

16. Find the product $(p^2 - q^2)(2p + q)$.

17. If $y = 2x + \frac{4}{x}$, prove that $x^2 \frac{d^2y}{dx^2} + x\frac{dy}{dx} - y = 0$.

18. Eliminate arbitrary constants a and b from $z = (x - a)^2 + (y - b)^2$ to form the partial differential equation.

19. $\int \frac{x + a}{x - a} dx$.

20. If simple interest on a certain sum is Rs. 360 for 2 years at 6% per annum. Find the sum.

St Xavier's College

21. After allowing a discount of $7\frac{1}{2}\%$ on the marked price of an article, an article is sold for Rs. 555. Find its marked price.

22. A man wishes to pay back his debt of Rs. 5,044 due after 6 years by 6 equal yearly instalment. Find the amount of each instalment, money being worth 10% per annum compound interest.

(8 × 2 = 16 Marks)

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

23. The base of an isosceles triangle is $\frac{4}{3}$ cm. The perimeter of the triangle is $4\frac{2}{15}$ cm. What is the length of either of the remaining equal sides?

24. The table below gives the ages of drivers of cars involved in total accidents during a certain year. Draw a pie-diagram to represent the data :

Ages of drivers	Under 20	20-40	40-60	Over 60	Total
Percent of totals	15	60	20	5	100

25. If $A = \begin{bmatrix} 2 & 1 & 1 \\ -1 & 0 & 1 \\ 1 & 3 & -1 \end{bmatrix}$ calculate $A^2 - 5A + 9I$.

Where $I = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

26. Find the inverse of $\begin{bmatrix} 2 & -4 \\ -3 & 5 \end{bmatrix}$

27. At what rate percent compound interest per annum with Rs. 640 amount to 774.40 in 2 years.

28. Distinguish between Straight Line Method and diminishing balance method.

St. Xavier's College

29. Find a partial differential equation by eliminating a,b,c from $\frac{x^2}{a^2}+\frac{y^2}{b^2}+\frac{z^2}{c^2}=1$.

30. If $y=ae^{mx}+be^{-mx}$ prove that $\frac{d^2y}{dx^2}-m^2y=0$.

31. The total cost function (in rupees) if x units of a product is $c(x)=x^2+78x+2500$ and the demand function is $p=600-8x$, when the price is Rs. 1 per unit. Show that the maximum net revenue (ie, profit) is obtained when 29 units are produced. Also find the price at which profit is maximums.

(6 × 4 = 24 Marks)

Answer any two questions from among the questions 32 to 35. They carry 15 marks.

32. Using Cramer's rule, solve

$x+y+z=6,\ 2x+3y-z=5,\ 6x-2y-3z=-7$.

33. Explain the need for providing depreciation what are the methods of recording depreciator.

34. (a) Explain bar diagrams

(b) Draw a simple bar diagram to represent the following figures relating to manufacturing of machines.

Years	1984	1985	1986	1987	1988
No. of machines	1200	1700	1900	2800	2100

(c) What are the advantages of diagram and graphs?

35. (a) Explain different types of sets and set operations with examples.

(b) What are the rules of differentiation? Explain it with examples.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) G – 2523

Reg. No. : .....

Name : .....

Second Semester B.A./B.Sc. Degree Examination, May 2019

Career Related First Degree Programme Under CBCSS

Language Course (Additional Language) – Latin

LT 1211.3 – TRANSLATION AND COMMUNICATION IN LATIN

(2013 Admission Onwards)

Time : 3 Hours Max. Marks : 80

PART – A

Responde omnibus

Delige verbum aptissimum.

1. Nauta poetae stellas ———— (monstrat, monstrare, monstrant).
2. Reginam ———— (amant, amat, amamus) filiae.

Indica verum (T) an falsum (F).

3. Magnificat is taken from the gospel of Luke.
4. Beati pacifici: quoniam filii Dei vocabuntur.

Scribe quod non aptum.

5. Habere, docere, monere, venire
6. Ancilla, aqua, corona, poeta

Expande

7. DV
8. DL

P.T.O.

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Redde Anglice.

9. Crux
10. Argentum

(10 × 1 = 10 Marks)

PART – B

Responde octo de datis

Explica significationem in lingua Anglica.

11. Beati pauperes spiritu: quoniam ipsorum est regnum cælorum.
12. Deduxit me super semitas justitiæ propter nomen suum.

Scribe diversitatem inter verba.

13. 'a.m' and 'p.m'
14. 'Poetarum' and 'templorum'
15. Declina singulariter et pluraliter: Mons, Montis
16. Declina adjectivam singulariter et pluraliter: niger, a-um
17. Cojuga in praesens: 'regere'
18. Conjuga in perfect: 'ornare'

Construe sententiam utens verbo.

19. Monere
20. Delectare
21. Adequa in sequentia.

(a)	Psalmus	–	Dei Gratia
(b)	Magnificat	–	Jesus
(c)	Sermo De Monte	–	Luke
(d)	DG.,	–	David

Corrige sententiam.

22. Animam meam convertint.

(8 × 2 = 16 Marks)

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PART – C

Responde sex de datis

Explica sententias datas.

23. Fecit potentiam in brachio suo.

24. In loco pascuæ, ibi me collocavit.

25. Beati mites: quoniam ipsi possidebunt terram.

26. Beati qui esuriunt et sitiunt justitiam: quoniam ipsi saturabuntur.

27. Et misericordia tua subsequetur me omnibus diebus vitæ meæ.

Redde in Latinam linguam.

28. We delight the queen: You are praising the roses: I am showing the moon: They love crowns: We are adorning the tables: He is showing the stars: We are watering the roses: The queen gives a rose.

29. You prepare a table before me in the presence of my enemies.

    You anoint my head with oil; my cup overflows.

Redde in Anglicam linguam.

30. Ancillas laudant: Coronam dat: Mensam ornat: Epistolam dant: Filiam amat: Rosas rigant: Reginam delectate: Poetam laudant.

31. Et ait Maria: Magnificat anima mea Dominum: et exsultavit spiritus meus in Deo salutari meo. Quia respexit humilitatem ancillæ suæ: ecce enim ex hoc beatam me dicent omnes generations.

(6 × 4 = 24 Marks)

PART – D

Responde duo de datis

32. Et ait Maria: Magnificat anima mea Dominum: why does Mary magnify the Lord?

33. Explain the sermon on the mountain and its relevance today.

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34. Dominus _____(1)_____ (regimus, regitis, regit) me, et nihil _____(2)_____ (mihi, mei, me) deerit: in _____(3)_____ (locis, locus, loco) pascuæ, ibi me _____(4)_____ (collocamus, collocant, collocavit). Super _____(5)_____ (aqua, aquam, aquae) refectionis _____(6)_____ (educavimus, educaverunt, educavit) me; animam _____(7)_____ (meus, meam, meae) convertit. Deduxit _____(8)_____ (me, meus, meorum) super _____(9)_____ (semita, semitae, semitas) justitiæ propter nomen suum. Nam et si ambulavero in medio umbræ mortis, non timebo _____(10)_____ (malus, malum, mala), quoniam tu mecum es. Virga tua, et baculus tuus, ipsa me consolata sunt.

35. Herba in silva _____(1)_____ (est, sunt, sumus).

Belle filias reginae _____(2)_____ (terrare, terrent, terret).

Asini et equi in _____(3)_____ (silva, silvam, silvae) sunt.

Magister discipulos _____(4)_____ (laudant, laudat, laudo).

_____(5)_____ (Discipulus, discipulis, Discipuli) non aurum, sed praemia habent.

Discipuli libros _____(6)_____ (habent, habet, habere)

Aper in silva _____(7)_____ (est, sunt, sum)

Nuntius domino donum _____(8)_____ (dant, dat, do)

Fili, cibi_____(9)_____ (pretius, pretiorum, pretium) agricolae da.

Puellae signum in caelo _____(10)_____ (videt, vident, video)

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) G – 2525

Reg. No. : .....

Name : .....

Second Semester B.A./B.Sc./B.Com. Degree Examination, May 2019

(Career Related First Degree Programme under CBCSS)

GROUP 2(a)

Language Course IV – Additional Language – II

Malayalam

ML 1211.3 : ദൃശ്യകലാസാഹിത്യം

(2014 Admission – 2017 Admission)

Time : 3 Hours Max. Marks : 80

I. ഒരു വാക്കിലോ പരമാവധി രണ്ടു വാക്യത്തിലോ ഉത്തരം എഴുതുക.

1. 'നളചരിതം ആട്ടക്കഥ'യ്ക്ക് കാന്താരതാരകം എന്ന പേരിൽ വ്യാഖ്യാനമെഴുതിയതാര്?

2. മൂന്നുതരം തുള്ളലുകളുടെ പേരെഴുതുക.

3. സി.ജെ.തോമസ് എഴുതിയ നാടകപഠനഗ്രന്ഥം.

4. "ഗ്രാഹം പിടിച്ചപ്പോൾ മോഹവും കലർ-

ന്നാകമ്പിതമായി ദേഹവും"

- ആരുടെ വാക്കുകളാണിത്?

5. കഥകളിയിൽ ഉപയോഗിക്കുന്ന വാദ്യങ്ങളേവ?

P.T.O.

St. Xavier's College

6. ''ഉത്തരാശാമുഖം നോക്കിപ്പുറപ്പെട്ടു
സത്യരാഹങ്കാര ഗംഭീരപുരുഷൻ''
- ആരാണ് ഈ ഗംഭീരപുരുഷൻ?

7. 'നളചരിതം കിളിപ്പാട്ട്' ആരുടെ രചനയാണ്?

8. 'നീലക്കുയിൽ' എന്ന ചലച്ചിത്രത്തിന്റെ തിരക്കഥ എഴുതിയതാര്?

9. മഹാഭാരതത്തിലെ ഭീമസേനന്റെ വിചാരധാരകളെ പുനരാഖ്യാനം ചെയ്ത് എം.ടി. വാസുദേവൻ നായർ എഴുതിയ നോവൽ.

10. '1128-ൽ ക്രൈം 27' എന്ന നാടകമെഴുതിയതാര്?

(10 × 1 = 10 Marks)

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

11. ''മോഹാർണ്ണവത്തിൻ പ്രവാഹത്തിൽ വീണു ഞാൻ
മുഹുരപി മുഴുകുമാറായിതിദാനീം''
- ആരുടെ വാക്കുകളാണിത്? സന്ദർഭമേത്?

12. ''മാരിതമായ് പെരുമ്പാമ്പെടോ സുകു-
മാരിമാർക്കിന്നൊരു കൂമ്പടോ''
- കാട്ടാളന്റെ ഈ വാക്കുകളിലെ മനോഭാവമെന്ത്?

13. കഥകളിയുടെ പ്രാരംഭചടങ്ങുകൾ എന്തെല്ലാം?

14. ശീതങ്കൻതുള്ളലിന്റെ സവിശേഷതകളെന്തെല്ലാം?

15. ''പെണ്ണിന്റെ ചൊൽക്കേട്ടു ചാടിപ്പുറപ്പെട്ട
പൊണ്ണൻ മഹാദോഷനയ്യോ മഹാജളൻ''. ആരുടെ വാക്കുകളാണിത്? സന്ദർഭമേത്?

16. ''ഉത്തരാശാമുഖം നോക്കിപ്പുറപ്പെട്ടു
സത്യരാഹങ്കാരഗംഭീരപുരുഷൻ''
- ആരെക്കുറിച്ചാണ് ഈ പ്രസ്താവന? യാത്രാലക്ഷ്യമെന്ത്?

St Xavier's College

17. 'അവൻ വീണ്ടും വരുന്നു' എന്ന നാടകത്തിലെ 'അവൻ' ആരാണ്?

18. ''പാലു കൊടുത്ത കൈയ്യ് കടിക്കുന്ന പാമ്പ് ദുഷ്ടൻ ഇവനൊന്നും നരകത്തിലും സ്ഥലം കിട്ടുകേല'' - ആരുടെ വാക്കുകളാണിത്? സന്ദർഭമേത്?

19. ''പ്രായോഗിക ജീവിതസൗകര്യങ്ങൾ മാത്രമല്ലല്ലോ വിവാഹത്തിന്റെ അടിസ്ഥാനം'' എന്ന് മാത്തുക്കുട്ടി പറയാൻ കാരണമെന്ത്?

20. സീൻ, സ്വീക്വൻസ് എന്നിവ എന്താണെന്ന് വിശദമാക്കുക.

21. 'അവൻ നോക്കി നില്ക്കെ തോണി അവനെ തിരിച്ചറിഞ്ഞപോലെ ഇളകുന്നു. ഓളങ്ങളിൽ സൃത്തം വയ്ക്കുന്നു' സന്ദർഭമേത്? വിശദീകരിക്കുക.

22. 'കടവ്' എന്ന പ്രതീകം എന്തിനെ സൂചിപ്പിക്കുന്നു?

(8 × 2 = 16 Marks)

III. **120** വാക്കിൽ കവിയാതെ **ആറ്** ചോദ്യത്തിന് ഉത്തരമെഴുതുക.

23. ''പ്രാണരക്ഷണത്തിനൊന്നില്ലാ പ്രത്യുപകാരം

പ്രചുരമാം സുകൃതാദൃതേ''

- ആരുടെ വാക്കുകളാണിത്? സന്ദർഭമേത്? ഈ പ്രതികരണത്തിന്റെ ഔചിത്യം പരിശോധിക്കുക.

24. നളചരിതത്തിൽ ഉണ്ണായി വാര്യർ തന്റെ പ്രാസപക്ഷപാതം പ്രദർശിപ്പിക്കുന്ന സന്ദർഭമാണ് ദമയന്തീ - കാട്ടാളസംഗമം നിരൂപണം ചെയ്യുക.

25. കല്യാണസൗഗന്ധികത്തിലെ കദളീവനവർണ്ണന വിശദീകരിക്കുക.

26. 'അവൻ വീണ്ടും വരുന്നു' എന്ന നാടകത്തിലെ ഉപദേശി.

27. ജീവിതം തന്നെ ഒരു മഹായുദ്ധമാണെന്ന ആശയം 'അവൻ വീണ്ടും വരുന്നു' എന്ന നാടകം പങ്കുവയ്ക്കുന്നു. പരിശോധിക്കുക.

28. കല്യാണസൗഗന്ധികത്തിലെ ദ്രൗപദി - കഥാപാത്രനിരൂപണം ചെയ്യുക.

St. Xavier's College

29. 'കടവി'ലെ രാജു എന്ന കഥാപാത്രത്തെ നിരൂപണം ചെയ്യുക.

30. പതിനെട്ടാം നൂറ്റാണ്ടിൽ കേരള കലാരംഗത്തിലുണ്ടായ നവോത്ഥാനം ചർച്ചചെയ്യുക.

31. 'എം.ടി. സിനിമകൾ വള്ളുവനാടിന്റെ അതിർത്തികളിൽ ഒതുങ്ങിപ്പോയിരിക്കുന്നു' എന്ന വിമർശനത്തെ യുക്തിപൂർവ്വം അപഗ്രഥിക്കുക.

(6 × 4 = 24 Marks)

IV. മൂന്നു പുറത്തിൽ കവിയാതെ **രണ്ട്** ചോദ്യങ്ങൾക്ക് ഉത്തരമെഴുതുക.

32. ആട്ടക്കഥാസാഹിത്യത്തിൽ 'നളചരിത'ത്തിന്റെ സ്ഥാനം പരിശോധിക്കുക.

33. 'കവിത ചാട്ടവാറാക്കിയ കവിയാണ് കുഞ്ചൻ നമ്പ്യാർ' എന്ന പ്രസ്താവനയുടെ സാധുത പരിശോധിക്കുക.

34. മലയാളനാടകവേദിയെ ആധുനികരിച്ചവരിൽ പ്രഥമ ഗണനീയനാണ് സി.ജെ. തോമസ്. വിലയിരുത്തുക.

35. എം.ടി. സിനിമകളുടെ പൊതുസവിശേഷതകൾ 'കടവി'നെ ആധാരമാക്കി നിർണ്ണയിക്കുക.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4) G – 2534

Reg. No. : .....

Name : .....

Second Semester B.A./B.Sc./B.Com. Degree Examination, May 2019

Career Related First Degree Programme under CBCSS

MALAYALAM

Additional Language – II

ML 1211.3 : ദൃശ്യകലാസാഹിത്യം

(2018 admission)

Time : 3 Hours Max. Marks : 80

I. ഒരു വാക്കിലോ രണ്ടു വാക്യത്തിലോ ഉത്തരം എഴുതുക.

1. നളചരിതത്തിന്റെ മൂലകഥ മഹാഭാരതം ഏതു പർവ്വത്തിലാണുള്ളത്?

2. കുഞ്ചൻ നമ്പ്യാരുടെ ജന്മദേശം.

3. ഭഗ്നഭവനം അരങ്ങേറിയ വർഷം.

4. എൻ. കൃഷ്ണപിള്ളയെ മുഖ്യമായും സ്വാധീനിച്ച പാശ്ചാത്യ നാടകകാരൻ.

5. ലേബർ റൂം എന്ന നാടകം അവതരിപ്പിച്ച നാടകസംഘം?

6. പി. പത്മരാജൻ തിരക്കഥാരചനയിലേക്കും സംവിധാനത്തിലേക്കും കടന്ന ആദ്യ ചലച്ചിത്രമേത്?

7. ദിവസം ഒരു കഥയെന്ന നിലയിൽ ഇരുന്നൂറിലധികം ആട്ടക്കഥകൾ എഴുതി പ്രശസ്തനായ ആട്ടക്കഥാകാരൻ.

P.T.O.

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8. തുള്ളൽവൃത്തം എന്നറിയപ്പെടുന്ന വൃത്തം.

9. ലേബർ റൂം ആദ്യമായി അവതരിപ്പിച്ച വർഷം.

10. ഒരിടത്തൊരു ഫയൽവാൻ എന്ന ചലച്ചിത്രത്തിൽ കണ്ണൻ എന്ന കഥാപാത്രത്തെ അവതരിപ്പിച്ച അഭിനേതാവ്.

(10 × 1 = 10 Marks)

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

11. ''മുദിതം മാനസം മമ ഭവദംഗദർശനേന

മുഴുതിങ്കളുദയേന കുമുദമെന്നതുപോലെ'' ആരുടെ വാക്കുകൾ? ഔചിത്യഭംഗി പരിശോധിക്കുക.

12. ''വാമാക്ഷിവാക്യം പ്രമാണിക്കകാരണം

രാമാദികൾക്കുമബദ്ധം പിണഞ്ഞുപോൽ'' - സൂചിതമെന്ത്?

13. ''ഭ്രാന്തിൽനിന്നും അബദ്ധത്തിൽനിന്നും ചാടിപ്പുറപ്പെടുന്ന വിശ്വാസങ്ങൾ!'' ആരാണിങ്ങനെ അഭിപ്രായപ്പെടുന്നത്? സന്ദർഭമേത്?

14. ''ജനിക്കാനിരിക്കുന്നവരും മരിച്ചു പോയവരും ജീവിച്ചിരിക്കുന്നവരേക്കാൾ പ്രായംകൂടിയവരാണ്'' - ആരുടേതാണീ പ്രസ്താവം? പൊരുളെന്ത്?

15. ശിവൻപിള്ള എന്ന കഥാപാത്രത്തിന് 'ഒരിടത്തൊരു ഫയൽവാൻ' തിരക്കഥയിലുള്ള പ്രാധാന്യമെന്ത്?

16. ലേബർ റൂം നാടകത്തിൽ ഗർഭിണിയായ മൂന്നാമത്തെ സ്ത്രീ ജീവച്ഛവമായ കുഞ്ഞിനെ ആഗ്രഹിക്കാൻ കാരണമെന്ത്?

17. ''രത്നമെല്ലാം നിനക്കുള്ളൂ, യജ്ഞമേ ദേവകൾക്കുള്ളൂ'' - സാംഗത്യമെന്ത്?

18. 'സഫലം നിന്നുടെ കാര്യം സപദിസംഭവിച്ചീടും'' ആരാണിങ്ങനെ പറയുന്നത്? കാര്യമെന്ത്?

19. ''മൂന്നു വർഷത്തെ സഹവാസം കൊണ്ടും എനിക്കു നിന്നെ മനസ്സിലാക്കാൻ കഴിഞ്ഞില്ല'' ആരാണിങ്ങനെ പരിതപിക്കുന്നത്? കാരണമെന്ത്?

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20. ''എന്നാൽ കുലമിതഖിലവുമറുതിവന്നിതു'' ഹംസത്തിന്റെ ഈ വാക്കുകൾക്ക് ആട്ടക്കഥയിലുള്ള പ്രാധാന്യമെന്ത്?

21. 'കല്യാണസൗഗന്ധികം' എന്ന പേര് തുള്ളൽകൃതിക്ക് എത്രത്തോളം അനുയോജ്യമാണെന്നു പരിശോധിക്കുക.

22. കൃഷ്ണനാട്ടം, രാമനാട്ടം - കുറിപ്പെഴുതുക.

(8 × 2 = 16 Marks)

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

23. ''നല്ലതു നല്ലതിനോടേ ചേരണം, തവ

വല്ലഭനപരൻ തുല്യൻ നഹി നൂനം'' - സന്ദർഭവും സാരസ്യവും വിശദമാക്കുക.

24. ''ഇത്ഥം പറഞ്ഞുഗദയും വഹിച്ചുകൊ-
ണ്ടുത്ഥാനവും ചെയ്തു ഗന്ധവാഹാത്മജൻ'' - പറഞ്ഞതെന്തെല്ലാം?

25. ''എടാ, കണ്ണില്ലാത്ത ദൈവമേ നീ എന്റെ മൺകുടിൽ തകർത്തുകളഞ്ഞല്ലോ'' - ഈ വിലാപത്തിന് നാടകത്തിലുള്ള പ്രാധാന്യം വിലയിരുത്തുക.

26. ലേബർ റൂം നാടകത്തിലെ ഗർഭിണികളായ മൂന്നു സ്ത്രീകളും സ്ത്രീത്വത്തെ അടയാളപ്പെടുത്തുന്നതെങ്ങനെ?

27. ''അർണ്ണവം തന്നിലല്ലോ നിമ്നഗ ചേർന്നു ഞായം
അന്യഥാ വരുത്തുവാൻ കുന്നു മുതിർന്നിടുമോ''
- ആശയഭംഗി വ്യക്തമാക്കുക.

28. നാടകവും തിരക്കഥയും തമ്മിലുള്ള മൗലികമായ വ്യത്യാസങ്ങൾ അടയാളപ്പെടുത്തുക.

29. ''കഥാപാത്രസൃഷ്ടിയിൽ ഉണ്ണായിവാര്യർ പുലർത്തുന്ന സൂക്ഷ്മതയ്ക്ക് ദൃഷ്ടാന്തമാണ് ഹംസം'' നിരൂപിക്കുക.

30. ''ബാക്കിയെല്ലാക്കളിക്കും തോറ്റാ. പിന്നേം കളിക്കാം. ഗുസ്തീല് ഒരിക്കെ അടിപെട്ടാ പിന്നെ പിടിക്കാൻ ഗോദാ കിട്ടുകേല്ലാ!''- സന്ദർഭം വിശദമാക്കുക.

31. ''വ്യക്തിത്വവും എല്ലുറപ്പുള്ളതുമായ കഥാപാത്രങ്ങളാണ് ഭഗ്നഭവനം നാടകത്തിലുള്ളത്'' നിങ്ങൾ ഈ അഭിപ്രായത്തോടു യോജിക്കുന്നുവോ?

(6 × 4 = 24 Marks)

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

32. നളചരിതം ആട്ടക്കഥയുടെ സവിശേഷതകൾ പാഠഭാഗം മുൻനിർത്തി ഉപന്യസിക്കുക.

33. വനത്തിലേക്കുള്ള ഭീമന്റെ പ്രവേശം കുഞ്ചൻ നമ്പ്യാർ അവതരിപ്പിച്ചിരിക്കുന്നതെങ്ങനെയെന്നു വിവരിക്കുക.

34. "മലയാളനാടകത്തിലെ ഒരു യുഗസംക്രമണമാണ് ഭഗ്നഭവനം" - നിരൂപിക്കുക.

35. ചലച്ചിത്രനിർമ്മിതിയിൽ തിരക്കഥയ്ക്കുള്ള പ്രാധാന്യം 'ഒരിടത്തൊരു ഫയൽവാൻ' മുൻനിർത്തി ചർച്ച ചെയ്യുക.

(2 × 15 = 30 Marks)

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(Pages : 6) **G – 2468**

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019.

First Degree Programme under CBCSS

Mathematics

Foundation Course II

MM 1221 : FOUNDATIONS OF MATHEMATICS

(2018 Admission)

Time : 3 Hours Max. Marks : 80

PART – A

All the first **ten** questions are compulsory and each carries 1 mark.

1. Construct a truth table for the compound statement $\sim(p \wedge q) \Leftrightarrow [(\sim p) \vee (\sim q)]$.

2. Write the negation statement of "If (a_n) is monotone and bounded, then (a_n) is convergent.

3. If the function $g(n, m) = n^2 + n + m$, where n and m are positive integers. Then find $g(16, 17)$.

4. Let f be the function given by $f(x) = 4x + 7$. Use the contrapositive implication to prove the statement. If $x_1 \neq x_2$, then $f(x_1) \neq f(x_2)$.

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5. Given an example of a relation which is reflexive but not symmetric and not transitive.

6. Find the slope of $x = \sec t, y = \tan t$ at $t\,\pi/3$.

7. Find the arc length of the spiral $r = e^{\theta}, 0 \le \theta \le \overline{n}$.

8. Find an equation for the ellipse with foci $(0, \pm 2)$ and major axis with end points $(0, \pm 4)$.

9. Find the norm of $v = -3i + 2j + k$.

10. Find the vector orthogonal to both of the vectors $\overline{u} = (2, -1, 3)$ and $\overline{v} = (-7,\ 2, -1)$.

(10 × 1 = 10 Marks)

PART – B

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

11. Write the four different types of negation statement of "$\forall \xi > 0 \exists N \to \forall n$, if $n \ge N$, then $\forall x$ in S, $|fn(x) - f(x)| < \xi$".

12. If x in rational and y in irrational, than prove that xy is irrational.

13. Let $S = \{x \in R, x > 0\}$. For each $x \in S$, let $A_x\left(-\frac{1}{x}, \frac{1}{x}\right)$. Find $\bigcap_{x \in S} Ax$.

14. Define a relation R on N × N by $(a, b)R(c, d)$ iff $a^d = c^d$.

    (a) Find an equivalence class with exactly two elements.

    (b) Find an equivalence class with exactly tour elements.

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15. Let $f : A \to B$ and $g : B \to C$ be two injective functions. Show that the composition $g \circ f : A \to C$ is injective.

16. Find all values of t at which the parametric curve. $x = 2\sin t, y = 4\cos t$ $(0 \le t \le 2\pi)$ has horizontal tangent line.

17. Find the polar coordinates of the point P whose rectangular coordinates are $\left(-2, -2\sqrt{3}\right)$.

18. Sketch the graph $r = \cos 2\theta$. Also verify it is symmetric or not.

19. Find the area of the region inside the cardioid $r = 2 + 2ws\theta$ and outside the circle $r = 3$.

20. Describe the surface whose equation is $2x^2 + 2y^2 + 2z^2 - 2x - 3y + 5z - 2 = 0$.

21. Find the angle between a diagonal of a cube and one of its edges.

22. Let u and v be non-zero vectors in 3 – pace, and let θ be the angle between these vectors when they are positioned so their initial points coincide. Prove that $\|u \times v\| = \|u\| \|v\| \sin\theta$.

(8 × 2 = 16 Marks)

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PART – C

Answer **any six** questions from questions 23 to 31. Each question carry **4** marks.

23. Define a new sentential connective ∇, called nor by the following truth table.

p	q	p∇q
T	T	F
T	F	F
F	T	F
F	F	F

(a) Use a truth table to show that p∇p is logically equivalent to ~ p.

(b) Complete a truth table for $(p \nabla p) \nabla (q \nabla q)$.

24. Find $\bigcup_{B\in\mathcal{B}} B$ and $\bigcap_{B\in\mathcal{B}} B$ or each collection $\mathcal{B}$.

(a) $\mathcal{B} = \left\{\left[1+1+\frac{1}{n}\right] : n \in N\right\}$,

(b) $\mathcal{B} = \left\{\left[1+1+\frac{1}{n}\right] : n \in N\right\}$,

(c) $\mathcal{B} = \{[2, x], x \in R \text{ and } n > 2\}$

(d) $\mathcal{B} = \{[0, 3], [1, 5], [2, 4]\}$.

25. Determine which of the three properties (reflexive, symmetric and transitive apply to each relation.

(a) Let S be the set of people in the school. Define R on S xRY iff "n likes y"

(b) Let R be the relation on R given by xRY iff $|x - y| \leq 2$.

26. Sketch the curve by eliminating the parameter and indicates the direction of increasing t

(a) $x = 3t - 4$, $y = 6t + 2$

(b) $x = \sec t, y = \tan t \left(\pi, t \leq 3\frac{\pi}{2}\right)$.

27. Describe the graph of the equation $x^2 - y^2 - 4x + 8y - 21 = 0$.

28. Find the total arc length of the cardioid $r = 1 + \cos\theta$.

29. Determine whether $u = \langle 4, 1, 6\rangle$ and $v = \langle -3, 0, 2\rangle$ make an a cute angle, an obtuse angle or orthogonal.

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30. Find the parametric equations of the line that satisfies the stated conditions :

(a) The line that is tangent to the circle $x^2 + y^2 = 25$ at the point $(3, -4)$

(b) The line through the origin that in parallel to the line given by $x = t, y = -1 + 4, z = 2$.

31. Sketch the graph of hyperboloid of two sheets $z^2 - x^2 \frac{y^2}{4} = 1$.

(6 × 4 = 24 Marks)

PART – D

Answer **any two** from questions 32 to 35. Each question carry **15** marks.

32. Prove the following :

(a) There exists an integer n such that $n^2 + 3\frac{n}{2} = 1$. Is this integer unique?

(b) For every real number $x > 5$, there exists a real number $y < 0$ such that $x = \frac{5y}{y+3}$.

(c) $\log_2^{-1}$ is irrational.

(d) For every positive integer $n^2 + 4n + 8$ is even.

33. (a) Define a relation R on the set of all integers Z by xRY iff $x = y = 2k$ for some integer K. Verify that R is an equivalence relation and describe the equivalence class E_5. How many distinct equivalence classes are there?

(b) Let $f : A \to B$ and $g : B \to C$ by bijective functions show that the composition $g \circ f : A \to C$ is bijective and $(g \circ f)^{-1} = f^{-1} \circ g^{-1}$.

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34. (a) Find the slope of the tangent line to the circle $r = 4\cos\theta$ at the point where $\theta = \frac{\pi}{4}$.

(b) Find the points on the cardioid $r = 1 - \cos\theta$ at which there is a horizontal tangent line, a vertical tangent line or a singular point.

35. (a) Find the equation of the plane through the points $P_1(1, 2, -1)$, $P_2(2, 3, 1)$ and $P_3(3, -1, 2)$.

(b) Determine whether the planes $3x - 4y + 5z = 0$ and $-6x + 8y - 10z - 4 = 0$ are parallel.

(c) Let $L_1 : x = 1 + 4t, y = 5 - 4t, z = -1 + 5t, L_2 : x = 2 + 8t$, $y = 4 - 3t, z = 5 + t$ be two lines. Are the lines parallel?

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 6) G – 2444

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme under *CBCSS*

Complementary Course for Physics

MM 1231.1 : MATHEMATICS II — INTEGRATION AND VECTORS

(2014-2017 Administration)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

SECTION – I

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

1. Evaluate $\int \tan^2 x \, dx$.

2. Find the position function of a particle that moves with velocity $v(t) = \cos \pi t$ along a coordinate line, assuming that the particle has coordinate s = 4 at time t = 0.

3. Suppose that a particle moves on a coordinate line so that its velocity at time t is $v(t) = |t-3| \; m/s$. Find the displacement of the particle during the time interval $0 \le t \le 5$.

4. Find the average value of the function $f(x) = \sqrt{x}$ over the interval [1,4].

P.T.O.

5. What do you mean by Surface of revolution?

6. A particle move along a circular path in such a way that its x and y coordinates at time t are $x = 2\cos t$, $y = 2\sin t$. Find the speed of the particle at time t.

7. Find the slope of the line in 2-space that is represented by the vector equation $r(\vec{t}) = (1-2t)\,\hat{i} - (2-3t)\,\hat{j}$.

8. Find a unit vector $\vec{u}$ that is normal at P(1, –2) to the level curve of $f(x,y) = 4x^2 y$ through P.

9. Define inverse square field.

10. If $\phi(x,y) = \frac{x^2}{2} + \frac{y^2}{2}$ is a potential function of the vector field $\vec{F}(x, y) = x\,\hat{i} + y\,\hat{j}$, find $\int_{(0,0)}^{(1,1)} \vec{F} \cdot d\vec{r}$.

(10 × 1 = 10 Marks)

SECTION – II

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

11. Find the equation of the curve that satisfies the following conditions: At each point (x, y) on the curve, y satisfies the condition $\frac{d^2y}{dx^2} = 6x$; the line $y = 5 - 3x$ is a tangent to the curve at the point where $x = 1$.

12. A penny is released from rest near the top of the time Empire State Building at a point that is 1250 ft above the ground. Assuming that the free-fall model applies, how long does it take for the penny to hit the ground, and what is its speed at the time of impact.

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13. Find the total area between the curve $y = 1 - x^2$ and the x– axis over the interval [0, 2].

14. A projectile fired downward from a height of 112 *ft* reaches the ground in 2 s. What is its initial velocity.

15. Find the volume of the solid that is obtained when the region under the curve $y = \sqrt{x}$ over the interval [1, 4] is revolved about the x- axis.

16. If $\vec{r} = x\,\vec{i} + y\,\vec{j}$, show that $\nabla r = \frac{\vec{r}}{r}$ where $r = \sqrt{x^2 + y^2}$.

17. Use double integral to find the volume under the surface $z = 3x^3 + 3x^2y$ over the rectangle R = [1, 3] × [0, 2].

18. Use polar coordinates to evaluate $\iint_R \frac{1}{1 + x^2 + y^2}\, dA$, where R is the sector in the first quadrant bounded by $y = 0$, $y = x$ and $x^2 + y^2 = 4$.

19. A bug, starting at the reference point (1, 0, 0) of the curve $\vec{r} = \cos t\,\hat{i} + \sin t\,\hat{j} + t\,\hat{k}$ walks up the curve for a distance of 10 units. What are the bug's final coordinates.

20. Find the curvature of the smooth curve $r(\vec{t}) = e^t\,\hat{i} + e^{-t}\,\hat{j} + t\,\hat{k}$ at the point t = 0.

21. Find the directional derivative of $f(x, y, z) = x^2y - yz^3 + z$ at the point (1, –2, 0) in the direction of the vector $\vec{a} = 2\hat{i} + \hat{j} - 2\hat{k}$.

22. Find the divergence and the curl of the vector field $\vec{F}(x, y, z) = x^2y\hat{i} + 2y^3z\,\hat{j} + 3z\,\hat{k}$.

(8 × 2 = 16 Marks)

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SECTION – III

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

23. A car traveling 60 *mi/h* along a straight road decelerates at a constant rate of 10 ft/s^2.

    (a) How long will it take until the speed is 45 *mi/h*

    (b) How far will the car travel before coming to a stop.

24. Sketch the region enclosed by the curves $y = x^2$, $y = \sqrt{x}$, $x = \frac{1}{4}$, $x = 1$ and find its area.

25. Find the flux of the vector field $\vec{F}(x, y, z) = z\hat{k}$ across the outward-oriented sphere $x^2 + y^2 + z^2 = a^2$.

26. Evaluate $\int_1^3 \int_0^{\ln x} x \, dy \, dx$ by changing the order of integration.

27. Use spherical coordinates to find the volume of the solid within the cone $\phi = \frac{\pi}{4}$ and between the spheres ρ = 1 and ρ = 2.

28. Suppose a particle moves along the parabola y = x2 with constant speed of 3 units per second. Find the normal scalar component of acceleration as a function of x.

29. A heat-seeking particle is located at the point (2, 3) on a flat. metal plane whose temperature at a point (x, y) is T(x, y) = $10 - 8x^2 - 2y^2$. Find an equation for the trajectory of the particle if it moves continuously in the direction of maximum temperature increase.

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30. Evaluate $\int_C 2xy\,dx + (x^2 + y^2)dy$ along the circular are C given by $x = \cos t,\ y = \sin t\ (0 \le t \le \pi/2)$.

31. Find the work done by the force field $\vec{F}(x, y) = x^3 y\,\hat{i} + (x - y)\,\hat{j}$ on a particle that moves along the parabola $y = x^2$ from (–2.4) to (1, 1)

(6 × 4 = 24 Marks)

SECTION – IV

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

32. (a) Find the area of the region enclosed by $x = y^2$ and $y = x - 2$, integrating with respect to x. (7)

(b) Find the area of the surface generated by revolving the curve, $x = y^3$ between $y = 0$ and $y = 1$ about the y–axis. (8)

33. (a) Evaluate $\iiint_G xyz\,dV$ where G is the is the solid in the first octant that is bounded by the parabolic cylinder $z = 2 - x^2$ and the plane s $z = 0$, $y = x$ and $y = 0$. (8)

(b) A bus has stopped to pick up riders, and a woman is running at a constant velocity of 5 m/s to catch it. When she is 11 m behind the front door the bus pulls away with a constant acceleration of 1 m/s^2. From that point in time, how long will it take for the woman to reach the front door of the bus if she keeps running with a velocity of 5 m/s. (7)

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34. (a) Find the mass of a thin wire shaped in the form of the circular arc $y = \sqrt{9 - x^2}$ $(0 \le x \le 3)$ if the density function is $\delta(x, y) = x\sqrt{y}$. (7)

(b) Verify Green's theorem for $f(x,y) = y^2, g(x,y) = x^2$ and C is the square with vertices (0,0), (1,0), (1, 1) and (0, 1) oriented counterclockwise. (8)

35. Verify Stokes' Theorem for the vector field $\vec{F}(x,y,z) = 2z\hat{i} + 3x\hat{j} + 5y\hat{k}$, taking a to be the portion of the paraboloid $z = 4 - x^2 - y^2$ for which $z \ge 0$ with upward orientation, and C to he the positively oriented circle $x^2 + y^2 = 4$ that forms the boundary of σ in the xy— plane.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 6) **G – 2514**

Reg. No. : .....

Name : .....

Second Semester B.Com. Degree Examination, May 2019

First Degree Programme Under CBCSS

Core Course II : CO 1242/CX 1241/CC 1242/HM 1241

FINANCIAL ACCOUNTING

(Common for Commerce/Commerce and Tax Procedure and Practice/ Commerce with Computer Applications/Commerce and Hotel Management and Catering)

(2014 Admission – 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. Give the hire vendor's entry for repossession of goods.
2. What is Primage?
3. Where do you open the General Ledger Adjustment account?
4. How do you disclose a contingent liability in financial statements?
5. Which accounting principle is inherent in valuation of stock?
6. What is meant by closing entries?

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7. Give the full form of ASB.

8. What is Suspense account?

9. List the errors affecting two or more accounts.

10. Which is the most suitable method of depreciation for livestock?

(10 × 1 = 10 Marks)

SECTION – B

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

11. State the features of accounting principles.

12. What are the essential characteristics of instalment purchase system?

13. Distinguish between outstanding income and accrued income.

14. What is Contingent asset? Give an example.

15. State the meaning and objective of cash discount.

16. After preparing final accounts with an agreed trail balance a trader has found two mistakes; (a) purchase book had been overcast by Rs. 1,000; (b) Rs.100 discount allowed had been debited to customer's account. Show the effect of these errors on trading and profit and loss account.

17. If the opening stock of materials is Rs. 5,000; purchases of materials is Rs. 20,000; closing stock of materials is Rs. 10,000and sales are Rs. 25,000; what is the value of raw material consumed?

18. The trail balance shows the debtors Rs. 60,000 and bad debts Rs. 10,000. If the trader further decides to write off bad debts of Rs. 2,000 and make a provision of 10 % for doubtful debts, pass the adjusting entries

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19. A Machine was purchased for Rs 30000 on 1-1-2004 and its useful life is 3 years. Compute the yearly depreciation under the sum of digit method.

20. What are features of sectional balancing system?

21. Give an equation for preparing trading account to show gross profit with imaginary figures.

22. State the main causes of depreciation. **(8 × 2 = 16 Marks)**

SECTION – C

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

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23. Briefly explain the accounting conventions.

24. Mr. X purchased a machine on hire purchase system on 1-1-2010. He paid Rs. 5,000 at spot and then three annual instalments of Rs. 5,000 each. The rate of interest was 5% per annum. Find out the cash price of the machine.

25. A machine was acquired on 1-1-2012 at a cost of Rs. 19,000, the cost installation being Rs. 1,000, it is expected that its total life will be 40000 hours. During 2012 it worked for 4000 hours and during 2013 for 2000 hours. Write up the Machinery account for 2012 and 2013.

26. Make the transfer and self balancing entries for the following :

    (a) Sold goods to Y Rs. 5,000, purchased goods from Y Rs. 500 (b) sold goods for Rs. 100 to Z, the clerk in the firm in payment of the outstanding salary to him.

27. The capital account as per the trail balance of a business of Mr. Y on 31-12-2014 showed balance of Rs. 20,000/. He had introduced Rs. 5,000 into the business on 1-7-2014. If the interest on capital is to be allowed at 10% p.a. pass entry on interest capital and show treatment of the same in final accounts of Mr. Y as on 31-12-2014.

28. A manufacturer sells away a part of the plant for Rs. 60,000 on 30th June 2014 at a profit of 20% on the book value as on 1-1-14. Depreciation is to be written off at 20% p.a. Show the plant account.

29. Give a note on containers trading account.

30. Briefly discuss the need for providing depreciation.

31. A trader maintained a provision for doubtful debts @ 5% which on 1st January 2013 stood at Rs. 1,500. His balances on 31st December 2013 and 2014 were as follows :

	31st December 2013	31st December 2014
Bade debts written off	1,800	300
Sundry debtors	20,000	6,000

Show the provision for doubtful account. **(6 × 4 = 24 Marks)**

SECTION – D

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

32. What is meant by trail balance? Discuss its main objects and limitations and also illustrate the methods of preparing a trail balance.

33. An Indian ship commenced a voyage on 1-10-2014 from Mumbai to Chennai. The details of the complete voyage to Chennai and back to Mumbai were as follows (Rs): Coal consumption 70,000, Port charges 14,000, Depreciation 40,000, Sundry expenses 4,000, Wages 8,000, Freight 4,00,000, Stores Consumed 30,000, Salaries 48,000, Ship insurance 40,000, Freight insurance 16,000. Primage 10%, Address commission 5%, Freight relating to return journey was 1,20,000 only. The accounts are closed on 31st December. The ship was on her half way back to Mumbai on the date of closing the accounts. Prepare voyage accounts up to 31-12-2014.

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34. Mr. R purchased seven trucks on hire purchase on 1-7-2012. Cash price on each truck was Rs. 50,000/. He was to pay 20% of the cash purchase price at the time of delivery and the balance in 5 half yearly instalments starting from 31-12-2012 with interest at 5% per annum. On R's failure to pay the instalment due on 30-6-2013, it was agreed that he would return 3 trucks to the vendor and remaining 4 could be retained by him. The returning price of 3 trucks was 40,500. Mr. R charges depreciation at 20% per annum. The Vendor spent Rs. 1,500 on thoroughly overhauling the trucks and sold two of them at Rs. 26,000. Show the truck and vendor's accounts in the books of Mr. R and Goods repossessed account in the books of vendor.

35. From the following balances, you are required to prepare Trading and Profit and loss account for the year ended 31-3-2015 and a balance sheet on that date after making the adjustments.

Particulars	Rs.	Particulars	Rs.
Y's Capital	2,28,800	Discounts (Dr)	1,320
Y's Drawings	13,200	Sundry Debtors	29,260
Plant and machinery	99,000	10% Loan to Mr. Z (1-4-14)	44,000
Freehold property	66,000	Cash	31,900
Purchases	1,10,000	Bills payable	5,500
Returns Outwards	1,100	Freight	9,900
Salaries	13,200	Loose tools	2,200
Stock on 1-4-14	38,500	Factory Lighting	1,100
Wages	35,200	Prov. for Doubtful Debts	880
Sundry creditors	44,000	Interest on Loan to Z	1,100
Stationery	3,300	Sales	2,31,440
Fuel	2,970	Office expenses	5,610
Bad debts	660	Furniture	5,500

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Adjustments :

(a) Stock on 31-3-15 Rs. 72,600

(b) Depreciate Plant, Furniture and property @ 331/3%, 10% and 5% respectively.

(c) Loose tools are to be valued at 1760.

(d) Further bad debts to be written off 600 and maintain a provision for doubtful debts at 5% of debtors.

(e) A new machine was installed during the year costing Rs. 15400/, but it was not recorded as no payment was made. Wages Rs. 11,00/on installation of it was debited to wages account.

(2 × 15 = 30 Marks)

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(Pages : 7) G – 2277

Reg. No. : .....

Name : .....

Second Semester B.A./B.Sc./B.Com. Degree Examination, May 2019

First Degree Programme Under CBCSS

Language Course IV (ENGLISH II)

(Common for B.A./B.Sc. (EN 1212.1), B.Com. (EN 1211.2) & Career Related 2 (a) (EN 1211.3))

MODERN ENGLISH GRAMMAR AND USAGE

(2013 Admission Onwards)

St. Xavier's College

Time : 3 Hours Max. Marks : 80

I. Answer **all** questions :

1. Most children below ten play happily with colourful toys. (Identify the predicate)
2. She likes sweets. (change into negative)
3. Solomon was the wisest of all men. (add a question tag)
4. I haven't done ———— work so far. (use 'some' or 'any')
5. The Base-ball is a very popular game in America. (correct the sentence)
6. The train left the platform before I reached. (correct the sentence)
7. Spain is ———— European country (use 'a' or 'an')
8. To solve this problem is difficult (begin with 'it')

P.T.O.

9. Many a passenger _____ lost his luggage. (use the correct form _____ has/have)

10. The former part of the film is more interesting than the _____ (later/latter)

(10 × 1 = 10 Marks)

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

11. Convert the following into a complex sentence.

(a) His absence is due to illness.

(b) Seeing the policeman, the thief ran away.

12. Change into simple sentence.

(a) It is a matter that deserves attention.

(b) Dogs that bark do not always bite.

13. Change into affirmative :

(a) How terrible it is !

(b) What a fuss you make !

14. Correct the following sentences :

(a) He said to me to complete the work.

(b) The leopard attacked on six villagers.

15. Change the voice :

(a) They made her apologize.

(b) They found him guilty.

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16. Frame a question to get the underlined word as answer :

(a) He goes to <u>church</u> everyday.

(b) I met <u>her</u> in the afternoon.

17. Change into comparative :

(a) The elephant is the strongest animal on land.

(b) Kovalam is the most beautiful beach.

18. Add a suitable question tag :

(a) Honesty is the best policy ————————?

(b) They didnot lose their way, ————————?

19. Write the 's' genitive version of the following :

(a) Visit of the President.

(b) The house of Mr. John.

20. Rearrange the jumbled words into meaningful sentence :

(a) was/dancer/painter/the/once/a

(b) jumped/bus/he/off/the.

21. Replace the underlined words with an adverb.

(a) She can speak French <u>in a fluent manner</u>.

(b) He finished the work <u>in a quick fashion</u>.

22. Use the appropriate articles :

(a) The car is going at fifty miles ———————— hour.

(b) He reads ———————— Bible everyday.

(8 × 2 = 16 Marks)

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III. Answer any **six** of the following as directed.

23. Complete the following sentences using the correct form of the tenses :

A : Hello Sir, what can I – (do) for you?

B : I _____ (look) for a good bicycle.

A : There are many new models. Have a _____ (look)

B : I want one which _____ (give) a smooth run.

A : Then take this one with a low cost.

B : How much will it cost?

A : Only 2000 Rupees.

B : All right. I _____ (come) in the evening to purchase it.

A : Thank you sir.

24. Use the correct forms of the words given in brackets.

I was (read) a book when I (hear) a knock on the door. (see) nothing. I (go) on reading the book.

25. Rewrite the following sentences using the correct prepositions :

(a) The meeting started _____ 5 p.m.

(b) He goes to office _____ Bus.

(c) He beat me _____ a stick.

(d) Here comes the bus that you are waiting _____

(e) India became a Republic _____ 1950.

(f) Gandhiji was born _____ 2nd October 1869.

(g) It rained _____ morning till evening yesterday.

(h) I want your reply _____ a week.

26. Rewrite the following conversation in indirect speech :

"I am acquainted with your name" , said Kirilov courteously.

"I have seen it in print, even in the soviet union".

"I feel flattered", said Emily.

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27. Correct the following sentences :

(a) The letter reached us only very lately.

(b) They were awaiting for our reply.

(c) He drove very fastly.

(d) The school principal decided to give him capital punishment.

28. Complete the following sentences using suitable modals :

(a) You _____ not enter the class without apologizing to the principal (shall/may/would)

(b) When I was living with my grandma she _____ tell stories and fables at bed time. (shall/would/might)

(c) To become a good driver I _____ practice every (should/might/could)

(d) Our team _____ win, if they tried. (can/could/would)

29. Rewrite the following passage underlining the determinatives, quantifiers and possessives in it :

(a) Have you got the book?

(b) The teacher liked her essay.

(c) This research requires expensive equipment.

(d) There was no debate and the senate passed all the bills.

30. Fill up using articles :

(a) _____ large number of cars were parked outside _____ school.

(b) _____ police arrested _____ one-eyed man.

(c) There was _____ ugly scar on _____ face of _____ prisoner.

(d) We always admire _____ brave.

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31. Rewrite the following providing the correct punctuations :

trains buses autorickshaws cars are not running due to the bandh.

(6 × 4 = 24 Marks)

IV. Answer any **two** of the following :

32. Expand the proverb "united we stand ! Divided we fall !" .

(Answer in about two or three pages)

33. Write a short essay on "India : My country".

(Answer in about two to three pages)

34. Write a precis of the following passage :

There is a false idea that a man must live up to his position. It is said that one's house, furniture, and dress should inform the world of one's rank. This idea is foolish. Throw it aside. Find out what you want, and spend money on that; find out what you do not care about, and spend nothing on such things. Find out by practical tests what you really want and enjoy. A man who has not experienced ups and downs, a man who has not been forced to live more cheaply than in former times, has still his education to begin. Let the experiment be made. He will find to his surprise that he has been eating more than was necessary; that the cheap lodging, the rough clothes, the plain food, give him as much pleasure as the costly things that he had previously enjoyed.

The happy man is he who lives wholly in himself. He does what he wishes and not what is thought proper by others. He buys what he wants for himself and not what others expect him to buy. He works at what he believes he can do well and not what will bring him money or favour. However poor he may be, he is always open handed to his friends. If he has more now, he does not care to save, for he knows he can do with less. He shares his sovereign or shilling with a friend. Where do beggars usually go? Not to the great houses where people are rolling in wealth, but to the doors of poor men who have scarcely enough to meet their own needs. (277 words)

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35. Arrange the given sentences in the proper order :

(Hints : First sentence and the last sentence are in the correct order. The rest of the sentences have to be rearranged so as to give logical sense to the whole passage).

Generally, we think that 'education' refers to the study of books and what we learn in the class room visiting new places can be an enriching and educative experience. But education is not restricted to that when we hear or read that Banglore is a beautiful place, we can form only a rough picture of the city in a broad sense, education is what we gain by seeing, reading, thinking and acting. However, it is only by visiting the city that we can develop a clear understanding of its culture, language, and history. In this sense, travel is an important part of education. Travel, therefore, adds to our experience and is certainly a part of education.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 8)

G – 2517

Reg. No. : .....

Name : .....

Second Semester B.Com. Degree Examination, May 2019

First Degree Programme Under CBCSS

Core Course

FINANCIAL ACCOUNTING

(Common for CO 1241/CC 1242/CX 1241/TT 1241/HM 1241)

(2018 Admn)

St. Xavier's College

Time : 3 Hours

Max. Marks : 80

SECTION – A

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

1. What is accounting?
2. What is a trial balance?
3. For what purpose profit and loss account is prepared?
4. What is a closing entry?
5. What is primage?
6. What is short sale?
7. What is the book of prime entry?

8. What is written down value method of depreciation?

9. Write any two names of accounting concepts.

10. What is Fixed Interest Bearing Securities? **(10 × 1 = 10 Marks)**

SECTION – B

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

11. What are the Errors which are not disclosed by a Trial Balance?

12. Write a note on accounting cycle.

13. Write a note on current liabilities.

14. Explain money measurement concept.

15. What is deferred revenue expenditure?

16. State whether the following are capital or revenue expenditure.

    (a) Paid a bill of Rs. 10,000 of Mr. Kumar, who was engaged as the erection engineer to set up a new automatic machine costing Rs. 20,000 at the new factory site.

    (b) Incurred Rs. 26,00O expenditure on varied advertisement campaigns under taken yearly, on a regular basis, during the peak festival season.

    (c) In accordance with the long-term plan of providing a well-equipped Labour Welfare Centre, spent Rs. 90,000 being the budgeted allocation for the year.

17. What are the features of hire purchase?

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18. Journalise the following transactions in the books of Mr. Roy

2018 April

1	He started business with a capital of - Plant Rs. 10,000, Bank Rs. 8,000, Stock Rs. 12,000
2	Bought furniture for resale Rs. 5,000
3	Bought furniture for Office decoration Rs. 3,000
4	Paid rent out of personal cash for Rs. 2,000
5	Sold furniture out of those for resale Rs. 6,000
6	Paid Salary to Mr. X for Rs. 1,200

19. On 12th June, 2017 fire occurred in the premises of a paper merchant. Most of the stock were destroyed, cost of stock salvaged being Rs. 11,200. In addition, some stock were salvaged in a damaged condition and its value in that condition was agreed at Rs. 10,400. From the books of account the following particulars were available :

(a) The stock at the close of account on 31st December, 2016 was valued at Rs. 83.500.

(b) The purchase from 1.1.15 to 12.6.17 amounted to Rs. 1,12,000 and sales during that period amounted to Rs. 1,54,000.

On the basis of accounts for the past three years it appears that the firm earns on an average gross profit of 25% on sales. Stock for Rs. 60,000 has been insured. Compute the amount of the claim.

20. Write notes on (a) Cum dividend or interest (b) ex dividend or interest

21. What are the Advantages of Straight-Line Depreciation?

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22. On 31st march 2018 Sethu purchased for cash from Ravi four 6% Rs. 100 Debentures of M ltd at Rs. $110\frac{1}{2}$% Ex interest : interest being payable on 1st June and 1st December each year. How will you record the transaction in the books of Ravi if each party had to pay bank commission of 25 paise percent?

(8 × 2 = 16 Marks)

SECTION – C

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

23. What are the objectives of accounting?

24. Explain the basic concepts of accounting.

25. On 1.1.2011 a machine was purchased for Rs. 1,00,000 and Rs. 50,000 was paid for installation. Assuming that the rate of depreciation was 10% on Reducing Balance Method, calculate amount of depreciation upto 31.12.2013.

26. M.M. Mariee a ship Voyaged from Mumbai to London and back on 31st March 2018 on which date the accounts was closed the ship was on her half way back to Mumbai from London. The details of the voyage were as under.

Freight - Mumbai to London Rs 1,00.000

London to Mumbai 60,000

Coal consumption 20,000

Stores consumed 15,000

Port charges Rs 10,000

Salaries of crev 17,000

Depreciation 16,000

Insurance of ship for the voyage 20,000

Primage 10% and Address commission 5%

Prepare voyage account upto 31st March 2018.

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27. Prepare an Accounting Equation from the following transactions in the books of Mr. X for January, 2018 :

1 Invested Capital in the firm Rs. 20,000

2 Purchased goods on credit from Das & Co. for Rs. 2,000

4 Bought plant for cash Rs. 8,000

8 Purchased goods for cash Rs. 4,000

28. The value of insurance policy for the loss of stock is Rs. 1,00,000. Stock on hand on the date of fire is Rs. 1,40,000 out of which stock destroyed is estimated to be Rs. 70,000. What should be the amount claim to be admitted by the insurance company?

29. On 1st April. 2011, Som Ltd. purchased a machine for Rs. 66,000 and spent Rs. 5,000 on shipping and forwarding charges, Rs. 7,000 as import duty, Rs. 1,000 for carriage and installation, Rs. 500 as brokerage and '500 for an iron pad. It was estimated that the machine will have a scrap value of Rs. 5,000 at the end of its useful life which is 15 years. On 1st January, 2012 repairs and renewals of Rs. 3,000 were carried out. On 1st October, 2013 this machine was sold for Rs. 50,000. Prepare Machinery Account for the 3 years.

30. What are the differences between sinking fund method and annuity method of depreciation?

31. What is depreciation fund method? Write entries required.

(6 × 4 = 24 Marks)

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SECTION – D

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

32. X purchased a truck for Rs. 2,80,000, payment to, be made Rs. 91,000 down and 3 installments of Rs. 76,000 each at the end of each year. Rate of interest is charged at 10% p.a. Buyer depreciates assets at 15% p.a. on written down value method. Because of financial difficulties, X, after having paid down payment and first installment to the end of 1st year could not pay second installment and seller took possession of the truck. Seller, after spending Rs. 9,200 on repairs of the asset sold for Rs. 1,50,000. Show the relevant accounts.

33. Mr. A, who is a sole trader following is the trial balance as on 31 dec 2017

	Rs.		Rs.
Cash at bank	61,590	Sales	9,36,200
Cash in hand	11,800	12% bank loan	80,000
Drawings	20,000	Capital	1,60,000
Bills receivable	39,600	Bills payable	5,200
Salary	44,000	Discount received	2,400
Market value Rs. 28,000	24,000	Sundry creditors	1,26,200
Stock on 1.1.2017	1,27,360	Investment	
Land and building	80,000	Income from investment	1,980
Travelling expenses	13,800	Purchase return	7,400
Motor van	32,000		
Furniture	16,000		
Telegram	1,600		
Sundry debtors	1,28,000		
Discount allowed	3,600		
Sundry expense	37,240		
Stationary	3,200		
Bank loan interest	6,000		
Establishment	9,190		
Advertisement	2,000		
Sales return	5,000		
Purchase	6,53,400		
	13,19,380		13,19,380

Additional information

(a) Closing stock is valued at 2,40,000

(b) Maintain a reserve of 10% of debtors as reserve for debtors

St. Xavier's College

(c) Provide a reserve of 5% on sundry debtors as reserve for discount and 5% on sundry creditors

(d) Stock worth Rs. 20,000 destroyed by fire on 25.11.2017 in respect of which the insurance company admitted the claim only Rs. 15,000

(e) The manager of the business is entitled to get a commission of 10% of net profit after calculating such commission

(f) Charge depreciation 2.5% on land and building. 10% on furniture, 20% on motor van

(g) Salary paid in advance 3000.

Prepare a trading and profit and loss account on 31 Dec 2017 and balance sheet on that date.

34. Prepare Journal and ledger

2018
May

1. Mr. N. started business with cash Rs. 5,000, stock Rs. 3,000, Furniture Rs. 2,000.

2. Purchased goods from Mr. Y for Rs. 3,000.

3. Paid expenses Rs. 200.

4. Paid Mr. Y on account Rs. 1,000.

5. Sold goods to Mr. T. for Rs. 4,000.

6. Paid wages Rs. 800.

7. Received from Mr. T in full settlement of his account Rs. 3,950.

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35. On 1st April 2016 Janaki Ltd. had Rs. 3.00,000 6% Government stock at Rs. 94 (face value Rs. 100 each). Interest is payable half-yearly on 31st March and 30th September. The company sold Rs. 90,000 of the stock at Rs. 95 ex-interest on 1st June and purchased Rs. 72,000 stock at Rs. 97 cum -interest on 1st September. A further purchase of Rs. 36,000 stock was made on 1st December at Rs. 98 ex-interest. Draw up 6% Government Stock Account in the Investment Ledger of the company for the year ended 31st March. 2017. Ignore brokerage and income tax. The stock was quoted at Rs. 96 at the Stock Exchange on that date.

(2 × 15 = 30 Marks)

St. Xavier's College

(Pages : 4)

Reg. No. : .....

Name : .....

G – 2441

Second Semester B.Sc. Degree Examination, May 2019

First Degree Programme under CBCSS

Mathematics

Foundation Course II

MM 1221 : FOUNDATIONS OF MATHEMATICS

(2014-2017 Admissions)

Time : 3 Hours

Max. Marks : 80

PART – A

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

1. Show that $a \equiv b \pmod{1001}$ implies $a \equiv b \pmod{7}$.

2. Is {1 , 3, 5, 7, 9, 11, 13} is a complete set $\mathbb{Z}/7\mathbb{Z}$.

3. Find the order of 2 modulo 7.

4. State Euler's theorem.

5. Find the intervals on which, $f(x) = x^3 - 3x^2 + 1$ is concave up and downwards.

6. State the Extreme value theorem.

7. Define definite integral of a function f.

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8. Find the inverse of $y = \sqrt{3x^2 - 2}$..

9. Evaluate $\int_1^{-\infty} \frac{dx}{x^2}$.

10. Find the polar co-ordinates of the point whose rectangular co ordinates are $(-2, 2\sqrt{3})$.

(10 × 1 = 10 Marks)

PART – B

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

11. Prove that, if $\alpha \equiv b (\text{mod } r)$ and $a \equiv b \pmod{s}$, then $a \equiv b (\text{mod } [r,s]$.

12. Show that in $\mathbb{Z}/m\mathbb{Z}$, [a] is unit if and only if $(a, m) = 1$.

13. Define the terms in Trial division : (a) Wheel (b) Spokes.

14. State Fermat's theorem in terms of congruence classes and in terms of divisibility.

15. Find the points of inflection of x^4.

16. Find the absolute extrema of $f(x) = 6x^{\frac{3}{4}} - 3x^{\frac{1}{3}}$ on [-1, 1].

17. Evaluate $\int \frac{\cos x}{\sin^2 x} dx$.

18. Find the volume of the solid generated by revolving the region enclosed by the curves $y = \sqrt{x}, y = 2, y = 0$ about the y-axis.

19. Solve $\frac{e^x - e^{-x}}{2} = 1$ for x.

St. Xavier's College

20. Evaluate $\lim_{x \to 0+} \left(\frac{1}{x} - \frac{1}{\sin x} \right)$.

21. Find the area enclosed in first quadrant by the cardioid $r = 1 - \cos \theta$.

22. Express $r = 2 + \cos \frac{5\theta}{2}$, parametrically.

(8 × 2 = 16 Marks)

PART – C

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

23. Show that $2^{340} \equiv 1 \pmod{341}$.

24. Show that if p is a prime and a is not divisible by p, then the order of a modulo p divides $p - 1$.

25. Find the order of [2], [3], [4], [5] in $\mathbb{Z}/7\mathbb{Z}$.

26. Find the absolute the extrema of $f(x) = \frac{1}{x^2 - x}$ on (0, 1)

27. Find the volume of the right pyramid whose altitude is h and whose base is a square with sides of length a.

28. Find the length of the curve $y = x^{\frac{3}{2}}$ from (1,1) to (2,2\ $\sqrt{2}$).

29. Prove that $\sinh^{-1} x =$ in $(x + \sqrt{x^2 + 1})$.

30. Evaluate $\int_{-\infty}^{\infty} \frac{dx}{1 + x^2}$.

31. Find the area enclosed by the rose $r = \cos 2\theta$.

(6 × 4 = 24 Marks)

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PART – D

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

32. (a) Write the round by round match schedule with 6 players.

(b) Define Euler phi function and show that $\phi(p^n) = p^n\left(1-\frac{1}{p}\right)$.

(c) Prove that if 'a' has order e (mod m), then the order of a^d modulo m is $e/(d, e)$ where (d, e) is the greatest common divisor of d and e.

33. (a) Briefly explain the encoding and decoding procedures in RSA codes.

(b) Evaluate $\int_0^2 x(x^2+1)^3\,dx$ and $\int_0^{\frac{\pi}{8}} \sin^5 2x \cos 2x\,dx$.

34. (a) Find the area of the region enclosed $x = y^2$ and $y = x - 2$ by integrating with respect to x. Verify the result by integrating with respect to y also.

(b) State Arc Length formula for parameterized curves and use it to fin the circumference of a circle of radius a.

35. (a) Evaluate $\int \frac{x^2+x-2}{3x^2-x^2+3x+1}dx$.

(b) Sketch the graph of $r = \frac{6}{z+\cos\theta}$, in polar co-ordinates.

(2 × 15 = 30 Marks)

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