SM 13

THREE YEAR U.G. DEGREE EXAMINATION, DECEMBER 2023/JANUARY 2024.

FIRST SEMESTER

General Telugu

Paper I – సాహితీ సౌరభం

Time : Three hours Maximum : 75 marks

(No additional sheet will be supplied)

విభాగం అ – (5 × 5 = 25 మార్కులు)

క్రింది పది ప్రశ్నలలో ఏవైనా 5 ప్రశ్నలకు సమాధానములు రాయండి. ప్రతి ప్రశ్నకు 5 మార్కులు.

1. క్రింది పద్యాలలో ఒక దానిని పాదభంగం లేకుండా రాయండి.

   (అ) పదలక బుద్ధి . . . . . నిర్జితాత్ములన్.

   (ఆ) హృదయములేని . . . . . ప్రముభావృతాంధసుల్.

2. క్రింది వానిలో రెండింటికి సందర్భసహిత వ్యాఖ్యలు రాయండి.

   (అ) వార్తయందు జగము వర్తిల్లుచున్నది.

   (ఆ) భోజనము బెట్టు వానికి భుక్తి లేదు.

   (ఇ) జరుపసాగె బ్రహ్మచర్య దీక్ష.

   (ఈ) కృతము దలంచి ప్రాణములు విడుతురనిన్.

3. క్రింది వానిని విడదీసి సంధి పేర్లు రాయండి.

   (అ) రాజాన్వయము

   (ఆ) జన్మమెత్తి

   (ఇ) ఇల్లుసేరి

   (ఈ) మదోన్మత్తి

   (ఉ) అభ్యంతరము

4. క్రింది వానికి విగ్రహవాక్యాలు రాసి, సమాసాల పేర్లు రాయండి.

(అ) అఖిలజనులు

(ఆ) ధనధాన్యములు

(ఇ) నాల్గుపడగలు

(ఈ) రాజకృత్యములు

(ఉ) సారమతి

5. క్రింది అలంకారాలలో ఒక దానికి లక్ష్యలక్షణ సమన్వయం చేయండి.

(అ) ఉత్ప్రేక్ష

(ఆ) స్వభావోక్తి

(ఇ) అతిశయోక్తి

6. క్రింది పద్యాలకు ఒక దానికి లక్ష్యలక్షణ సమన్వయము చేయండి.

(అ) శార్దూలము

(ఆ) ద్విపద

(ఇ) ఆటవెలది

7. గబ్బిలం కావ్యములో జాషువా వర్ణించిన పంచముని దుస్థితిని వివరించండి.

8. అలరాస పుట్టిళ్ళు సందేశాన్ని తెల్పండి.

9. సంఘసేవ గురించి సీతారామారావుగారి ఆలోచనలను తెల్పండి.

10. సి.పి. బ్రౌన్.

విభాగం ఆ – (5 × 10 = 50 మార్కులు)

క్రింది ఐదు ప్రశ్నలకు వ్యాసరూప సమాధానములు రాయండి. ప్రతి ప్రశ్నకు 10 మార్కులు.

11. క్రింది పద్యాలలో ఒక దానికి ప్రతి పదార్థ తాత్పర్యాలు రాయండి.

(అ) బహుధనధాన్య సంగ్రహము బాణవిరాసనయోధ వేరసం

గ్రహము నిరంతరాంతరుదకంబులు ఘాసర సేంధ నౌఘసం

గ్రహము ననేక యంత్రములుఁగల్గి యసాధ్యములై ద్విషద్ధయా

వహులగుచుండ నొప్పునె భవత్పరిరక్ష్యములైన దుర్గముల్

(ఆ) ప్రతిమల పెండ్లి సేయుటకు వందలు వేలు వ్యయించుఁగాని దుఃఖితమతులైన పేదల పకీరుల శూన్యములైన పాత్రలన్
మెతుకు విదల్పదీ భరతమేదిని ముప్పది మూఁడు కోట్ల దే
వత లెగవడ్డ దీశమున భాగ్య విహీనుల క్షుతులాఱునే

12. (అ) రాజులు ఆచరించవలసిన రాజనీతిని వివరించండి.

లేదా

(ఆ) జాషువా కావ్యాల విశిష్టతను, కవితా లక్షణాలను తెల్పండి.

13. (అ) అలరాస పుట్టిళ్ళు కథలోని సందేశాన్ని వివరించండి.

లేదా

(ఆ) సుబ్బారాయుడు మనస్తత్వాన్ని విశ్లేషించండి.

14. (అ) అసమర్థుని జీవయాత్ర నవలా నేపథ్యాన్ని వివరించండి.

లేదా

(ఆ) సీతారామారావు వ్యక్తిత్వాన్ని విశ్లేషించండి.

15. (అ) సి.పి. బ్రౌన్ సాహితీ సేవను విశదీకరించండి.

లేదా

(ఆ) మీ పాఠ్యభాగమాధారంగా సి.పి. బ్రౌన్ వ్యక్తిత్వాన్ని తెల్పండి.

SC 102

U.G. (Honours) DEGREE EXAMINATION, DECEMBER 2023/JANUARY 2024.

FIRST SEMESTER

Life Skills Courses

LEADERSHIP SKILLS

Time : Two hours | Maximum : 50 marks

(No additional sheet will be supplied)

Answer any FIVE of the Following. (5 × 10 = 50)

1. Write about the Explanations of Human Personality.
2. What are the Big five traits of personality?
3. Examine the key elements of Psychodynamic Explanations.
4. Define the methods of personality assessment.
5. What exercises build Self-Confidence?
6. Explain the importance of personality skills.
7. Write about the types of Leaders with examples.
8. Suggest ways of Leading Efficient Teams.
9. Define the Leadership skills of Mahatma Gandhi.
10. What lessons in leadership. Can you learn from J. R. D. Tata?

SM 10

B.A./B.Sc./B.Com./B.B.A. DEGREE EXAMINATION, DECEMBER 2023/JANUARY 2024.

FIRST SEMESTER

A COURSE IN COMMUNICATION AND SOFT SKILLS

(w.e.f. 2023-24 Admitted Batch)

Time : Three hours | Maximum : 70 marks

(No additional sheet will be supplied)

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1. Answer any TWO of the following questions. (2 × 5 = 10)

   (a) Why is listening important?

   (b) Explain the barriers to listening.

   (c) What are the traits of a good listener?

   (d) Enumerate and explain the various types of listening.

2. Answer any TWO of the following questions. (2 × 5 = 10)

   (a) Describe various vowel sounds of English.

   (b) What are the different kinds of intonation?

   (c) What is contrastive word stress? Explain it with examples.

   (d) Identify the sound of the underlined part of the following words.

      (i) Character

      (ii) Foot

      (iii) Toil

      (iv) Phonetics

      (v) Father

3. Answer any TWO of the following questions. (2 × 5 = 10)

   (a) Mention the six traits that a leader should have, according to A.P.J. Kalam.

   (b) What does Barack Obama say about his victory in the American presidential election?

   (c) How does Dr. A.P.J. Abdul Kalam plan for an energy-independent India?

   (d) What were the goals that Obama wanted to achieve?

4. Answer any TWO of the following questions. (2 × 5 = 10)

(a) What are the benefits of "SWOC" analysis?

(b) Explain the importance of a positive attitude. How can we develop it?

(c) Describe the qualities needed to develop emotional intelligence.

(d) List the constituents of interpersonal skills.

5. Answer any TWO of the following questions. (2 × 5 = 10)

(a) What are the different ways of greeting?

(b) Introduce yourself as the host for the College Day Celebrations.

(c) Introduce your friend to your sister.

(d) How do you greet your friend who is going abroad for higher studies?

6. Change the following sentences as directed:

(a) Fill in the blanks with the appropriate Articles: (4 × 1 = 4)

(i) _____ paper is made from trees.

(ii) Bhanu is _____ young research scholar.

(iii) _____ Honesty is the best policy.

(iv) Raj is _____ union leader.

(b) Fill in the blanks with appropriate Verb forms: (4 × 1 = 4)

(i) The news _____ (be) unclear.

(ii) Every boy and girl _____ (attend) the function.

(iii) My daughter _____ (write) a book on medicine now.

(iv) The Collector _____ (meet) the flood victims yesterday.

(c) Fill in the blanks with suitable Prepositions: (4 × 1 = 4)

(i) Many people took advantage _____ the low prices offered by the new shop.

(ii) The Chief Minister was thankful _____ everyone who helped in the campaign.

(iii) This site is suitable _____ the factory.

(iv) Shyam goes to college _____ foot.

(d) Fill in the blanks with the appropriate Question Tags: (4 × 1 = 4)

(i) Let's go to the cinema, _____?

(ii) Close the window please, _____?

(iii) Don't blame others for everything, _____?

(iv) I am very happy now, _____?

(e) Write English words for the following phonetic transcriptions: (4 × 1 = 4)

(i) /tʃɛrɪʃ/

(ii) /meɪl/

(iii) /əˈpɪə/

(iv) /ˈrɪð(ə)m/

SC 103

THREE YEAR B.A /B.Sc./B.Com./B.B.A. (CBCS) DEGREE EXAMINATION, DECEMBER 2023/JANUARY 2024.

FIRST SEMESTER

Life Skills Course

ANALYTICAL SKILLS

(w.e.f. 2023-24)

Time : Two hours | Maximum : 50 marks

(No additional sheet will be supplied)

Answer any FIFTY questions. Each question carries 1 mark.

(50 × 1 = 50 marks)

1. Simplify $0.32 \times 0.32 + 0.64 \times 0.68 + 0.68 \times 0.68$

   (a) 1 (b) 0

   (c) 2 (d) 0.5

2. $\left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right)\left(1-\frac{1}{5}\right)\ldots\left(1-\frac{1}{n}\right)$ is equal to

   (a) $\frac{1}{2}$ (b) $\frac{2}{n}$

   (c) $\frac{2}{n(n+1)}$ (d) $\frac{2(n-1)}{n}$

3. Which is greater $\frac{6}{13}$ or $\frac{5}{7}$?

   (a) $\frac{6}{13}$ (b) $\frac{5}{7}$

   (c) $\frac{42}{65}$ (d) None of these

4. What decimal of an hour is a second?

   (a) 0.0025 (b) 0.0256

   (c) 0.00027 (d) 0.000126

5. Which of the following numbers divisible by 8?

   (a) 106598304 (b) 9801642

   (c) 5967013 (d) 36870521

6. What is the total of all the odd numbers from 1 to 180?

(a) 8400 (b) 8300

(c) 8200 (d) 8100

7. Find the HCF of 70 and 90

(a) 20 (b) 10

(c) 30 (d) 40

8. Find the LCM of $\frac{2}{5}$, $\frac{3}{10}$ and $\frac{6}{25}$

(a) $\frac{5}{6}$ (b) $\frac{6}{5}$

(c) $\frac{2}{5}$ (d) $\frac{5}{2}$

9. The HCF of two numbers is 12 and their difference is 12. The numbers are

(a) 66, 78 (b) 70, 82

(c) 94, 106 (d) 84, 96

10. LCM of two numbers is 120 and their HCF is 10. If one of the numbers is 75, then the other number is

(a) 15 (b) 16

(c) 17 (d) 18

11. A number is as much greater than 36 as is less than 86. Find the number?

(a) 51 (b) 41

(c) 61 (d) 71

12. 11, 13, 17, 19, 23, 29, _____.

(a) 31 (b) 33

(c) 51 (d) None of these

13. If EODGH is the code for BLADE, what is the code for CRICKET?

(a) WHNFLUF (b) FULFNHW

(c) DSJDLFU (d) ETKEMGV

14. If EARTH if coded as 41590 and PALE as 2134, what is the code for PEARL?

(a) 12345 (b) 54123

(c) 21534 (d) 24153

15. A is brother of B. C is mother of B. M is sister of C. How is M related to B?

(a) Nephew (b) Niece

(c) Aunt (d) None of these

16. Pointing towards a person, a man said to a women, "His mother is the only daughter of your father". How is the women related to that person?

(a) Daughter (b) Sister

(c) Mother (d) Wife

17. How many times in a day, are the hands of a clock in straight line but opposite in direction?

(a) 20 (b) 22

(c) 24 (d) 44

18. At what time between 9 and 10'o clock will the hands of a watch be together?

(a) 45 min past 9 (b) 50 min past 9

(c) $49\frac{1}{11}$ min past 9 (d) $45\frac{2}{11}$ min past 9

19. The calendar for the year 2021 will be the same as the year?

(a) 2027 (b) 2026

(c) 2025 (d) 2024

20. Today is Friday, after 152 days what will be the day?

(a) Monday (b) Tuesday

(c) Wednesday (d) Thursday

21. The average marks obtained by 20 students in a certain examination is 45. Find the total marks?

(a) 650 (b) 720

(c) 840 (d) 900

22. Find the average of all the prime numbers from 17 to 31.

(a) 20.8 (b) 23.8

(c) 20.5 (d) 20.4

23. Find the mean proportional between 48 and 12

(a) 27 (b) 26

(c) 24 (d) 25

24. Two numbers are in the ratio of 4:5 and the sum of these numbers is 27. Find the two numbers

(a) 12, 17 (b) 12, 16

(c) 12, 15 (d) 12, 14

25. The present age of Anitha is 6 times of Vani's age. Vani's present age is 10 years less than Anitha's age. Find the present age of Anitha?

(a) 12 (b) 13

(c) 14 (d) 15

26. Present age of Rohith is 28 years. What was his age before 9 years?

(a) 20 years (b) 18 years

(c) 17 years (d) 19 years

27. A cyclist covers a distance of 750 m in 2 min 30 sec. What is the speed in km/hr of the cyclist?

(a) 18 km/hr (b) 15 km/hr

(c) 14 km/hr (d) 16 km/hr

28. A car is running at a speed of 108 kmph what distance will it cover in 15 seconds?

(a) 45 meters (b) 55 meters

(c) 450 meters (d) cannot be determined

29. A boy goes to his school from his house at a speed of 3 km/hr. and returns at a speed of 2 km/hr. If he takes 5 hours in going and coming the distance between his house and school is

(a) 5 km (b) 5.5 km

(c) 6 km (d) 6.5 km

30. 60% of 240 = ?

(a) 144 (b) 384

(c) 180 (d) 300

31. 5% of (25% of Rs. 1600) is

(a) Rs. 5 (b) Rs. 17.50

(c) Rs. 20 (d) Rs. 27

32. A man buys a toy for Rs. 25 and sells it for Rs. 30. Find his gain percent.

(a) 10% (b) 40%

(c) 30% (d) 20%

33. Anjan sold an article for Rs. 6,000 at a loss of 25%. Find the cost price?

(a) Rs. 7,500 (b) Rs. 7,200

(c) Rs. 8,500 (d) Rs. 8,000

34. Ravi and Kavi start a business by investing Rs. 80,000 and Rs. 72,000 respectively. Find the ratio of their profits at the end of year

(a) 2 : 9 (b) 5 : 9

(c) 7 : 9 (d) 10 : 9

35. Rakesh, Dinesh and Mahesh start a business by investing Rs. 5,000, Rs. 8,000 and Rs. 12,000 respectively. At the end of year, they got the profit of Rs. 12,500, what is the share if Dinesh in profit?

(a) Rs. 4,000 (b) Rs. 4,500

(c) Rs. 6,000 (d) Rs. 7,500

36. Find the simple interest on Rs. 5200 for 2 years at 6% per annum.

(a) Rs. 622 (b) Rs. 623

(c) Rs. 624 (d) Rs. 625

37. In what time will Rs. 1,200 earn an interest of Rs. 240 at 5% per annum?

(a) 5 years (b) 4 years

(c) 3 years (d) 2 years

38. Find compound interest on Rs. 5,000 for 2 years at 4% per annum.

(a) Rs. 405 (b) Rs. 406

(c) Rs. 407 (d) Rs. 408

39. What will be the difference between simple and compound interest on a sum of Rs. 4500 put for 2 years at 5% per annum?

(a) Rs. 11 (b) Rs. 12

(c) Rs. 11.25 (d) Rs. 12.25

40. Find the amount on Rs. 15,625 for 2 years at 4% p.a.

(a) Rs. 1275 (b) Rs. 2175

(c) Rs. 16,900 (d) Rs. 19,600

41. If $3x + 4 = 10$ then x is

(a) 3 (b) 4

(c) 2 (d) 1

42. If $a : b = 2 : 3$ and $b : c = 5 : 7$ find $a : c$

(a) 21:10 (b) 15:21

(c) 14:21 (d) 10:21

43. $\frac{2}{5}$ of $\frac{1}{3}$ of $360 = ?$

(a) 48 (b) 56

(c) 60 (d) 68

44. Which ratio is least 14 : 17 or 18 : 21?

(a) 18:21 (b) 14:17

(c) 12:19 (d) None of these

45. Express 25 mps in kmph.

(a) 80 kmph (b) 85 kmph

(c) 90 kmph (d) 95 kmph

Study the following table and answer the questions.

Classification of 100 students based on the Marks obtained by them in Physics and Chemistry in an Examination.

Subject	Marks out of 50				
	40 and above	30 and above	20 and above	10 and above	0 and above
Physics	9	32	80	92	100
Chemistry	4	21	66	81	100
Average (Aggregate)	7	27	73	87	100

46. What is the different between the number of students passed with 30 as cut-off marks in Chemistry and those passed with 30 as cut-off marks in aggregate?

(a) 3 (b) 4

(c) 5 (d) 6

47. If at least 60% marks in Physics are required for pursuing higher studies in Physics, how many students will be eligible to pursue higher studies in Physics?

(a) 27 (b) 32

(c) 34 (d) 41

48. The percentage of number of students getting at least 60% marks in Chemistry over those getting at least 40% marks in aggregate, is approximately?

(a) 21% (b) 27%

(c) 29% (d) 31%

49. The number of students scoring less than 40% marks in aggregate is?

(a) 13 (b) 19

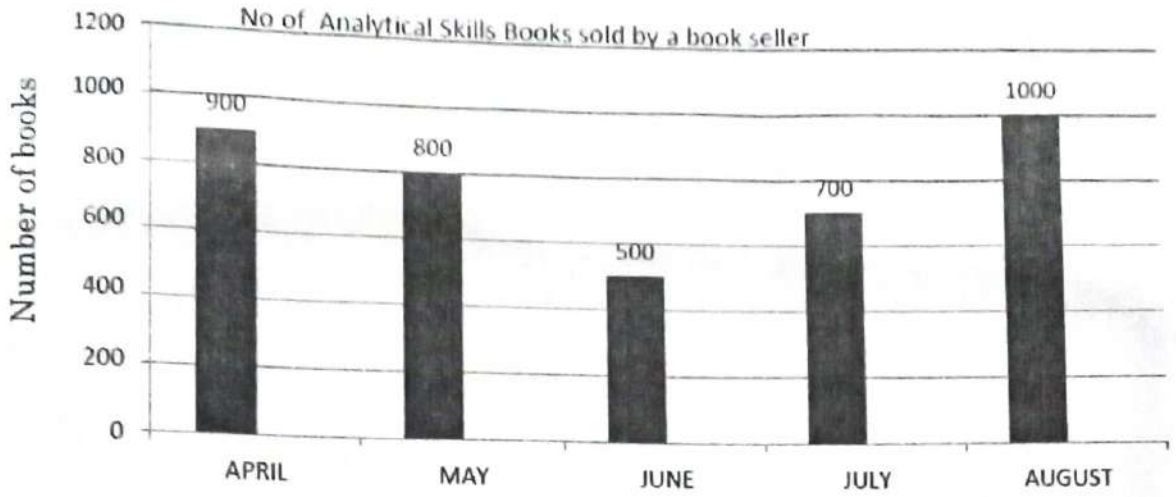
(c) 20 (d) 27

50. If it is known that at least 23 students were eligible for a Symposium on Chemistry, then the minimum qualifying marks in Chemistry for eligibility to Symposium would lie in the range?

(a) 40-45 (b) 30-40

(c) 20-30 (d) Below 20

The bar graph shows the number of copies "Analytical Skills" sold by a book seller during the period from April 2021 to August 2021.



51. What is the difference of the sale of books in April and August?

(a) 100 (b) 200

(c) 300 (d) 400

52. In which month was the sale of the book maximum?

(a) April (b) May

(c) August (d) July

53. In which month was the sale of the book minimum?

(a) July (b) June

(c) May (d) August

54. What is the total sale of the books during these five months?

(a) 3500 (b) 3700

(c) 3800 (d) 3900

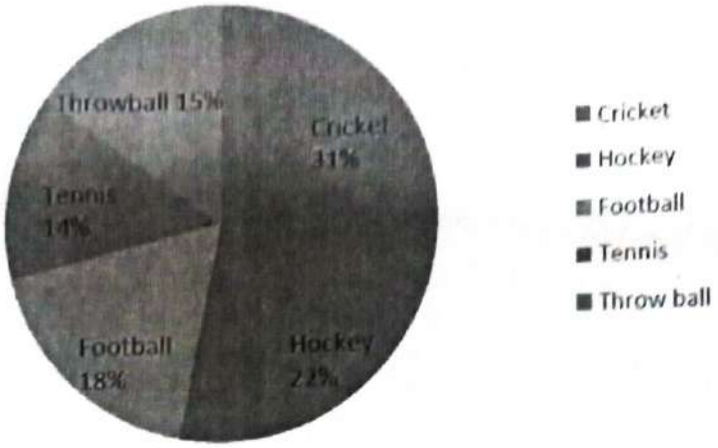
55. What is the average sale of the books during these five months?

(a) 780 (b) 790

(c) 750 (d) 720

Study the following Pie chart carefully. Pie chart shows the number of players = 3000.

Number of Players



56. How many number of players in Cricket?

(a) 900 (b) 920

(c) 930 (d) 940

57. How many players in Throw ball?

(a) 420 (b) 430

(c) 460 (d) 450

58. What is the difference between the number of players in Football and Tennis?

(a) 120 (b) 220

(c) 330 (d) 440

59. What is the average of players who are playing Tennis, Throw ball and Cricket?

(a) 900 (b) 600

(c) 800 (d) 940

60. How many players are there in Football and Hockey together?

(a) 900 (b) 920

(c) 930 (d) 940

MDC 101

THREE YEAR B.A. DEGREE EXAMINATION DECEMBER 2023/ JANUARY 2024

FIRST SEMESTER

Multidisciplinary Course

INTRODUCTION TO SOCIAL WORK

Time : Two hours Maximum : 50 marks

(No additional sheet will be supplied)

Answer any FIVE of the following

(5 × 10 = 50 marks)

1. Define how Social Work has emerged as a profession during the last century?
2. Describe the Principles of Social Work.
3. What are the major social problems in India?
4. Explain different types of Community.
5. Define the forms of community participation.
6. Describe the nature of Social Case Work.
7. What do you mean by field work?
8. Write about facilitation skills and techniques.
9. Analyse the phases of community organisation.
10. Describe the importance of field work supervision.

MDC 103

U.G.(Honours) DEGREE EXAMINATION, DECEMBER 2023 / JANUARY 2024

MULTIDISCIPLINARY COURSE

FIRST SEMESTER

INDIAN HISTORY

Time : 2 hours Maximum : 50 marks

(No additional sheet will be supplied)

Answer any FIVE of the following.

(5 × 10 = 50)

1. Discuss the first ancient history of India.
2. What is the difference between Jainism and Buddhism?
3. Analyse the Development of Science and Technology in Guptha period.
4. Describe the administration of Delhi Sultanate.
5. Write about the policies of Mohammad Bin Tughlaq.
6. What is the role of Bhakti Saints?
7. Describe the history of modern India.
8. Examine the Economic impact of British rule of India.
9. Write an essay on quit India Movement.
10. Analyse the role of Gandhiji in Indian freedom struggle.

CP 11101

B.A. DEGREE EXAMINATION, DECEMBER 2023/JANUARY 2024.

FIRST SEMESTER

HISTORY

Paper I — FUNDAMENTALS OF SOCIAL SCIENCE

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE of the following.

1. Meaning of Natural Sciences
2. Methods of Social Sciences
3. History in present society
4. Types of History
5. Social Behaviour
6. Scope of Psychology
7. Political Parties
8. Micro Economics
9. Generations of Computers
10. Fraud Techniques

SECTION B — (5 × 10 = 50 marks)

Answer any FIVE of the following.

11. Discuss the Scope of Social Sciences.

Or

12. Write about different approaches to Social Sciences.
13. Define the nature and scope of History.

Or

14. "Is History a science or an Art" — Discuss.

15. Analyse the need of psychology for present society.

Or

16. Define the importance of Social Interaction.

17. Explain the organs of state.

Or

18. Discuss various aspects of development.

19. What are the milestones of computer evolution?

Or

20. Write about the basics of Internet.

CP 12101

B.Com./B.B.A./B.C.A. DEGREE EXAMINATION, DECEMBER 2023/JANUARY 2024

FIRST SEMESTER

FUNDAMENTALS OF COMMERCE

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE questions

1. Balance of payment.
2. Define commerce.
3. Gross national product.
4. Cross elasticity.
5. Branches of accounting.
6. Accounting cycle.
7. Customs duty.
8. Types of taxes.
9. Website.
10. Data analytics

SECTION B — (5 × 10 = 50 marks)

Answer ALL questions.

Each question carries 10 marks

11. Describe the role of commerce in societal development.

Or

12. What are the functions performed by the World Trade Organisation?

13. Define national income and explain the methods of measuring the national income.

Or

14. Explain the law of demand with exceptions.

15. What are the differences between Financial Accounting, Cost Accounting and Management Accounting?

Or

16. Describe the concepts and conventions of Accounting.

17. Define tax and explain its objectives.

Or

18. What are the differences between Direct Tax and Indirect Tax?

19. What is digital marketing? Explain its advantages.

Or

20. Write a note on search engine maximisation.

CP 12102

B.Com./B.B.A./B.C.A. DEGREE EXAMINATION, DECEMBER 2023/JANUARY 2024.

FIRST SEMESTER

BUSINESS ORGANISATION

Time : Three hours Maximum : 70 marks

(No additional sheet will be provided)

PART A — (5 × 4 = 20 marks)

Answer any FIVE questions.

1. Importance of Business
2. Types of industry
3. Forms of business organizations
4. Joint stock company
5. Types of layouts
6. Optimum size
7. Business combinations
8. Nationalisation
9. History of computers
10. Types of networks

PART B — (5 × 10 = 50 marks)

Answer ALL questions. Each question carries 10 marks.

11. Describe the stages in development of a business.

Or

12. What are the characteristics of modern business?

13. What are the qualities of a successful businessman?

Or

14. Distinguish between the sole proprietorship and partnership.

15. Explain the various factors affecting the layout of a plant.

Or

16. Define plant location and explain its importance.

17. Elucidate the various causes for combining the businesses.

Or

18. What are the merits and demerits of rationalisation?

19. Define computer and draw the block diagram of computer.

Or

20. Write a note on network and security concepts.

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CP 16101 BS

THREE YEAR B.Sc. DEGREE EXAMINATION, DECEMBER 2023/JANUARY 2024

FIRST SEMESTER

Life Science Honours

INTRODUCTION TO CLASSICAL BIOLOGY

Time : Three hours

Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE questions.

1. Binomial nomenclature
2. Kinds of Pollution
3. Structure of monocot Embryo
4. Various kinds of Pollination
5. Economic Importance of Apiculture
6. Unique features of Hormones
7. Cell Cycle
8. Central dogma of molecular biology
9. Covalent bond
10. Scope of chemistry

SECTION B — (5 × 10 = 50 marks)

Answer ALL questions

11. Explain about International code of Zoological Nomenclature (ICZN).

Or

12. Write an essay on conservation of Biodiversity.

13. Describe the classification of plant kingdom.

Or

14. Explain the procedure for mushroom cultivation.

15. Give a brief account on Gametogenesis.

Or

16. Explain various types of metabolic disorders.

17. Describe the ultra structure of prokaryotic cell.

Or

18. Explain various theories explaining the origin of life on earth.

19. Write about the benefits and principles of green chemistry.

Or

20. Explain about Hydrogen bonding and Vander Waals attraction.

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CP 16102 BS

THREE YEAR B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

FIRST SEMESTER

Life Science Honours

INTRODUCTION TO APPLIED BIOLOGY

Time : Three hours

Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE questions.

1. Contributions of Edward Jenner
2. Characteristics of Archae bacteria
3. Isoelectric point
4. Functions of proteins
5. Algal bio fertilizers
6. Transgenic animals disease models
7. Gene therapy
8. Differences between Positive eugenics and negative eugenics
9. Proteomic
10. Primary data and secondary data

PART B — (5 × 10 = 50 marks)

Answer ALL questions.

11. Describe the structure of bacteria.

Or

12. Write about the types of Immunity.

13. Explain the classification of carbohydrates.

Or

14. Describe the Watson and Crick's model of DNA.

15. Give a detailed account on applications of biotechnology.

Or

16. Write an essay on restriction enzymes.

17. Describe about DNA fingerprinting.

Or

18. Give a detailed account on ELISA.

19. Explain about median what are its merits and demerits.

Or

20. Write about the virus types of biological data bases.

CP 16101 BS

THREE YEAR B.Sc. DEGREE EXAMINATION, DECEMBER 2023/JANUARY 2024

FIRST SEMESTER

Life Science Honours

INTRODUCTION TO CLASSICAL BIOLOGY

Time : Three hours

Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE questions.

1. Binomial nomenclature
2. Kinds of Pollution
3. Structure of monocot Embryo
4. Various kinds of Pollination
5. Economic Importance of Apiculture
6. Unique features of Hormones
7. Cell Cycle
8. Central dogma of molecular biology
9. Covalent bond
10. Scope of chemistry

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13. Describe the classification of plant kingdom.

Or

14. Explain the procedure for mushroom cultivation.

15. Give a brief account on Gametogenesis.

Or

16. Explain various types of metabolic disorders.

17. Describe the ultra structure of prokaryotic cell.

Or

18. Explain various theories explaining the origin of life on earth.

19. Write about the benefits and principles of green chemistry.

Or

20. Explain about Hydrogen bonding and Vander Waals attraction.

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CP 16102 BS

THREE YEAR B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

FIRST SEMESTER

Life Science Honours

INTRODUCTION TO APPLIED BIOLOGY

Time : Three hours

Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE questions.

1. Contributions of Edward Jenner
2. Characteristics of Archae bacteria
3. Isoelectric point
4. Functions of proteins
5. Algal bio fertilizers
6. Transgenic animals disease models
7. Gene therapy
8. Differences between Positive eugenics and negative eugenics
9. Proteomic
10. Primary data and secondary data

PART B — (5 × 10 = 50 marks)

Answer ALL questions.

11. Describe the structure of bacteria.

Or

12. Write about the types of Immunity.

13. Explain the classification of carbohydrates.

Or

14. Describe the Watson and Crick's model of DNA.

15. Give a detailed account on applications of biotechnology.

Or

16. Write an essay on restriction enzymes.

17. Describe about DNA fingerprinting.

Or

18. Give a detailed account on ELISA.

19. Explain about median what are its merits and demerits.

Or

20. Write about the virus types of biological data bases.

CP 16101 PS

THREE YEAR B.Sc. DEGREE EXAMINATION, DECEMBER 2023/JANUARY 2024.

FIRST SEMESTER

COURSE I – ESSENTIALS AND APPLICATIONS OF MATHEMATICAL PHYSICAL AND CHEMICAL SCIENCES

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE questions.

Each question carries 4 marks.

1. Write short notes on general form of a complex number.
2. Define and explain Cartesian form.
3. Explain the electromagnetic interactions.
4. Write short notes on Wave – particle duality.
5. Write short notes on Biomolecules.
6. What are vitamins give examples?
7. Explain food adulteration.
8. Write short notes on application of physics in semiconductor technologies.
9. Write short notes on types of networks.
10. Discuss about Fire walls.

PART B — (5 × 10 = 50 marks)

Answer ALL the following the questions.

11. (a) Write a brief note on trigonometric ratios and relations.

Or

(b) Give an account amplitude form and conversions with suitable examples.

12. (a) Explain Newtonian Mechanics and relative mechanics.

Or

(b) Write a brief note on Laws of Thermodynamics and its significance.

13. (a) Write a brief note on branches of Chemistry and its significance.

Or

(b) Give an account of Periodic Table and its properties.

14. (a) Write a brief note on Quality Control and Instrumentation.

Or

(b) Write a brief note on Environmental Monitoring.

15. (a) Give a brief account of Milestone of computer evolution.

Or

(b) Write a brief note on Network and security concepts.

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CP 16102 PS

B.Sc. DEGREE EXAMINATION, DECEMBER 2023/JANUARY 2024.

FIRST SEMESTER

COURSE II – ADVANCES IN MATHEMATICAL, PHYSICAL AND CHEMICAL SCIENCES

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE questions.

Each question carries 4 marks.

1. Explain derivative of a function.
2. Write short notes on quotient rule.
3. Explain Quantum dots.
4. Write short notes on Quantum Communication.
5. Write short notes on Chemical Pollutants.
6. Define and explain Chemical biology.
7. Write short notes on Grid integration.
8. Discuss application of biophysics.
9. Write short notes on Multiplexing.
10. Explain error detection and correction.

PART B — (5 × 10 = 50 marks)

Answer ALL the following questions.

11. (a) Explain the reduction of general equation into various forms.

Or

(b) Explain scalar multiple of a matrix.

12. (a) Write a brief note on recent advances in medical physics.

Or

(b) Discuss energy – efficient materials and devices.

13. (a) What are chemical pollutants and give their effect on ecosystem and human health?

Or

(b) Give an account of different methods of dyes removal.

14. (a) Write a brief note on Water treatment.

Or

(b) Write a brief note on Mathematical modelling to applications of renewable energy.

15. (a) Give a brief account of Signals – Analog.

Or

(b) Write a brief note on Repeater, hub, bridge and switch.

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3 MJ 10106

THREE YEAR B.A. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

Economics

ECONOMIC THOUGHT AND POLITICAL ECONOMY

(with effect from 2023-24)

Time : Three hours

Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 5 = 25 marks)

Answer any FIVE of the following.

Each question carries 5 marks.

1. Explain the key concepts of Physiocracy and its significance in economic thought.
2. Explain Vilfredo Pareto's principle and its significance in economics.
3. Outline Kenneth Arrow's contributions to general equilibrium theory and social choice.
4. Discuss Kautilya's contributions to Indian political thought.
5. What role do political parties play in development?
6. Describe Mercantilism and its main economic principles.
7. Explain about New Keynesian School.
8. What is Herbert Simon's contribution to economics?
9. Discuss Amartya Sen's views on development, democracy, and human capabilities.
10. What role non political Institutions (Bureaucracy, Judiciary) play in development?

PART B — (5 × 10 = 50 marks)

Answer any FIVE of the Following.

Each question carries 10 marks.

11. (a) What were Adam Smiths major contributions to economic theory?

Or

(b) Summarize Karl Marx's critique of capitalism and his views on class struggle.

12. (a) Describe Alfred Marshall's contributions to Neo-Classical economics and the concept of marginal utility.

Or

(b) Discuss John Maynard Keyne's main ideas on aggregate demand and its role in economic fluctuations.

13. (a) Describe Gunnar Myrdal's contributions to institutional economics and his views on development.

Or

(b) Discuss Friedrich Hayek's views on the role of information and decentralization in economic decision-making.

14. (a) Analyze Gandhi's political philosophy, including his principles of non-violence and self-reliance.

Or

(b) Discuss Amartya Sen's views on development, democracy, and human capabilities.

15. (a) Explain the basic features of political economy and how it integrates political and economic analysis.

Or

(b) How does Marxism approach the issue of economic development and class struggle?

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3 MJ 10107

THREE YEAR B.A. (CBCS) DEGREE EXAMINATION NOVEMBER/DECEMBER 2024

THIRD SEMESTER

Economics

DEVELOPMENT ECONOMICS

(with effect from 2023-24)

Time : Three hours

Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 5 = 25 marks)

Answer any FIVE of the following. Each answer carries 5 marks.

1. What are the differences between Economic growth and Economic development?
2. Human Development Index (HDI).
3. Causes of Inequalities.
4. Sustainable Development Goals (SDGs).
5. What is the Harrod-Domar model of Economic growth?
6. Briefly describe Karl Marx's view of development.
7. Explain the Mixed Economy Strategies.
8. Balanced growth strategy.
9. Discuss the Role of Institutions in Economic Development.
10. What is Economic federalism?

PART B — (5 × 10 = 50 marks)

Answer any FIVE of the following. Each answer carries 10 marks.

11. (a) Examine the scope and importance of Development Economics.

Or

(b) Explain Kuznets' Six Characteristics of Modern Economic growth.

12. (a) Discuss the potential solutions to reduce Unemployment rates in a modern Economy.

Or

(b) Analyse the key causes and Solution of Poverty in Developing Countries.

13. (a) What are the stages of Economic growth according to Rostow?

Or

(b) Explain the Solow's Model of Economic Growth.

14. (a) Explain the human capital-capability strategy and its significance for long-term development.

Or

(b) Critically examine the Unbalanced growth strategy.

15. (a) Discuss the Economic Planning Concept, Objectives and Role in Economic Development.

Or

(b) How do International Institutions like the World Bank and IMF impact the Economic development of developing countries?

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3 MJ 10108

THREE YEAR B.A. (CBCS) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024

THIRD SEMESTER

Economics (Major)

PUBLIC ECONOMICS

(With effect from 2023–24)

Time : Three hours Maximum : 75 marks

(No additional sheet will be supplied)

SECTION A — (5 × 5 = 25 marks)

Answer any FIVE of the following.

Each question carries 5 marks.

1. What is the main difference between public finance and private finance?
2. Types of Goods (Public and Private).
3. Explain the Ability to Pay theory of Taxation.
4. What are different types of tax system?
5. What are Two reforms in Public expenditure in India?
6. What is the Peacock-Wiseman theory of public expenditure?
7. Deficit Budget.
8. FRBM Act.
9. Concepts of Vertical and Horizontal Fiscal Imbalances.
10. What is fiscal federalism?

SECTION B — (5 × 10 = 50 marks)

Answer FIVE of the following.

Each question carries 10 marks.

11. (a) Explain the meaning, nature, and scope of Public finance.

Or

(b) Explain the Principle of Maximum Social Advantage.

12. (a) Describe the sources of Public revenue.

Or

(b) Explain the canons of taxation.

13. (a) Discuss Wagner's Law and its relevance to the growth of Public expenditure in modern Economies.

Or

(b) What are the causes for increasing Public Expenditure?

14. (a) Discuss the effects and burden of Public debt on the Economy.

Or

(b) What is Barro-Ricardo equivalence, and how does it relate to public debt and fiscal policy?

15. (a) What are Objectives and functions of Fiscal Policy?

Or

(b) Discuss the objectives and key recommendations of the most recent Finance Commission in India.

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3 MN 10102

THREE YEAR B.A. (CBCS) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

Economics

(Minor)

MACRO ECONOMICS

Time : Three hours Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 5 = 25 marks)

Answer any FIVE of the following.

Each answer carries 5 marks.

1. Macro Economics.
2. What is the circular flow of Income?
3. What does Say's Law of Markets state?
4. Types of Investment.
5. What are the components of Money according to the RBI classification?
6. Non-Banking Financial Companies (NBFCs).
7. Explain different types of inflation.
8. What is the Phillips Curve?
9. Financial Markets.
10. IS-LM Model.

PART B — (5 × 10 = 50 marks)

Answer FIVE of the following.

Each answer carries 10 marks.

11. (a) Explain the scope and importance of Macro Economics.

Or

(b) Discuss different concepts of National Income.

12. (a) Describe the Classical Model of employment. Why has it been criticized?

Or

(b) Explain the Keynesian Theory of Employment.

13. (a) Define Money and explain its primary functions in an Economy.

Or

(b) Discuss the functions of a Central bank or Reserve Bank of India.

14. (a) Explain the various effects of Inflation on different sectors in the Economy.

Or

(b) What are the phases of a Trade cycle? Describe each phase briefly.

15. (a) Discuss the role of the Stock Market in Economic development.

Or

(b) What are Sensex and Nifty, and how are they important for understanding stock market trends?

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3 MJ 20105

THREE YEAR B.B.A. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

BUSINESS LAW

Time : Three hours | Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 5 = 25 marks)

Answer any FIVE of the following questions.

1. Breach of contract
2. Partnership firm
3. Articles of Association
4. Unpaid Seller
5. District consumer forum
6. Free Consent
7. Parties in Bills of Exchange
8. Memorandum of Association
9. Auction Sale
10. Consumer councils

PART B — (5 × 10 = 50 marks)

Answer ALL of the following questions

11. Describe the salient features of Indian contract Act 1872.

Or

12. "No consideration No contracts" Explain.

13. Explain different types of partners.

Or

14. What are the rights and liabilities of partners?

15. Define company. Explain different types of companies.

Or

16. What are the modes of winding up of a company?

17. Define the Differences between sale and agreement to sale.

Or

18. Explain implied conditions and Warranties.

19. Write about the redressal mechanism under consumer protection Act.

Or

20. What are the uses of consumer protection Act?

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3 MJ 20106

THREE YEAR B.B.A. (CBCS) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

ORGANIZATIONAL BEHAVIOUR

Time : Three hours

Maximum : 75 marks

(No additional sheet will be supplied)

SECTION A — (5 × 5 = 25 marks)

Answer any FIVE of the following questions.

1. Importance of Organizational Behaviour.
2. Johari window.
3. Managerial grid.
4. Reasons for resistance.
5. Organizational climate.
6. Group Cohesiveness.
7. Personality.
8. Qualities of effective leader.
9. Process of organizational Development.
10. Organizational culture.

SECTION B — (5 × 10 = 50 marks)

Answer ALL of the following questions.

11. Explain with examples the varies determinants of personality.

Or

12. What is learning? Explain cognitive and observational teaming.

13. Define group. Discuss the stages of group development.

Or

14. What are the barriers exit that make effective decision making difficult?

15. Discuss the varies characteristics and approaches of leadership.

Or

16. Explain different theories of leadership.

17. What are the factors driving organizational change?

Or

18. What are the sources of resistance to change?

19. Explain difference between organizational culture and climate?

Or

20. What is the relationship between power and politics?

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3 MJ 20107

THREE YEAR B.B.A. (CBCS) DEGREE EXAMINATION NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

BUSINESS ENVIRONMENT

(Major)

Time : Three hours Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 5 = 25 marks)

Answer any FIVE of the following questions.

1. Nature of Business environment.
2. Internal environment.
3. Economic reforms.
4. Role of clusters in promoting MSME.
5. Trade regulations.
6. Uruguay round.
7. FDI.
8. Exchange control.
9. NITI Aayog.
10. GATT.

PART B — (5 × 10 = 50 marks)

Answer ALL of the following questions.

11. What are the salient features of the Indian economy?

Or

12. Define the elements of environment.

13. What are the key elements of a political environment in a business content?

Or

14. What is planning commission, and how does it differ from NITI Aayog?

15. How does the government address challenges faced by MSMEs.

Or

16. Explain the key features of the MSME Development Act, 2006.

17. What does it mean when there is a disequilibrium in BOP?

Or

18. What is exchange control, and why do government use it?

19. Define the purpose of WTO and how does it regulate international trade.

Or

20. What role has Foreign Direct Investment in economic development of India?

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3 MJ 20108

THREE YEAR B.B.A. (CBCS) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024

THIRD SEMESTER

BUSINESS STATISTICS AND MATHEMATICS

(w.e.f–2023–24)

(Major)

Time : Three hours | Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE of the following questions.

1. Define statistics and explain its importance in a business context.
2. What are the limitations of statistics when applied to business decisions?
3. Differentiate between primary and secondary data with suitable examples.
4. What is a frequency distribution? Explain its importance.
5. Describe the various methods used for presenting data graphically.
6. Define arithmetic mean and list its advantages.
7. What is the coefficient of variation, and why is it used?
8. Explain Karl Pearson's measure of skewness.
9. Define correlation and describe its types.
10. What is a subset? Provide an example to illustrate.

SECTION B — (5 × 10 = 50 marks)

Answer ALL the following questions.

11. Discuss the various methods of data collection and explain the toots used for collecting primary data.

Or

12. Describe the tabulation of data and its significance in business statistics.
13. Explain the objectives and characteristics of the median and mode.

Or

14. Discuss the calculation and interpretation of the standard deviation in data analysis.

15. Explain Spearman's rank correlation and its application in business analysis.

Or

16. Compare correlation and regression, explaining their differences and use cases.

17. Illustrate De Morgan's laws with examples using Venn diagrams.

Or

18. Describe the Laws of indices and their application in solving mathematical problems.

19. Discuss the types of matrices and the operations of matrix addition and multiplication.

Or

20. Explain how matrix inversion is performed and its importance in solving equations.

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3 MJ 40105/3 MJ 50105

B.Com. (Com) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

ADVANCED ACCOUNTING

Time : Three hours | Maximum : 75 marks

(No additional sheet will be supplied)

SECTION A — (5 × 5 = 25 marks)

Answer any FIVE of the following questions.

Each answer carries 5 marks.

1. Discuss the accounting treatment for donations received by non-profit organizations.
2. What are the key differences between capital and revenue expenditure?
3. Explain the concept of depreciation and the methods used to calculate it.
4. What is a Partnership Deed, and what are its essential elements?
5. Describe the process of preparing a Trial Balance and its purpose.
6. Explain how profit-sharing ratios are calculated when a partner retires.
7. What is the difference between a Receipts and Payments Account and an Income and Expenditure Account?
8. Discuss the treatment of bad debts and provision for doubtful debts in accounting.
9. Explain the treatment of interest on drawings and interest on capital in partnership accounts.
10. Describe the accounting treatment for loss of goods due to fire or natural calamity.

SECTION B — (5 × 10 = 50 marks)

Answer ALL of the following questions.

11. Explain the preparation of an Income and Expenditure Account and Balance Sheet for non-profit organizations using the following data:
    (a) Subscriptions received: ₹ 150,000 (₹ 20,000 related to the previous year and ₹10,000 for the next year)
    (b) Donations: ₹50,000 (to be capitalized)
    (c) Expenses: Salaries ₹80,000, Rent ₹20,000, Printing ₹5,000, and Repairs ₹15,000.
    (d) Depreciation on equipment: ₹ 10,000.

Or

12. Prepare the Receipts and Payments Account and Income and Expenditure Account for a school with the following transactions:

(a) Opening cash balance: ₹25,000.

(b) Subscriptions received during the year: ₹2,00,000.

(c) Tuition fees: ₹3,00,000.

(d) Donations for building fund: ₹ 1,00,000.

(e) Expenses incurred: Rent ₹50,000, Teacher salaries ₹ 1,80,000, Library expenses ₹15,000. and Miscellaneous ₹10,000.

(f) Closing cash balance : ₹ 50,000.

13. Explain the adjustments required during the conversion of a single entry system to a double entry system.

Or

14. Mr. Ramesh operates a small business and maintains his accounts on a single entry basis. The following balances are available:

(a) Opening: Cash ₹30,000, Debtors ₹ 1,00,000, Creditors ₹70,000, Stock ₹60,000.

(b) Closing: Cash ₹20,000, Debtors ₹ 1,50,000, Creditors ₹90,000, Stock ₹80,000.

(c) Withdrawals for personal use during the year: ₹50,000.

(d) Additional capital introduced: ₹20,000.

(e) Sales (credit): ₹4,00,000; Purchases (credit): ₹2,50,000.

(f) Outstanding expenses: ₹8,000. Prepare a Statement of Profit or Loss for the year ended March 31, 2024.

15. Discuss the accounting treatment for goods repossessed under the hire purchase system and illustrate with journal entries.

Or

16. M/s XYZ Ltd. purchased a vehicle on hire purchase on April 1, 2023. The cash price was ₹5,00,000. The terms included a down payment of ₹ 1,50,000 and three annual installments of ₹ 1,50,000 each, with an interest rate of 8% per annum. Prepare the Interest Calculation and the Journal Entries for M/s XYZ Ltd. for the first installment.

17. Describe the accounting procedure for the admission of a new partner when revaluing assets and liabilities.

Or

18. A, B, and C are partners sharing profits in the ratio of 2:2:1. The balance sheet as of March 31, 2024, is:

(a) Liabilities: Capital — A ₹ 200,000, B ₹1.50,000, C ₹ 1,00,000; Creditors ₹ 80,000.

(b) Assets: Cash ₹30,000, Debtors ₹70,000, Stock ₹80,000, Land ₹2,50,000. D is admitted as a partner with a 1/4th share for ₹1,00,000 as capital and ₹50,000 as goodwill. Revaluations include:

(c) Increase in land by ₹20,000.

(d) Stock to be reduced by ₹ 10,000. Prepare the Revaluation Account, Partners' Capital Accounts, and the Balance Sheet after D's admission.

19. Discuss the steps involved in the dissolution of a partnership and the necessary accounting treatments.

Or

20. X, Y, and Z share profits in a ratio of 5:3:2. On March 31, 2024, their balance sheet shows:

(a) Liabilities: X ₹ 2,50,000, Y ₹2,00,000, Z ₹1,50,000; Creditors ₹50,000.

(b) Assets: Cash ₹20,000, Debtors ₹90,000, Inventory ₹1,00,000, Machinery ₹3,00,000. On April 1, 2024, Z retires, and adjustments are made:

(c) Goodwill is valued at ₹60,000.

(d) Inventory is undervalued by ₹ 10,000.

(e) Create a provision for doubtful debts at 5% on debtors. Z is paid ₹ 1,00,000 in cash, and the balance is transferred to his loan account. Prepare the Revaluation Account, Capital Accounts, and the Balance Sheet after Z's retirement.

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3 MJ 40106/3 MJ 50106

THREE YEAR B.Com. (General) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

INCOME TAX

Time : Three hours Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 5 = 25 marks)

Answer any FIVE of the following questions.

1. Previous year and Assessment Year
2. Allowances
3. Deductions U/S 24
4. Types of capital assets
5. Deductions u/s 80C
6. Agriculture Income
7. Profits in Lieu of salary
8. Define Business.
9. Person
10. Standard Rent

PART B — (5 × 10 = 50 marks)

Answer ALL of the following questions.

11. Mention any ten Exempted Incomes Under Section 10.

Or

12. Following are the incomes of Miss. Arpitha for the current year.

		Rs.
(a)	Profit from the business in Bangalore	20,000
(b)	Income accrued in India but received in Japan	16,000
(c)	Profit from business in Canada but received in India	15,000
(d)	Income from House property in Karachi received in Mumbai	25,000
(e)	Income from House property from America and deposited there	18,000
(f)	Income from Indian dividends	12,000

Compute the total of Miss Arpitha if she is

(i) Resident

(ii) Not Ordinary Resident

(iii) Non-Resident

13. From the following find out the taxable salary of Mr. Raju working at Chennai :

(a) Salary Rs. 48,000 P.M

(b) DA Rs. 6,000 RM

(c) Bonus Rs. 33,000 RM

(d) Employer contribution to employee recognized PF 14% of basic salary

(e) Rent free accommodation (unfurnished) fair rental value is Rs. 2,00,000 P.A

(f) A car (1.4 liters in capacity) is provided by employer. All expenses are born by employer. It is used both for performance of duties and private purpose. Car was used by employee for only 11 months during the year

(g) She paid professional tax of Rs. 200

(h) He received Rs. 1,000 P.M as fixed medical allowance.

Or

14. Calculate the salary income of Sri Virot from the following details for the previous year 2022-23 :

(a) Basic salary Rs. 25,000

(b) DA 40% of salary

(c) Commission on sales Rs. 50,000

(d) HRA Rs. 60,000

(e) Medical Allowance Rs. 8,000

(f) Employer and Employee contribution to RPF 16% of salary

(g) Interest credited in RPF account Rs. 9,600 @ 12%

(h) Children education allowance P.M Rs. 3,200 for 2 children

15. From the particulars given below compute income from house property which consists of two independent units having 1/3 and 2/3 :

Date of completion	1-11-2024
Municipal Rental Value	Rs. 1,20,000
Fair Rental Value	Rs. 1,80,000
Self occupied	2/3 portion
Let-out	1/3 portion from 1.4.2024 to 31.8.2024 @ 10,000 PM and self occupied from 1.9.2024 onwards
Municipal taxes	Rs. 12,000
Free Insurance Premium	Rs. 4,000
Ground Rent	Rs. 8,000
Interest on Loan	Rs. 15,000

Or

16. The following is the profit and loss a/c for the year ending with 31 March prepare by the owner of a business compute from business for the current assessment year.

Profit & Loss A/C

Particulars	Amount Rs.	Particulars	Amount Rs.
To		By	
Proprietors salary	10,000	Gross profit	50,000
Salaries to staff	12,000	Profit on the sale of car	15,000
General expenses	7,000	Bad debts recovered	5,000
Interest on capital	2,000	Interest on Govt.	
Insurance premium (Fire)	5,000	Securities	4,000
Advertisements	2,700	Dividends	4,000
Depreciation	3,000	Interest on post office	4,000
Provision for bad debts	1,000	Savings a/c	
Income tax	4,000		
Donation to schools	3,000		
Car expenses	3,000		
Net profits	29,300		
Total	82,000	Total	82,000

Other Information :

(a) As per the income tax regulations, depreciation is Rs. 2,500 only

(b) General expenses included the printing expenses incurred for the calendars Rs. 500

(c) Advertisements included the expenses incurred for the distribution of pamphlets Rs. 1,000

17. Ms Saradha purchases 1000 equity shares in good luck limited an unlisted company, at a cost of Rs. 30 per share (brokerage 1%) in January 1996. She gets 100 bonus shares in August 2000. She gets 1100 bonus shares by virtue of her holding on February 2006. Fair market value of the shares of good lick ltd on 1st April, 2001 is Rs. 80. On 1st January 2022, she transfers all her shares @ Rs. 200 per share (brokerage 2%).

Compute the capital gains taxable in the hands of MS. Saradha for the A.Y. 2022-23.

Note : CII F.Y. 2001-02:100, 2005-06:117, 2021-22: 317.

Or

18. Mr. Vamsi, a resident in India earned the following incomes. Compute taxable Income under the head income from other sources for the current assessment year.

		Rs.
(a)	Interest on securities	6,000
(b)	Winning from horse race	12,500
(c)	Dividend from a foreign company	26,000
(d)	Interest on postal savings bank account	2,000
(e)	Income from agricultural land in Bangladesh	20,000
(f)	Received a gift of wrist watch from his cousin	5,000
(g)	Directors frees	1,800

19. Write deductions u/s 80C to 80U of income Tax Act 1961.

Or

20. The Following incomes and losses of Anji were extracted from his records. Calculate taxable incomes for the current assessment year.

		Rs.
(a)	Long term capital gain	3,30,000
(b)	Short term capital gain	50,000
(c)	Interest on fixed deposit	10,000
(d)	Winning from lottery (gross)	10,000
(e)	Deposited in NSC VIII issue	15,000
(f)	Deposit in pension scheme u/s 80 CCC	30,000
(g)	Income from salary computed	2,00,000

3 MJ 50107

THREE YEAR B.Com. (Comp) (CBCS) DEGREE EXAMINATION, NOVEMBER 2024.

THIRD SEMESTER

Course VII – E COMMERCE AND WEB DESIGNING

(w e f. 2023-24)

(Major)

Time : Three hours Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

Each question carries 5 marks.

1. Explain about E-Commerce with 5-C Model.
2. Explain about actors and stakeholders.
3. Explain about PROCUREMENT PLATFORM.
4. Explain about differences between B2b and B2c.
5. Write important technology for technology in ISM.
6. Explain about Cyber Money.
7. Explain about HTML attributes.
8. Explain about block quote elements in HTML.
9. Explain about span and div elements.
10. Explain about RGB values for color.

PART B — (5 × 10 = 50 marks)

Answer ALL questions.

Each question carries 10 marks.

11. Explain about advantages and disadvantages in e-commerce.

Or

12. Describe seven steps for fundamental sales process in e-commerce.

13. Explain about the process model and its variants.

Or

14. Explain about B2B Basics. The different types of B2B e-commerce.

15. Explain about foundations of risk management.

Or

16. Explain about payment procedures.

17. What is HTML? Explain the structure of HTML program.

Or

18. Explain different types of text elements in HTML.

19. What is CSS? Explain about CSS syntax and styles.

Or

20. Explain about font properties in CSS.

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3 MJ 50108

THREE YEAR B.Com. (Comp) (CBCS) DEGREE EXAMINATION,
NOVEMBER/DECEMBER 2024

THIRD SEMESTER

DIGITAL MARKETING

(Major)

Time : Three hours | Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 5 = 25 marks)

Answer any FIVE of the following questions.

1. Define digital marketing and explain its key components.
2. What are the advantages of digital marketing over traditional marketing?
3. Briefly describe the types of online advertising.
4. Explain the significance of A/B testing in online advertising campaigns.
5. What are the essential elements of an effective e-mail marketing strategy?
6. Discuss the importance of segmentation in e-mail marketing.
7. List and explain the popular social media platforms used for marketing purposes.
8. What is social media engagement, and why is it crucial for businesses?
9. Explain the importance of keyword research in SEO.
10. Differentiate between on-page and off-page SEO techniques.

PART B — (5 × 10 = 50 marks)

Answer ALL of the following questions.

11. Explain the key challenges faced in digital marketing and how to overcome them.

Or

12. Discuss the role of data analytics in shaping digital marketing strategies.
13. Describe the different types of online advertising and their effectiveness.

Or

14. Explain the importance of targeting and personalization in online advertising.

15. Outline the steps involved in creating a successful e-mail marketing campaign.

Or

16. Discuss the challenges and solutions for ensuring e-mail deliverability and open rates.

17. Examine the strategies used in social media marketing to build brand loyalty.

Or

18. Discuss the impact of social media algorithms on content visibility and marketing strategies.

19. Describe the process of optimizing a website for search engines.

Or

20. Explain the significance of back links in SEO and how to build them effectively.

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3 MJ 60305

THREE YEAR B.Sc. (Honours) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

VASCULAR PLANTS

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE of the following questions.

1. Heterospory
2. Coralloid roots of *Cycas*
3. Omega taxonomy
4. Head or Capitulum
5. Cytotaxonomy
6. Maleflower of *Gnetum*
7. Binomial system of nomenclature
8. Economic importance of Annonaceae
9. Betalins
10. *Cycas* Ovule

PART B — (5 × 10 = 50 marks)

Answer ALL of the following questions.

11. Write an essay on stelar evolution in pteridophytes.

Or

12. Describe the internal structure of Marselia rhizome.

13. Describe the internal structure of Cycas leaflet.

Or

14. Describe in detail the anatomical characters of young and old stems of *Gnetum*.

15. Give an account of Bentham and Hooker system of classification. Discuss its merits and demerits.

Or

16. Define herbarium. Describe the techniques of herbarium and add a note on digital herbaria.

17. Describe the vegetative and floral characters of the family Amaranthaceae.

Or

18. Enumerate the floral characters of Euphorbiaceae. Mention the botanical names of any five plants of economic importance and their uses.

19. Give an account of different steps involved in the construction of taxonomic groups.

Or

20. Write an essay on the origin and evolution of angiosperms.

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3 MJ 60306

THREE YEAR B.Sc. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024

THIRD SEMESTER

Botany

PLANT PATHOLOGY AND PLANT DISEASES

(w.e.f 2023–2024)

Time : Three hours | Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE questions

1. Write a short note on the importance of plant pathology.
2. Write a short note on the Survival of the plant pathogens.
3. Role of toxins in plant pathogenesis.
4. Write a short note on the factors involved in infection.
5. Forecasting of plant diseases.
6. Plant growth promoting rhizobacteria (PGPR).
7. Tungro diseases of rice.
8. Ergot disease of Bajra.
9. Little leaf disease of Brinjal.
10. Basal disease of Coconut.

PART B — (5 × 10 = 50 marks)

Answer ALL the questions

11. Write an essay on the important famines in the world.

Or

12. Write an essay on the dispersal of plant pathogens.

13. Describe the role of enzymes in plant pathogenesis.

Or

14. Write an essay on the defence mechanism in plants.

15. Write an essay on integrated disease management.

Or

16. Give an account on biological control.

17. Give an account of symptoms, etiology, disease cycle and control measures of bacterial blight disease of Rice.

Or

18. Give an account of symptoms, etiology, disease cycle and control measures of tikka disease of groundnut.

19. Give an account of symptoms, etiology, disease cycle and control measures of Powdery mildew of okra.

Or

20. Give an account of symptoms, etiology, disease cycle and control measures of Alternaria fruit spot of Pomegranate.

3 MJ 60307

THREE YEAR B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

Botany (Major)

Course 7 – PLANT BREEDING

(w.e.f. 2023-24)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE of the following questions.

1. Heritability
2. Apomixis
3. Male sterility
4. Domestication of plants
5. Basic principles Selection
6. Clonal selection
7. Heterosis
8. Epistasis
9. Simple Sequence Repeats (SSR)
10. Types of Polyploidy

PART B — (5 × 10 = 50 marks)

Answer ALL of the following questions.

11. Classification of crop plants based on mode of Pollination and Reproduction.

Or

12. Explain Advantages and disadvantages of asexual and sexual reproduction.

13. Explain the exploitation of self-incompatibility in hybrid production.

Or

14. Describe centres of origin of crop plants.

15. Define Selection. Write about natural and artificial selection Methods.

Or

16. Define Clonal selection. Write its procedure, advantages and disadvantages, achievements.

17. What is back cross method? Explain procedure, advantages and disadvantages.

Or

18. What is composite variety? – Merits, demerits and achievements.

19. Marker Assisted Selection (MAS) and its applications in plant breeding.

Or

20. Explain DNA markers and their applications in plant breeding.

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3 MJ 60308

THREE YEAR B.Sc. (CBCS) DEGREE EXAMINATION NOVEMBER/DECEMBER 2024

THIRD SEMESTER

Botany (Major)

Course 8 — PLANT BIOTECHNOLOGY

(w.e.f. 2023-24)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE of the following questions.

1. What is totipotency in plant tissue culture?
2. Synthetic seeds.
3. Importance of meristem culture.
4. Micropropagation
5. Differentiate between continuous and batch cultures.
6. Cybrids.
7. PR proteins.
8. Discuss the significance of herbicide resistance in plants.
9. Biofortification.
10. Plant-based vaccines.

PART B — (5 × 10 = 50 marks)

Answer ALL of the following questions.

11. Describe Discuss the formulation of media for plant tissue culture and its importance.

Or

12. Explain the process of somatic embryogenesis and discuss factors affecting it.

13. Discuss the production of haploids through anther and pollen including their applications.

Or

14. Discuss the importance and method of zygotic embryo culture in plant propagation.

15. Explain the strategies used to enhance the production of secondary metabolites in cell cultures.

Or

16. Explain the somatic hybridization and their applications in crop improvement.

17. Explain the mechanisms for virus resistance in transgenic plants with examples.

Or

18. Explain the ethical issues surrounding the development of genetically modified plants.

19. Discuss the role of plant biotechnology in bioenergy production.

Or

20. Explain the concept of biodegradable plastics.

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3 MJ 20105

THREE YEAR B.B.A. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

BUSINESS LAW

Time : Three hours Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 5 = 25 marks)

Answer any FIVE of the following questions.

1. Breach of contract
2. Partnership firm
3. Articles of Association
4. Unpaid Seller
5. District consumer forum
6. Free Consent
7. Parties in Bills of Exchange
8. Memorandum of Association
9. Auction Sale
10. Consumer councils

PART B — (5 × 10 = 50 marks)

Answer ALL of the following questions

11. Describe the salient features of Indian contract Act 1872.

Or

12. "No consideration No contracts" Explain.

13. Explain different types of partners.

Or

14. What are the rights and liabilities of partners?

15. Define company. Explain different types of companies.

Or

16. What are the modes of winding up of a company?

17. Define the Differences between sale and agreement to sale.

Or

18. Explain implied conditions and Warranties.

19. Write about the redressal mechanism under consumer protection Act.

Or

20. What are the uses of consumer protection Act?

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3 MJ 20106

THREE YEAR B.B.A. (CBCS) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

ORGANIZATIONAL BEHAVIOUR

Time : Three hours

Maximum : 75 marks

(No additional sheet will be supplied)

SECTION A — (5 × 5 = 25 marks)

Answer any FIVE of the following questions.

1. Importance of Organizational Behaviour.
2. Johari window.
3. Managerial grid.
4. Reasons for resistance.
5. Organizational climate.
6. Group Cohesiveness.
7. Personality.
8. Qualities of effective leader.
9. Process of organizational Development.
10. Organizational culture.

SECTION B — (5 × 10 = 50 marks)

Answer ALL of the following questions.

11. Explain with examples the varies determinants of personality.

Or

12. What is learning? Explain cognitive and observational teaming.

13. Define group. Discuss the stages of group development.

Or

14. What are the barriers exit that make effective decision making difficult?

15. Discuss the varies characteristics and approaches of leadership.

Or

16. Explain different theories of leadership.

17. What are the factors driving organizational change?

Or

18. What are the sources of resistance to change?

19. Explain difference between organizational culture and climate?

Or

20. What is the relationship between power and politics?

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3 MJ 60507

THREE YEAR B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

Computer Science (Major)

COMPUTER ORGANIZATION

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE of the following questions.

Each question carries 4 marks.

1. Write the purpose of register transfer language in computer organization.
2. Define bus and memory transfers with a brief example.
3. What are addressing modes in CPU architecture?
4. Explain the concept of control memory.
5. What is associative memory?
6. Describe the concept of memory hierarchy.
7. What are peripheral devices in a computer system?
8. Define asynchronous data transfer.
9. How is floating point representation used for data in computers?
10. What is the difference between instruction pipeline and arithmetic pipeline?

PART B — (5 × 10 = 50 marks)

Answer ALL of the following questions.

11. Discuss the different types of micro-operations and their functions within a CPU.

Or

12. Explain the basic instruction cycle and its phases in computer organization.

13. Describe micro-programmed control and hard-wired control. Compare both.

Or

14. Explain the various instruction formats in a Central Processing Unit (CPU) with examples.

15. Explain the working and importance of cache memory in computer systems.

Or

16. Discuss the mapping techniques used in cache memory.

17. Explain programmed I/O and Direct Memory Access (DMA) with examples.

Or

18. Discuss the role of an Input-Output Processor (IOP) and how it works in managing data transfer.

19. Describe the algorithm for floating-point addition and subtraction.

Or

20. Explain parallel processing and describe the concepts of pipelining in computer architecture.

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3 MJ 60506

THREE YEAR B.Sc. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

Computer Science

DATA STRUCTURES USING C

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE of the following questions.

Each question carries 4 marks.

1. What is space complexity, and how does it affect algorithm performance?
2. Describe the different types of data structures with examples.
3. Explain how linked lists are represented in memory.
4. What is the advantage of a circular singly linked list over a singly linked list?
5. How is a stack represented using an array?
6. What are circular queues, and how are they different from linear queues?
7. What is the difference between linear search and binary search?
8. Explain the working of insertion sort.
9. What is a complete binary tree, and how does it differ from a regular binary tree?
10. What is the adjacency matrix representation of a graph?

SECTION B — (5 × 10 = 50 marks)

Answer ALL of the following questions.

11. Define and explain asymptotic notation with examples.

Or

12. Write an algorithm for inserting an element into a two-dimensional array.

13. Explain the different types of linked lists and their advantages and disadvantages.

Or

14. Write the algorithm to traverse a doubly linked list and explain its time complexity.

15. Discuss the tower of Hanoi problem and its solution using recursion.

Or

16. Explain the implementation of circular queues using a linked list with an algorithm.

17. Compare and contrast binary search and indexed sequential search.

Or

18. Write an algorithm for merge sort and explain its time complexity.

19. Discuss binary tree traversal methods with examples.

Or

20. Explain the concept of graph traversal and compare DFS and BFS.

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3 MJ 60505

THREE YEAR B.Sc. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

Computer Science

OBJECT ORIENTED PROGRAMMING USING JAVA

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE of the following questions.

Each question carries 4 marks.

1. Define object-oriented programming and how it differs from procedural programming.
2. What are the key features of Java?
3. Explain the use of command-line arguments in Java.
4. What is the purpose of the 'this' keyword in Java?
5. Define inheritance and its importance in object-oriented programming.
6. What is method overriding, and how does it relate to polymorphism?
7. How are interfaces different from abstract classes in Java?
8. What is the role of the 'try', 'catch', and 'finally' blocks in exception handling?
9. Explain the differences between multiple processes and multiple threads.
10. What is a layout manager in GUI programming with Swing?

PART B — (5 × 10 = 50 marks)

Answer ALL of the following questions.

11. Describe the basic concepts of object-oriented programming, and explain how they are implemented in Java.

Or

12. Discuss the use of control statements in Java with examples.

13. Explain the usage of arrays and string manipulation methods in Java.

Or

14. What are constructors in Java? Explain the concept of overloading constructors with examples.

15. Discuss the importance of polymorphism in Java, with examples of dynamic binding and method overriding.

Or

16. Explain the concept of abstract classes and methods in Java. Provide examples.

17. How is exception handling managed in Java? Discuss the types of exceptions and provide examples of checked and unchecked exceptions.

Or

18. Describe thread synchronization and inter-thread communication with examples.

19. Explain the MVC architecture in Swing GUI programming and describe the usage of any two layout managers.

Or

20. Discuss event handling in Java. Explain how mouse and keyboard events are handled.

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3 MJ 60508

THREE YEAR B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024

THIRD SEMESTER

Computer Science

OPERATING SYSTEMS

(Major)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE of the following questions.

Each question carries 4 marks.

1. What is an operating system and its basic functions?
2. Differentiate between time-sharing and multiprogramming systems.
3. What is the role of system calls in an operating system?
4. Define process hierarchy and explain its significance.
5. What is deadlock, and what are the necessary conditions for its occurrence?
6. Explain the concept of semaphores in process synchronization.
7. What is paging in memory management?
8. Differentiate between physical and virtual address space.
9. Explain the concept of file allocation methods.
10. What are pipes in operating systems and how are they used?

PART B — (5 × 10 = 50 marks)

Answer ALL of the following questions.

11. Discuss the history and evolution of operating systems and how they have shaped modern computing.

Or

12. Compare and contrast real-time operating systems with batch processing systems.
13. Explain the various process scheduling algorithms, with a focus on non-preemptive and preemptive scheduling..

Or

14. Discuss the threading model in operating systems and explain the role of thread libraries.

15. What is deadlock avoidance? Discuss various strategies for avoiding deadlock in a system.

Or

16. Explain the classical synchronization problem of producer-consumer using semaphores.

17. Discuss the fixed and variable partitioning strategies in memory allocation.

Or

18. Explain virtual memory and the paging technique used in modern operating systems.

19. Describe disk scheduling algorithms and their significance in improving system performance.

Or

20. Explain the concept of shared memory and how it helps in inter-process communication.

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5 MJ 10113

FOUR YEAR B.A/B.Sc./B.Com./B.B.A/B.C.A.(HONORS) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2025

FIFTH SEMESTER

Economics

INSURANCE SERVICES

(w.e.f 2023-2024 Regulations)

Time : Three hours | Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE questions

1. Define the Risk and Uncertainty.
2. What do you mean by Insurance and write the types of Insurance?
3. Define Life Insurance and write the two features of Life Insurance.
4. What is Micro Insurance? Give at least one live example for Micro Insurance.
5. Define the General Insurance write the two features of General Insurance.
6. What do you mean by Health Insurance? Give at least one live example for it.
7. Define the Policy Lapse and write its revival possibility.
8. Write about Nomination in a Life Insurance policy.
9. What do you mean by Insurance Customer and mention their Categories?
10. Write about Ethical Behavior in Insurance.

SECTION B — (5 × 10 = 50 marks)

Answer ALL the following questions

11. Explain the Concept and Importance of Insurance

Or

12. Critically analyze the Insurance Regulations in India.
13. Write about evolution of Life Insurance Companies in India.

Or

14. Write about Important Life Insurance Products/policies.

15. Write about the Major General Insurance Companies in India

Or

16. Write the Features of Major Health Insurance Products/policies in India.

17. Explain the Complete Procedure to issue a Policy

Or

18. Give an account of Important Websites and Apps of Insurance and their deficiencies.

19. Explain how to understand Customer Mindset and skills required to Satisfy them.

Or

20. Give an account of a case study of a General Insurance policy.

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5 MJ 10114 A

FOUR YEAR B.A (HONOURS) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2025

FIFTH SEMESTER

Economics

RETAIL AND DIGITAL MARKETING

(w.e.f 2023-2024 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE questions

1. What is marketing? Mention any two features.

2. What is market segmentation? Explain its need.

3. What are the main features of product marketing?

4. Differentiate between product line and product mix.

5. Explain four types of retail marketing with examples.

6. Explain the responsibilities of a store manager.

7. Write a short note on social media marketing channels.

8. What are digital marketing tools? Give examples.

9. What are the main features of a good marketing model?

10. What is a case study? Why is it important in marketing?

SECTION B — (5 × 10 = 50 marks)

Answer ALL the following questions

11. Explain how marketing strategies help organizations reach their target customers.

Or

12. Describe different pricing methods used by companies to set prices.

13. What is the product life cycle? Describe its different stages.

Or

14. Discuss the importance of branding and packaging in attracting and retaining customers.

15. Write about the factors that influence the location decisions of retail markets.

Or

16. Explain the difference between customer loyalty programs and sales promotions.

17. Discuss the challenges faced by online retailers in managing customer satisfaction.

Or

18. Discuss the differences in product display and promotion between physical retail and online marketing.

19. Discuss how small local shops create their own marketing models to attract customers.

Or

20. Explain a case that demonstrates how social media campaigns led to brand growth.

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5 MJ 10114 A

FOUR YEAR B.A (HONOURS) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2025

FIFTH SEMESTER

Economics

RETAIL AND DIGITAL MARKETING

(w.e.f 2023-2024 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE questions

1. What is marketing? Mention any two features.

2. What is market segmentation? Explain its need.

3. What are the main features of product marketing?

4. Differentiate between product line and product mix.

5. Explain four types of retail marketing with examples.

6. Explain the responsibilities of a store manager.

7. Write a short note on social media marketing channels.

8. What are digital marketing tools? Give examples.

9. What are the main features of a good marketing model?

10. What is a case study? Why is it important in marketing?

SECTION B — (5 × 10 = 50 marks)

Answer ALL the following questions

11. Explain how marketing strategies help organizations reach their target customers.

Or

12. Describe different pricing methods used by companies to set prices.

13. What is the product life cycle? Describe its different stages.

Or

14. Discuss the importance of branding and packaging in attracting and retaining customers.

15. Write about the factors that influence the location decisions of retail markets.

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16. Explain the difference between customer loyalty programs and sales promotions.

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18. Discuss the differences in product display and promotion between physical retail and online marketing.

19. Discuss how small local shops create their own marketing models to attract customers.

Or

20. Explain a case that demonstrates how social media campaigns led to brand growth.

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5 MJ 10115 B

FOUR YEAR B.A (Honours) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2025

FIPTH SEMESTER

Economics

PROJECT DESIGNING AND REPORT WRITING

(w.e.f 2023-2024 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE questions

1. Define research.
2. What do you mean by Ethics in Research?
3. Define the Ethnography Research.
4. What do you mean by Case Study Research?
5. Define the Research Problem.
6. What do you mean by good Research Proposal?
7. What do you mean by Public Procurement?
8. Write about Crowd Funding.
9. Write about NI- MSMEs.
10. Write about PMKVY.

PART B — (5 × 10 = 50 marks)

Answer ALL the following questions.

11. Explain the methods of ensuring objectivity in Social Science research.

Or

12. Distinguish between the research in Physical/Biological Science and Social Science and write the Limitations of Research in Social Science.

13. Explain the Exploratory and Descriptive Research.

Or

14. Write on Action Research, Analytical Research, Evaluation Research, Experimental Research.

15. Explain the importance of Review of Theoretical and Related Research Studies.

Or

16. Write about Secondary and Primary Data; Census and Sample Data.

17. Write about the important elements in Project Report to obtain Loan for MSMEs.

Or

18. Explain the important elements in Marketing the products of MSMEs.

19. Write about the Government Schemes for promotion of Entrepreneurship and MSMEs.

Or

20. Identify the causes of failure of any one of enterprises of your area.

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5 MJ 20112 A

FOUR YEAR B.B.A. (Honours) DEGREE EXAMINATION,
NOVEMBER/DECEMBER 2025

FIFTH SEMESTER

B.B.A – Major

COURSE 12 : SALES AND DISTRIBUTION MANAGEMENT

(w.e.f. 2023 – 24 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE of the following.

1. What are the objectives of Sales Management?
2. Write any two functions of Sales Management.
3. What is a Sales Budget?
4. What are the emerging trends in Sales Management?
5. What is a Sales Quota?
6. Define Sales Control.
7. What are the sources of recruiting salesmen?
8. Define Sales Force Control.
9. What do you mean by Green Channels?
10. Explain the concept of Omni Channel Management.

SECTION B — (5 × 10 = 50 marks)

Answer any ONE question from each unit.

11. What is personal selling? Explain the features of personal selling.

Or

12. What is Organisation of sales? Explain different types of sales organization.
13. Explain the concept of sales territories. How it is useful in sales management?

Or

14. What is Sales Forecasting? Describe the methods of sales forecasting.

15. What do you mean by Sales Quotas? Explain the various methods of setting sales quotas.

Or

16. Define Sales budget. Explain objectives and principles of sales budget.

17. What is the 80-20 principle? Explain how it applies to sales performance evaluation.

Or

18. Discuss the advantages and disadvantages of straight salary compensation plan.

19. Describe the various levels of distribution channels. What are the common conflicts that occur among channel members, and how can such conflicts be effectively managed?

Or

20. Explain the new trends in distribution channel management.

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5 MJ 20113 A

FOUR YEAR B.B.A. (Honours) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2025.

FIFTH SEMESTER

Major

Course 13: TRAINING AND DEVELOPMENT

(W.e.f 2023-24 Regulations)

Time : Three hours | Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE of the following.

1. Write any Five factors that influence learning and working in the workplace.
2. Who are the five key roles of a training manager?
3. Mention any five tips for effective implementation of a training program.
4. What is meant by On-the-Job training?
5. List any two techniques used in executive development programs.
6. Who are the beneficiaries of training in an organization?
7. List any two methods of training evaluation.
8. What do you mean by training design?
9. State any two Do's and two Don'ts for trainers.
10. What is meant by Executive Development?

PART B — (5 × 10 = 50 marks)

Answer ALL questions.

11. Explain objectives, and importance of training in modern organizations.

Or

12. Describe the emerging trends in training.

13. Explain the Kirkpatrick Model and the CIRO Model of training effectiveness.

Or

14. Explain the need for training and development in modern organizations.

15. Discuss the factors that affect the design of a training program.

Or

16. Discuss the importance of budgeting in training programs and explain the different types of costs involved.

17. Describe the various Off-the-Job training methods.

Or

18. Discuss the factors to be considered while choosing an appropriate training method for employees.

19. Explain the need and importance of executive development.

Or

20. Explain factors determining the effectiveness of counselling in employee development.

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5 MJ 20114 B

FOUR YEAR B.B.A. (Honours) DEGREE EXAMINATION,
NOVEMBER/DECEMBER 2025.

FIFTH SEMESTER

Major

COURSE 14: FINANCIAL MARKETS

(W.e.f 2023-24 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE of the following.

1. What are financial services? Mention any two examples.

2. Give any five features of money market

3. Capital markets

4. Differentiate between Spot rate and Forward rate

5. SWAPS

6. Name the main components of the Indian financial system

7. Certificate of deposit

8. State any five objectives of SEBI

9. Purchasing Power Parity

10. Features of Forward Contract.

PART B — (5 × 10 = 50 marks)

Answer ALL questions.

11. Explain the importance and functions of the financial system in the economic development of a country.

Or

12. Explain the functions and types of financial institutions operating in India.

13. What are the functions of money market in the financial system.

Or

14. Discuss the deficiencies of the Indian money market and suggest suitable measures for its improvement.

15. Explain objectives and functions of Capital markets.

Or

16. Describe the regulatory role of SEBI in the functioning of the Indian capital markets.

17. Define arbitrage and explain its role in maintaining equilibrium in the foreign exchange market.

Or

18. Discuss the participants in the foreign exchange market and their respective roles.

19. Explain different types of derivative contracts.

Or

20. Differentiate between hedging and speculation in derivatives trading.

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5 MJ 20114 B

FOUR YEAR B.B.A. (Honours) DEGREE EXAMINATION,
NOVEMBER/DECEMBER 2025.

FIFTH SEMESTER

Major

COURSE 14: FINANCIAL MARKETS

(W.e.f 2023-24 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE of the following.

1. What are financial services? Mention any two examples.

2. Give any five features of money market

3. Capital markets

4. Differentiate between Spot rate and Forward rate

5. SWAPS

6. Name the main components of the Indian financial system

7. Certificate of deposit

8. State any five objectives of SEBI

9. Purchasing Power Parity

10. Features of Forward Contract.

PART B — (5 × 10 = 50 marks)

Answer ALL questions.

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12. Explain the functions and types of financial institutions operating in India.

13. What are the functions of money market in the financial system.

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18. Discuss the participants in the foreign exchange market and their respective roles.

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5 MJ 20115 B

FOUR YEAR B.B.A. (Honours) DEGREE EXAMINATION,
NOVEMBER/DECEMBER 2025

FIFTH SEMESTER

Major

COURSE 15 : PROJECT MANAGEMENT

(w.e.f. 2023 – 24 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE of the following.

1. What are the its key characteristics of a project.
2. Mention any four sources of new project ideas.
3. List the advantages of CPM.
4. Explain the concept of time–cost trade-off.
5. Define a Functional Organization.
6. Mention the key elements of a project report.
7. Write a note on Project Cost Management.
8. Write short notes on Project Execution.
9. What are the main steps in project selection?
10. What are the human aspects of project management?

SECTION B — (5 × 10 = 50 marks)

Answer ONE question from each unit.

11. What are the key elements of project control? Explain the process of project monitoring and control.

Or

12. Explain how you would apply the stages of the Project Life Cycle to ensure the project's success.
13. Discuss the importance of feasibility studies and their types.

Or

14. What are the major determinants that influence the cost of a project? Explain in detail.

15. Define the Critical Path Method (CPM) and discuss its significance in project management.

Or

16. Explain the different methods of project evaluation.

17. Define the term "project Manager". Explain the role and responsibilities of a Project Manager.

Or

18. Describe the different forms of project organization structures.

19. What is Project Risk Management? Discuss the stages involved in the Project Risk Management process.

Or

20. Describe the essential components of a project monitoring system.

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5 MJ 50112 B

FOUR YEAR B.Com. (CA) (Honours) (CBCS) DEGREE EXAMINATION,
NOVEMBER/DECEMBER 2025.

FIFTH SEMESTER

Course 12 – ADVERTISEMENT AND MEDIA PLANNING

(w.e.f. 2023-24 Regulations)

(Major)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE of the following.

1. Define Advertising.
2. Explain the scope of Advertising.
3. What are the social and ethical aspects of advertising?
4. Write about different types of advertising agencies.
5. What is the role of the Advertising Standards Council of India (ASCI)?
6. What is meant by Copy Writing?
7. Write a short note on Elements of Design in advertisements.
8. Explain the role of Print Media in advertising.
9. What is Media Planning?
10. Write a short note on Target Market in advertising.

PART B — (5 × 10 = 50 marks)

Answer ONE Questions from each unit.

11. Explain the nature, scope and functions of Advertising.

Or

12. Discuss the impact of advertising on social, ethical and economic aspects.
13. Explain the types of advertising agencies and their strategies in creating advertisements.

Or

14. Describe the objectives and importance of the DAGMAR approach.

15. Explain the process of creative thinking and communication in advertising.

Or

16. Discuss the essentials and importance of Copy Testing in advertising.

17. Explain the different types of advertising media and their advantages and disadvantages.

Or

18. Describe the steps involved in Media Planning and Selection of Media.

19. Explain the factors influencing Media Strategy and Market Analysis.

Or

20. Discuss the role of geographical and language issues in advertising media.

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5 MJ 50113 A

FOUR YEAR B.COM. (CA) (Honours) (CBCS) DEGREE EXAMINATION,
NOVEMBER/DECEMBER 2025.

FIFTH SEMESTER

Computer Application

COURSE 13 – STOCK MARKETS

(w.e.f 2023-24 Regulations)

Major

Time : Three hours | Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE of the following.

Each question carries 4 marks.

1. What is Investment? Differentiate between Short-term and Long-term Investment.
2. Explain the role of the Capital Market in economic development.
3. What are Arbitragers?
4. Write a short note on Primary Market.
5. Define Equity Shares and Preference Shares.
6. What is the difference between Forward Contract and Future Contract?
7. What are the types of Clearing Members in Stock Exchange?
8. Write about the participants in a Future Contract.
9. What are the regulatory functions of SEBI?
10. Explain the importance of OTCEI in India.

SECTION B — (5 × 10 = 50 marks)

Answer ALL questions.

Each question carries 10 marks.

11. Explain the concept, scope, and functions of the Stock Market in detail.

Or

12. Define different types of Investors and explain their role in the Stock Market.

13. Discuss in detail the process of issuing Equity Shares, Preference Shares, and Debentures.

Or

14. Explain the functions and role of the National Stock Exchange (NSE).

15. Define Financial Intermediaries. Explain their functions with reference to Depositories and Clearing Houses.

Or

16. Explain the concept of Buy Back of Shares and its implications to companies.

17. What is a Stock Index? Explain its types and calculation method.

Or

18. Explain the concept of SENSEX and the importance of indices in the Stock Market.

19. Describe the role of SEBI in regulating Capital Markets in India.

Or

20. Explain the organization, objectives, and working of the Over the Counter Exchange of India.

5 MJ 50113 A

FOUR YEAR B.COM. (CA) (Honours) (CBCS) DEGREE EXAMINATION,
NOVEMBER/DECEMBER 2025.

FIFTH SEMESTER

Computer Application

COURSE 13 – STOCK MARKETS

(w.e.f 2023-24 Regulations)

Major

Time : Three hours | Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE of the following.

Each question carries 4 marks.

1. What is Investment? Differentiate between Short-term and Long-term Investment.
2. Explain the role of the Capital Market in economic development.
3. What are Arbitragers?
4. Write a short note on Primary Market.
5. Define Equity Shares and Preference Shares.
6. What is the difference between Forward Contract and Future Contract?
7. What are the types of Clearing Members in Stock Exchange?
8. Write about the participants in a Future Contract.
9. What are the regulatory functions of SEBI?
10. Explain the importance of OTCEI in India.

SECTION B — (5 × 10 = 50 marks)

Answer ALL questions.

Each question carries 10 marks.

11. Explain the concept, scope, and functions of the Stock Market in detail.

Or

12. Define different types of Investors and explain their role in the Stock Market.

13. Discuss in detail the process of issuing Equity Shares, Preference Shares, and Debentures.

Or

14. Explain the functions and role of the National Stock Exchange (NSE).

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16. Explain the concept of Buy Back of Shares and its implications to companies.

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20. Explain the organization, objectives, and working of the Over the Counter Exchange of India.

5 MJ 50114 A

FOUR YEAR B.Com.(CA) (CBCS) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2025

FIFTH SEMESTER

B .Com (Computer Application) Major

COURSE 14: BUSINESS ANALYSTICS

(w.e.f 2023-2024 Admitted Batch Regulations)

Time : Three hours | Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE of the following.

1. Define Business Analytics and explain its components.
2. List and explain any four benefits of Business Analytics in modern business.
3. Differentiate between OLAP and OLTP with suitable examples.
4. Explain the types of Business Analytics methods (Descriptive, Predictive, Prescriptive).
5. Define and differentiate between types of data (Qualitative vs Quantitative) with examples.
6. Compute conceptually the Mean, Median, and Mode for a given data set and explain their significance in analytics.
7. Explain the measures of dispersion: Standard Deviation and Variance with practical applications in business.
8. Describe the architecture and components of Business Intelligence (BI).
9. Explain the role of Machine Learning in predictive analytics and list its features.
10. Describe the steps involved in deploying Data Mining models in a business scenario.

PART B — (5 × 10 = 50 marks)

Answer ALL the following question.

11. Discuss the benefits and applications of Business Analytics in modern enterprises. Include examples from Retail Analytics and Marketing Analytics.

Or

12. Explain trends in Business Analytics and the tools used to implement analytics in business scenarios.

13. Explain the types of data and statistics used in business analytics with examples from Financial Analytics and Social Media Analytics.

Or

14. Discuss the measures of central tendency (Mean, Median, Mode) and measures of dispersion (Standard Deviation, Variance) with practical business examples.

15. Explain OLAP operations: Roll-up, Drill-down, Slice & Dice, Pivot. Describe types of OLAP and give examples of OLAP tools.

Or

16. Discuss OLTP systems, their characteristics, advantages, and disadvantages. Illustrate with a real case study working with OLAP tools.

17. Describe the architecture and components of Business Intelligence. Explain its operational and managerial benefits with examples.

Or

18. Analyze a case study on real-time credit card fraud detection using BI tools, highlighting the roles of BI in decision-making.

19. Explain Data Mining concepts, types of models, and deployment in business scenarios. Illustrate with Healthcare Analytics case study.

Or

20. Explain Machine Learning concepts, its classification, features, and applications in business predictive models. Include a real-life healthcare analytics example.

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5 MJ 50115 A

FOUR YEAR B.Com. (Honours) (CA) (CBCS) DEGREE EXAMINATION,
NOVEMBER/DECEMBER 2025

FIFTH SEMESTER

B.Com (Computer Application) – Major

COURSE 15 : MOBILE APPLICATION DEVELOPMENT USING ANDROID

(w.e.f. 2023 – 2024 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE of the following.

1. What is the Activity Life Cycle?
2. What are the new features of the latest Android version?
3. What is meant by the Anatomy of an Android Application?
4. Define Application Context and state its importance.
5. What are the main User Interface (UI) screen elements in Android?
6. Write short notes on Layouts used in Android.
7. What is meant by testing an Android application?
8. Write short notes on Android Preferences.
9. Write short notes on Android Networking APIs.
10. What are the uses of Google Maps API in Android applications?

SECTION B — (5 × 10 = 50 marks)

Answer any ONE question from each unit.

11. Write the steps for installing Android Studio and explain how to build your first Android Application.

Or

12. Explain the structure and anatomy of an Android Application.
13. Define and explain Activities, Services, and Intents. How are they used to link different parts of an application?

Or

14. Discuss the role and structure of the Android Manifest File. Explain common settings and permissions declared in it.

15. Explain the process of designing User Interfaces with Layouts in Android. Discuss different types of layouts with examples.

Or

16. Explain the role of animation and drawing in Android UI design. How can animations enhance user experience?

17. Explain the process of testing an Android application. Describe different testing methods and tools available.

Or

18. Discuss in detail the steps involved in publishing an Android application on the Google Play Store.

19. Explain how data is stored and managed in Android using internal and external storage with suitable examples.

Or

20. What is SQLite? Explain the process of creating, inserting, retrieving, updating, and deleting data using SQLite in Android.

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5 MJ 60312

FOUR YEAR B.Sc. (Honors) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2025.

FIFTH SEMESTER

Botany

Paper XII — CELL BIOLOGY AND GENETICS

(w.e.f 2023-24 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE questions.

1. Ultra-structure of a plant cell
2. Mitochondrial DNA
3. Heterochromatin
4. Karyotype and ideogram
5. Complementary gene interactions
6. Multiple allelism
7. Types of RNA
8. Translation
9. Mutation
10. Hardy-Weinberg law.

SECTION B — (5 × 10 = 50 marks)

Answer ALL the following questions.

11. Elaborate the ultra-structure of plasma membrane and various theories on its organization.

Or

12. What is Cell theory? Write about prokaryotic vs eukaryotic cell.

13. Give a note on morphology of a eukaryotic chromosome.

Or

14. Describe the organization of DNA in a chromosome.

15. Give a detailed note on chromosomal mapping.

Or

16. Write about Mendel's laws of inheritance.

17. Describe the regulation of gene expression in the Lac Operon in bacteria.

Or

18. Give an account on DNA replication by the Semiconservative method.

19. Give a detailed account on evolution of gene concept.

Or

20. Give a note on pattern of sex determination in plants.

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5 MJ 60313

FOUR YEAR B.Sc. (HONOURS) DEGREE EXAMINATION,
NOVEMBER/DECEMBER 2025

FIFTH SEMESTER

Paper – XIII

Botany

Paper 13 – PLANT PHYSIOLOGY AND METABOLISM

(w.e.f. 2023-24 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE questions

1. Water potential
2. Ascent of sap
3. Mechanism of enzyme action,
4. Krebs cycle
5. Photosynthetic pigments
6. C4 pathway
7. Symbiotic nitrogen fixing organisms
8. Saturated fatty acids
9. Gibberellins
10. Photoperiodism

PART B — (5 × 10 = 50 marks)

Answer ALL the following the questions.

11. Describe the importance of water to plant life and physical properties of water.

Or

12. Give a note on stomata structure and mechanism of stomatal movements.

13. Explain about essential macro and micro mineral nutrients and their role in plants.

Or

14. Write about Pentose Phosphate Pathway.

15. Describe the concept of two photosystems.

Or

16. Describe the process and significance of photorespiration (C2 pathway) in plants.

17. Give a detailed note on anabolism of triglycerides.

Or

18. Describe the biochemical reactions and significance of the Glyoxylate cycle in plants.

19. Define growth. Describe its phases and kinetics of growth.

Or

20. Describe the physiological effects of Plant Growth Regulators, specifically auxins and abscisic acid, on plant growth and development.

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5 MJ 60313

FOUR YEAR B.Sc. (HONOURS) DEGREE EXAMINATION,
NOVEMBER/DECEMBER 2025

FIFTH SEMESTER

Paper – XIII

Botany

Paper 13 – PLANT PHYSIOLOGY AND METABOLISM

(w.e.f. 2023-24 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE questions

1. Water potential
2. Ascent of sap
3. Mechanism of enzyme action,
4. Krebs cycle
5. Photosynthetic pigments
6. C4 pathway
7. Symbiotic nitrogen fixing organisms
8. Saturated fatty acids
9. Gibberellins
10. Photoperiodism

PART B — (5 × 10 = 50 marks)

Answer ALL the following the questions.

11. Describe the importance of water to plant life and physical properties of water.

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12. Give a note on stomata structure and mechanism of stomatal movements.

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17. Give a detailed note on anabolism of triglycerides.

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18. Describe the biochemical reactions and significance of the Glyoxylate cycle in plants.

19. Define growth. Describe its phases and kinetics of growth.

Or

20. Describe the physiological effects of Plant Growth Regulators, specifically auxins and abscisic acid, on plant growth and development.

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5 MJ 60314 B

FOUR YEAR B.Sc. (Honours) DEGREE EXAMINATION,
NOVEMBER/DECEMBER 2025

FIFTH SEMESTER

Botany

Paper 14 B : SEED TECHNOLOGY

(w.e.f 2023-2024 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE questions

1. Structure of Dicot seed
2. Methods to break seed dormancy
3. Natural longevity of seeds
4. Bagging and labeling of seeds
5. Seed vigour
6. Seed health testing
7. Transmission of different seed borne diseases
8. Dusting
9. Tags and sealing
10. New seed policy (1988).

PART B — (5 × 10 = 50 marks)

Answer ALL the following the questions.

11. Define seed? Write about the importance of seed.

Or

12. Give a note on role and goals of seed technology.

13. Explain about the principles of seed processing.

Or

14. Describe that the factors affecting longevity in storage.

15. Describe the differences for seed germination tests using paper, sand, and soil methods.

Or

16. Explain the importance of seed moisture and methods of moisture determination.

17. Write about different seed health testing methods for detecting microorganisms.

Or

18. Describe a brief account of different seed borne diseases and their transmission.

19. Discuss the duties and responsibilities of Seed Inspector.

Or

20. Write in detail about genetic purity verification, certification, records and reporting.

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5 MJ 60315 A

FOUR YEAR B.Sc. (Honours) DEGREE EXAMINATION,
NOVEMBER/DECEMBER 2025

FIFTH SEMESTER

Botany

Course 15 A : MUSHROOM CULTURE TECHNOLOGY

(w.e.f 2023-2024 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE questions

1. Milky mushroom
2. Harmful effects of poisonous mushrooms
3. Layout of a mushroom farm
4. Materials for compost preparation.
5. Culture maintenance
6. Quality parameters of casing soil
7. Spawning
8. Raw material
9. Preservation of mushrooms
10. Shelf life of mushrooms

PART B — (5 × 10 = 50 marks)

Answer ALL the following the questions.

11. Write about medicinal mushrooms and their therapeutic value in South India.

Or

12. Give a note on the structure and life cycle of a mushroom.

13. Explain about different methods of composting.

Or

14. Describe about Small village unit and larger commercial unit.

15. Write about facilities required for spawn preparation and preparation of spawn substrate.

Or

16. Give a note on preparation of pure culture and media used in raising pure culture.

17. Write in detail about casing, cropping and problems in cultivation of mushrooms.

Or

18. Describe the picking and packing of the Button mushroom and Oyster mushroom.

19. Write about management of spent substrates and waste disposal of various mushrooms.

Or

20. Explain about economics of different types of mushrooms.

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5 MN 60406 B

FOUR YEAR B.Sc. (Honours) DEGREE EXAMINATION,
NOVEMBER/DECEMBER 2025

FIFTH SEMESTER

Chemistry

Paper XIIIB – GREEN CHEMISTRY AND NANOTECHNOLOGY

(w.e.f. 2023-24 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE questions

1. List any four basic principles of Green Chemistry.
2. Give one example each for rearrangement and addition reaction with 100% atom economy.
3. What are the advantages of aqueous-phase reactions in green synthesis?
4. Mention one application each of Heck and Suzuki reactions.
5. State two merits of microwave-assisted reactions over conventional heating.
6. What is Leukart reaction? Mention its green relevance.
7. Write a short note on oxidation of toluene under green conditions.
8. What is the role of catalysts in green synthesis?
9. Give two key features of nanomaterials.
10. Name two methods used for physical synthesis of nanoparticles.

PART B — (5 × 10 = 50 marks)

Answer ALL the following the questions.

11. Define Green Chemistry. Explain its need, goals, and principles with examples.

Or

12. Discuss the evaluation of rearrangement and addition reactions in terms of atom economy. Provide equations to support your answer.

13. Describe green solvent systems with reference to (a) aqueous-phase reactions, (b) solid-supported synthesis.

Or

14. What is the role of green energy in sustainable chemistry? Discuss with suitable examples.

15. Write the apparatus and method for conducting microwave-assisted organic synthesis.

Or

16. Explain Diels–Alder and Cannizzaro reactions from a green chemistry perspective.

17. Outline the green synthesis of (a) Adipic acid (b) Disodium iminodiacetate.

Or

18. Explain microwave-assisted conversion of methyl benzoate to benzoic acid. Also discuss oxidation of alcohols.

19. Discuss classification and chemical properties of nanomaterials.

Or

20. Describe the aerosol method and inert gas condensation techniques used in nanoparticle synthesis.

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5 MN 60406 B

FOUR YEAR B.Sc. (Honours) DEGREE EXAMINATION,
NOVEMBER/DECEMBER 2025

FIFTH SEMESTER

Chemistry

Paper XIIIB – GREEN CHEMISTRY AND NANOTECHNOLOGY

(w.e.f. 2023-24 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE questions

1. List any four basic principles of Green Chemistry.
2. Give one example each for rearrangement and addition reaction with 100% atom economy.
3. What are the advantages of aqueous-phase reactions in green synthesis?
4. Mention one application each of Heck and Suzuki reactions.
5. State two merits of microwave-assisted reactions over conventional heating.
6. What is Leukart reaction? Mention its green relevance.
7. Write a short note on oxidation of toluene under green conditions.
8. What is the role of catalysts in green synthesis?
9. Give two key features of nanomaterials.
10. Name two methods used for physical synthesis of nanoparticles.

PART B — (5 × 10 = 50 marks)

Answer ALL the following the questions.

11. Define Green Chemistry. Explain its need, goals, and principles with examples.

Or

12. Discuss the evaluation of rearrangement and addition reactions in terms of atom economy. Provide equations to support your answer.

13. Describe green solvent systems with reference to (a) aqueous-phase reactions, (b) solid-supported synthesis.

Or

14. What is the role of green energy in sustainable chemistry? Discuss with suitable examples.

15. Write the apparatus and method for conducting microwave-assisted organic synthesis.

Or

16. Explain Diels–Alder and Cannizzaro reactions from a green chemistry perspective.

17. Outline the green synthesis of (a) Adipic acid (b) Disodium iminodiacetate.

Or

18. Explain microwave-assisted conversion of methyl benzoate to benzoic acid. Also discuss oxidation of alcohols.

19. Discuss classification and chemical properties of nanomaterials.

Or

20. Describe the aerosol method and inert gas condensation techniques used in nanoparticle synthesis.

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5 MJ 60515 B

FOUR YEAR B.Sc. (Honours) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2025.

FIFTH SEMESTER

Computer Science

Course 15 B – APPLICATION DEVELOPMENT USING PYTHON

(w.e.f. 2023-2024 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE questions.

1. Explain Python objects and standard types with examples.
2. Describe integers, floating point, and complex numbers in Python.
3. Explain control flow in Python with an example.
4. Describe built-in file functions in Python.
5. Explain handling exceptions in Python with examples.
6. Describe special symbols and characters in Python regular expressions.
7. Explain GUI programming using Tkinter in Python.
8. Describe creating simple web clients in Python.
9. Explain the role of Python DBAPI in database programming.
10. Describe object relational mappers (ORMs) with examples.

SECTION B — (5 × 10 = 50 marks)

Answer ALL questions.

11. Explain categorizing Python's standard operators with examples.

Or

12. Describe different sequences in Python.

13. Explain file execution and command-line arguments in Python with examples.

Or

14. Describe exception handling in Python with an example.

15. Explain regular expressions in Python with suitable examples.

Or

16. Discuss multithreaded programming in Python and the role of the Global Interpreter Lock (GIL).

17. Explain advanced CGI in Python with an example.

Or

18. Discuss building web (HTTP) servers using Python.

19. Explain the Python Database API (DBAPI) and its importance.

Or

20. Describe object relational mappers (ORMs) and give an example.

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5 MJ 60515 B

FOUR YEAR B.Sc. (Honours) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2025.

FIFTH SEMESTER

Computer Science

Course 15 B – APPLICATION DEVELOPMENT USING PYTHON

(w.e.f. 2023-2024 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE questions.

1. Explain Python objects and standard types with examples.
2. Describe integers, floating point, and complex numbers in Python.
3. Explain control flow in Python with an example.
4. Describe built-in file functions in Python.
5. Explain handling exceptions in Python with examples.
6. Describe special symbols and characters in Python regular expressions.
7. Explain GUI programming using Tkinter in Python.
8. Describe creating simple web clients in Python.
9. Explain the role of Python DBAPI in database programming.
10. Describe object relational mappers (ORMs) with examples.

SECTION B — (5 × 10 = 50 marks)

Answer ALL questions.

11. Explain categorizing Python's standard operators with examples.

Or

12. Describe different sequences in Python.

13. Explain file execution and command-line arguments in Python with examples.

Or

14. Describe exception handling in Python with an example.

15. Explain regular expressions in Python with suitable examples.

Or

16. Discuss multithreaded programming in Python and the role of the Global Interpreter Lock (GIL).

17. Explain advanced CGI in Python with an example.

Or

18. Discuss building web (HTTP) servers using Python.

19. Explain the Python Database API (DBAPI) and its importance.

Or

20. Describe object relational mappers (ORMs) and give an example.

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5 MJ 60513

THREE YEAR B.Sc. (Honours) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2025.

FIFTH SEMESTER

Computer Science

Paper XIII – WEB APPLICATIONS DEVELOPMENT USING PHP AND MYSQL

(w.e.f 2023-24 Regulations)

Time : Three hours | Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE questions.

1. What is a variable in PHP? How do you declare one?
2. Explain the purpose of constants in PHP.
3. How do you create an indexed array? Give an example.
4. Briefly explain the use of the strtotime() function.
5. What are the two main methods for submitting a form? Explain each.
6. How can you save state between pages using hidden fields?
7. What is a cookie? How is it set with PHP?
8. Explain the concept of a session ID.
9. Explain the difference between MySQL and MySQLi.
10. How do you create a simple database table using SQL?

PART B — (5 × 10 = 50 marks)

Answer ALL the following questions.

11. (a) Explain the different data types in PHP with suitable examples.

Or

(b) Describe the various types of loops used in PHP with syntax and examples.

12. (a) Explain how to create an object and access its properties and methods.

Or

(b) Explain how to format and manipulate strings in PHP using various built-in functions.

13. (a) Explain how to handle file uploads in PHP with a simple example.

Or

(b) How do you redirect a user from one page to another in PHP? Explain with an example.

14. (a) What is a session? Explain how to start a session, set session variables, and destroy a session.

Or

(b) How do you use sessions for user login and logout in a web application?

15. (a) Explain the steps involved in connecting to a MySQL database and retrieving data from a table.

Or

(b) Write a PHP script to create a record deletion mechanism for a database table.

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5 MJ 60514 B

FOUR YEAR B.Sc. (Honours) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2025.

FIFTH SEMESTER

Computer Science

Paper XIII – FOUNDATION OF DATA SCIENCE

(w.e.f. 2023–24 Regulations)

Time : Three hours | Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE questions.

1. Define Data Science and explain its evolution.
2. Explain about data integration.
3. Discuss the concept of skewness and kurtosis in descriptive statistics.
4. Explain NoSQL databases and their types.
5. Explain NumPy arrays and their importance in Data Science.
6. Discuss Boolean indexing in NumPy with an example.
7. Explain Series and DataFrame in pandas.
8. Describe indexing and filtering operations in pandas.
9. Explain the process of handling missing data in data cleaning.
10. Describe the use of scatter plots and histograms in data visualization.

SECTION B — (5 × 10 = 50 marks)

Answer ALL the following questions.

11. Explain the Data Science process in detail with a diagram.

Or

12. Explain different data reduction techniques.

13. Explain ANOVA and its use in data analysis.

Or

14. Describe the role of pivot tables and heat maps in data analysis.

15. Explain the basics of NumPy and describe different methods to create ndarrays with examples.

Or

16. Discuss universal functions in NumPy and their role in element-wise computation.

17. Explain the structure of pandas DataFrame and essential functionalities with examples.

Or

18. Describe reading and writing data in text format using pandas.

19. Explain data transformation techniques for cleaning datasets.

Or

20. Discuss plotting with pandas and explain the uses of line plots and bar plots.

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2 MN 60701

THREE YEAR B.A./B.Sc./B.Com. (CBCS) DEGREE EXAMINATION APRIL/MAY 2024.

SECOND SEMESTER

Mathematics (Minor)

Course – III: DIFFERENTIAL EQUATIONS

(w.e.f. 2023-24 admitted batch)

Time : Three hours

Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE of the following questions.

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

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

3. Show that the family of Confocal conics $\frac{x^2}{a^2+\lambda}+\frac{y^2}{b^2+\lambda}=1$ is self orthogonal. Where 'h' being parameter.

4. Solve $(px-y)(py+x)=2p$.

5. Solve $(D^3-5D^2+8D-4)y=e^{2x}$.

6. Solve $(D^3+9)y=\cos^3 x$.

7. Solve $(D^2+D+1)y=x^3$.

8. Solve $(D^4-1)y=e^x\cos x$.

9. Solve $(D^2+1)=y=\cos ec\ x$ by the method of variation of parameters.

10. Solve $(x^2D^2-2xD-4)y=x^2$.

SECTION B — (5 × 10 = 50 marks)

Answer ALL questions. Each question carries 10 marks.

11. Solve $\frac{dy}{dx}(x^3y^3+xy)=1$.

Or

12. Solve $(1+xy)x\,dy+(1-xy)y\,dx=0$.

13. Solve $y = 2xp + x^2p^4$.

Or

14. Find the orthogonal trajectories of the family of cardioids $r = a(1 - \cos\theta)$ Where 'a' is th parameter.

15. Solve $(D^2 - 3D + 2)y = \cos 3x . \cos 2x$.

Or

16. Solve $(D^2 + 16)y = e^{-3x} + \cos^4 x$.

17. Solve $\frac{d^2y}{dx^2} - 7\frac{dy}{dx} + 6y = e^{2x}(1 + x)$.

Or

18. Solve $(D^2 + 2D + 1)y = x\cos x$.

19. Solve $(D^2 + a^2)y = \sec ax$ by the method of variation of parameters.

Or

20. Solve $(x^2D^2 + 3xD + 1)y = \frac{1}{(1-x)^2}$.

3 MN 60702

B.Sc. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

Mathematics (Minor)

Course 5: GROUP THEORY

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE of the following questions.

1. In a group G, inverse of any element is unique.

2. A finite semi group satisfying the cancellation laws is a group.

3. If H is any subgroup of a group G, then $H \bullet H = H$.

4. Prove that the union of two subgroups is subgroups if and only if one is contained in the other.

5. If a, b are any two elements of a group G and H any subgroup of G, then $a \in bH \Leftrightarrow aH = bH$.

6. If N, M are normal subgroups of G, then NM is also a normal subgroup of G.

7. Every homomorphic image of an abelian group is abelian.

8. If $f = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 5 & 3 & 2 & 4 & 1 \end{pmatrix}$ and $g = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 4 & 3 & 1 & 2 & 5 \end{pmatrix}$ then find fg and gf.

9. Every cyclic group is an abelian group.

10. Show that the set of all cube roots of unity is a cyclic group w.r.t. multiplication.

PART B — (5 × 10 = 50 marks)

Answer ALL of the following questions.

11. Prove that the set G of all real numbers other than '1' with operation $\oplus$ such that $a \oplus b = a + b - ab$ for $a, b \in G$ is an abelian group.

Or

12. Show that the fourth roots of unity form an abelian group w.r.t. multiplication.

13. If H and K are two subgroups of a group G, then HK is a subgroup of G iff $HK = KH$.

Or

14. State and prove Langrange's theorem for groups.

15. Prove that any two right cosets of H are disjoint or identical.

Or

16. If H is a normal subgroup of G. The set $\frac{G}{H}$ of all cosets of h in G w.r.t cosets multiplication is a group.

17. Every homomorphic image of a group G is isomorphic to some quotient group of G.

Or

18. The necessary and sufficient condition for a homomorphism f of a group G onto a group G' with Kernel K to be an isomorphism of G into G' is that $K = \{e\}$.

19. Every finite group G is isomorphic to a permutation group.

Or

20. Every subgroup of cyclic group is cyclic.

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3 MN 60702

B.Sc. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

Mathematics (Minor)

Course 5: GROUP THEORY

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE of the following questions.

1. In a group G, inverse of any element is unique.

2. A finite semi group satisfying the cancellation laws is a group.

3. If H is any subgroup of a group G, then $H \bullet H = H$.

4. Prove that the union of two subgroups is subgroups if and only if one is contained in the other.

5. If a, b are any two elements of a group G and H any subgroup of G, then $a \in bH \Leftrightarrow aH = bH$.

6. If N, M are normal subgroups of G, then NM is also a normal subgroup of G.

7. Every homomorphic image of an abelian group is abelian.

8. If $f = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 5 & 3 & 2 & 4 & 1 \end{pmatrix}$ and $g = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 4 & 3 & 1 & 2 & 5 \end{pmatrix}$ then find fg and gf.

9. Every cyclic group is an abelian group.

10. Show that the set of all cube roots of unity is a cyclic group w.r.t. multiplication.

PART B — (5 × 10 = 50 marks)

Answer ALL of the following questions.

11. Prove that the set G of all real numbers other than '1' with operation $\oplus$ such that $a \oplus b = a + b - ab$ for $a, b \in G$ is an abelian group.

Or

12. Show that the fourth roots of unity form an abelian group w.r.t. multiplication.

13. If H and K are two subgroups of a group G, then HK is a subgroup of G iff $HK = KH$.

Or

14. State and prove Langrange's theorem for groups.

15. Prove that any two right cosets of H are disjoint or identical.

Or

16. If H is a normal subgroup of G. The set $\frac{G}{H}$ of all cosets of h in G w.r.t cosets multiplication is a group.

17. Every homomorphic image of a group G is isomorphic to some quotient group of G.

Or

18. The necessary and sufficient condition for a homomorphism f of a group G onto a group G' with Kernel K to be an isomorphism of G into G' is that $K = \{e\}$.

19. Every finite group G is isomorphic to a permutation group.

Or

20. Every subgroup of cyclic group is cyclic.

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3 MN 60702

B.Sc. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

THIRD SEMESTER

Mathematics (Minor)

Course 5: GROUP THEORY

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

PART A — (5 × 4 = 20 marks)

Answer any FIVE of the following questions.

1. In a group G, inverse of any element is unique.

2. A finite semi group satisfying the cancellation laws is a group.

3. If H is any subgroup of a group G, then $H \bullet H = H$.

4. Prove that the union of two subgroups is subgroups if and only if one is contained in the other.

5. If a, b are any two elements of a group G and H any subgroup of G, then $a \in bH \Leftrightarrow aH = bH$.

6. If N, M are normal subgroups of G, then NM is also a normal subgroup of G.

7. Every homomorphic image of an abelian group is abelian.

8. If $f = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 5 & 3 & 2 & 4 & 1 \end{pmatrix}$ and $g = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 4 & 3 & 1 & 2 & 5 \end{pmatrix}$ then find fg and gf.

9. Every cyclic group is an abelian group.

10. Show that the set of all cube roots of unity is a cyclic group w.r.t. multiplication.

PART B — (5 × 10 = 50 marks)

Answer ALL of the following questions.

11. Prove that the set G of all real numbers other than '1' with operation $\oplus$ such that $a \oplus b = a + b - ab$ for $a, b \in G$ is an abelian group.

Or

12. Show that the fourth roots of unity form an abelian group w.r.t. multiplication.

13. If H and K are two subgroups of a group G, then HK is a subgroup of G iff $HK = KH$.

Or

14. State and prove Langrange's theorem for groups.

15. Prove that any two right cosets of H are disjoint or identical.

Or

16. If H is a normal subgroup of G. The set $\frac{G}{H}$ of all cosets of h in G w.r.t cosets multiplication is a group.

17. Every homomorphic image of a group G is isomorphic to some quotient group of G.

Or

18. The necessary and sufficient condition for a homomorphism f of a group G onto a group G' with Kernel K to be an isomorphism of G into G' is that $K = \{e\}$.

19. Every finite group G is isomorphic to a permutation group.

Or

20. Every subgroup of cyclic group is cyclic.

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5 MN 60705

FOUR YEAR B.A./B.Sc./B.Com./B.B.A/B.C.A. (Honors) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2025.

FIFTH SEMESTER

Mathematics

Paper 12: LINEAR ALGEBRA

(w.e.f. 2023-24 Regulations)

Time : Three hours Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — ($5 \times 4 = 20$ marks)

Answer any FIVE questions.

1. Show that $\{(a,b,c), a,b,c \in R\}$ and $a-3b+4c=0\}$ is a subspace of $V_3(R)$.

2. Show that the system of three vectors (1, 2, 0) , (0, 3,1), (–1, 0, 1) of $V_3(Q)$ is linearly independent.

3. Show that the vectors (1, 0, 0), (1, 1, 0), (1, 1,1) forms a basis of $C^2(C)$.

4. If W is subspace of $V_4(\mathbb{R})$ generated by the vectors. $(1,-2,5,3),(2,3,1,-4)$ and $(3,8,-3,-5)$ then find a basis of W and its dimension .

5. Find $T(x,y,z)$ where $T: R^2 \to R$ is defined by $T(1,1,1)=3$, $T(0,1,-2)=1$, $T(0,0,1)=-2$.

6. Find the kernel of the linear transformation $T: R^2 \to R^2$ defined by $T(1,0)=(1,1)$ and $T(0,1)=(-1,2)$.

7. Find the characteristic roots of the matrix $\begin{pmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{pmatrix}$.

8. If $A=\begin{pmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{pmatrix}$ then express A^{-1} as a linear polynomial in A by using Cayley- Hamilton theorem.

9. State and prove parallelogram law.

10. Show that $\{(1,0,0),(0,1,0),(0,0,1)\}$ is an orthonormal set in the inner product space $V_3(\mathbb{R})$.

SECTION B — (5 × 10 = 50 marks)

Answer ALL the following questions.

11. The necessary and sufficient condition for a non-empty subset W of a vector space $V(F)$ to be a subspace of V is that $a,b \in F, \alpha, \beta \in W \Rightarrow a\alpha + b\beta \in W$.

Or

12. Let W_1 and W_2 be two Subspaces of a Vector Space $V(F)$. Then $W_1 \cup W_2$ is a sub space of $V(F)$ iff $W_1 \subseteq W_2$ or $W_2 \subseteq W_1$.

13. Prove that 'Every finite dimensional vector space has a basis'.

Or

14. If W_1 and W_2 are two subspaces of a finite dimensional vector space $V(F)$ then prove that $\dim(W_1 + W_2) = \dim W_1 + \dim W_2 - \dim(W_1 \cap W_2)$.

15. State and prove rank nullity theorem.

Or

16. Show that the mapping $T : R^3 \to R^3$ defined by $T(x,y,z) = (x+2y, y-z\ x+2z)$ is a linear transformation. Find the rank and nullity and verify the formula $rankT + nullityT = \dim R^3$.

17. Find the characteristic roots and characteristic vectors of the matrix $A = \begin{pmatrix} 3 & 1 & -1 \\ 2 & 2 & -1 \\ 2 & 2 & 0 \end{pmatrix}$.

Or

18. State and prove Cayley Hamilton Theorem.

19. State and prove Bessel's Inequality theorem.

Or

20. State and prove Gram-Schmidt orthogonalization process.

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5 MN 60706

FOUR YEAR B.Sc. (Honours) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2025.

FIFTH SEMESTER

Mathematics

Paper 13 — VECTOR CALCULUS

(w.e.f. 2023 – 24 Regulations)

Time : Three hours | Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE questions.

1. Evaluate $\int_0^2 \int_0^3 xy\, dx\, dy$.

2. Evaluate $\int_0^2 \int_1^x x\, y^2\, dx\, dy$.

3. Evaluate $\int_0^2 \int_1^3 \int_1^2 x\, y^2\, z\, dx\, dy\, dz$.

4. Evaluate $\int_{-1}^1 \int_{-2}^2 \int_{-3}^3 dx\, dy\, dz$.

5. If $\phi = 2x^3y^2z^4$ find $div(grad\phi)$.

6. Find the maximum value of the directional derivative of the function $\phi = 2x^2 - y - z^4$ at $(2, -1, 1)$.

7. If $F(t) = t\bar{i} + (t^2 - 2t)\bar{j} + (3t^2 + 3t^3)\bar{k}$ then find $\int_0^1 F(t)dt$.

8. If $F = 3xy\,\bar{i} - 5z\,\bar{j} + 10x\,\bar{k}$ evaluate $\int_C F \cdot dr$ along the curve $x = t^2, y = 2t^2, z = t^3$ from $t = 1$ to $t = 2$.

9. If $F = ax\,\bar{i} + by\,\bar{j} + cz\,\bar{k}$ and a, b, c are constants show that $\int F \cdot N\, dS = \frac{4}{3}\pi(a + b + c)$ where S is the surface of the unit sphere.

10. Apply Gauss's theorem to prove that $\int_S r \cdot N\, dS = 3V$.

SECTION B — ($5 \times 10 = 50$ marks)

Answer ALL the following questions.

11. Evaluate $\iint xy(x+y)dx\,dy$ over the region R bounded by $y = x^2$ and $y = x$.

Or

12. Evaluate $\int_0^{\frac{\pi}{4}} \int_0^a \sin\theta \frac{r}{\sqrt{a^2 - r^2}} dr\, d\theta$.

13. Evaluate $\int_0^1 \int_0^{1-x} \int_0^{1-x-y} dx\, dy dz$.

Or

14. Using spherical polar coordinates find the volume of sphere $x^2 + y^2 + z^2 = a^2$.

15. If $f = x^2 y\,\bar{i} - 2xz\,\bar{j} + 2yz\,\bar{k}$ at the point $(1, -1, 1)$ then find

    (a) *div f*

    (b) *curl (curl f)*.

Or

16. (a) If F is a differentiable vector point function, then prove that $div(Curl\, F = 0)$.

    (b) If $F = xy^2\bar{i} + 2x^2yz\,\bar{j} - 3yz^2\bar{k}$ then find *div F* at (1, –1, 1).

17. Evaluate $\int_S F.N\, dS$ where $F = 18z\,\bar{i} - 12\bar{j} + 3y\,\bar{k}$ and S is the part of the surface of the plane $2x + 3y + 6z = 12$ located in the first octant.

Or

18. If $F = (2x^2 - 3z)\bar{i} - 2xy\,\bar{j} - 4x\bar{k}$ evaluate $\int_V \nabla . F\, dV$ where V is the closed region bounded by $x = 0, y = 0, z = 0, 2x + 2y + z = 4$.

19. Evaluate by Gauss divergence theorem for $\iint 4xz\,dy\,dz - y^2 dz\,dx + yz\,dx\,dy$ where S is the surface of the cube bounded by the planes $x = 0, x = 1, y = 0, y = 1, z = 0, z = 1$.

Or

20. State and prove Green's theorem in a plane.

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FOUR YEAR B.Sc. (Honours) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2025.

FIFTH SEMESTER

Mathematics

Paper 13 — VECTOR CALCULUS

(w.e.f. 2023 – 24 Regulations)

Time : Three hours | Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE questions.

1. Evaluate $\int_0^2 \int_0^3 xy\, dx\, dy$.

2. Evaluate $\int_0^2 \int_1^x x\, y^2\, dx\, dy$.

3. Evaluate $\int_0^2 \int_1^3 \int_1^2 x\, y^2\, z\, dx\, dy\, dz$.

4. Evaluate $\int_{-1}^1 \int_{-2}^2 \int_{-3}^3 dx\, dy\, dz$.

5. If $\phi = 2x^3y^2z^4$ find $div(grad\phi)$.

6. Find the maximum value of the directional derivative of the function $\phi = 2x^2 - y - z^4$ at $(2, -1, 1)$.

7. If $F(t) = t\bar{i} + (t^2 - 2t)\bar{j} + (3t^2 + 3t^3)\bar{k}$ then find $\int_0^1 F(t)dt$.

8. If $F = 3xy\,\bar{i} - 5z\,\bar{j} + 10x\,\bar{k}$ evaluate $\int_C F \cdot dr$ along the curve $x = t^2, y = 2t^2, z = t^3$ from $t = 1$ to $t = 2$.

9. If $F = ax\,\bar{i} + by\,\bar{j} + cz\,\bar{k}$ and a, b, c are constants show that $\int F \cdot N\, dS = \frac{4}{3}\pi(a + b + c)$ where S is the surface of the unit sphere.

10. Apply Gauss's theorem to prove that $\int_S r \cdot N\, dS = 3V$.

SECTION B — ($5 \times 10 = 50$ marks)

Answer ALL the following questions.

11. Evaluate $\iint xy(x+y)dx\,dy$ over the region R bounded by $y = x^2$ and $y = x$.

Or

12. Evaluate $\int_0^{\frac{\pi}{4}} \int_0^a \sin\theta \frac{r}{\sqrt{a^2 - r^2}} dr\, d\theta$.

13. Evaluate $\int_0^1 \int_0^{1-x} \int_0^{1-x-y} dx\, dy dz$.

Or

14. Using spherical polar coordinates find the volume of sphere $x^2 + y^2 + z^2 = a^2$.

15. If $f = x^2 y\,\bar{i} - 2xz\,\bar{j} + 2yz\,\bar{k}$ at the point $(1, -1, 1)$ then find

    (a) *div f*

    (b) *curl (curl f)*.

Or

16. (a) If F is a differentiable vector point function, then prove that $div(Curl\, F = 0)$.

    (b) If $F = xy^2\bar{i} + 2x^2yz\,\bar{j} - 3yz^2\bar{k}$ then find *div F* at (1, –1, 1).

17. Evaluate $\int_S F.N\, dS$ where $F = 18z\,\bar{i} - 12\bar{j} + 3y\,\bar{k}$ and S is the part of the surface of the plane $2x + 3y + 6z = 12$ located in the first octant.

Or

18. If $F = (2x^2 - 3z)\bar{i} - 2xy\,\bar{j} - 4x\bar{k}$ evaluate $\int_V \nabla . F\, dV$ where V is the closed region bounded by $x = 0, y = 0, z = 0, 2x + 2y + z = 4$.

19. Evaluate by Gauss divergence theorem for $\iint 4xz\,dy\,dz - y^2 dz\,dx + yz\,dx\,dy$ where S is the surface of the cube bounded by the planes $x = 0, x = 1, y = 0, y = 1, z = 0, z = 1$.

Or

20. State and prove Green's theorem in a plane.
