

Time: 3 Hours

Max Marks: 70

Section-A

I. Answer any FIVE of the following questions

(5x4=20 Marks)

1. Write four anagrams from the following words.
a. left b. rental c. things d. reopen
2. Fill in the banks with suitable prepositions.
a. They are sorry having disturbed you. b. Rini was angry me.
c. The woman the car is my neighbour. d. The building is deserted pigeons and mice.
3. Mark the sounds (/iz/ or /z/ or /s/) of the endings of the following words.
a. proofs b. germs c. inches d. soaps
4. Mark the sounds (/id/ or /t/ or /d/) of the endings of the following words.
a. hinted b. searched c. poured d. funded
5. Use the correct capital letters in the following sentences or words.
a. Keerthi is the best player of our team... b. Christmas fall on 25 December.
c. French d. I am captain of my team.
6. Write syllable structure of the following words.
a. ram b. cat c. Pope d. whip
7. Complete the following sentences using suitable phrasal verbs from the list given below.
(cut off, grow up, call off, hand over)
a. Employees have decided to the strike.
b. The robber ordered the people to the money.
c. this noise, please! d. He wants his son to and be a responsible man.
8. Fill in the blanks with a suitable conjunction given in the list below.
(or, and, but, until)
a. Jenny is rich she is unhappy. b. You will need a paper a pen.
c. Do die. d. Do not leave the station I reach.

Section-B

II. Answer the following questions

(5x10=50 Marks)

9. A. i. The bank is, I suppose, the only place in the world where a man can get nothing for his money? Annotate. **5 Marks**
ii. Discuss the compassion, brother hood, rationality expressed in the poem, 'Where the Mind is Without Fear.' **5 Marks**

OR
- B. i. Read the passage and answer the questions that follow. **5 Marks**
I went into the bank and said, 'I wish to make a deposit.' The cashier looked up and said, 'Twenty-seven dollars and fifty cents.' I handed over the money and he handed me a piece of paper. I took it and went out. I had been banking for a quarter of an hour. I began to feel a sense of pride and dignity. I was a banker. I had fifty cents.
1. What did the narrator want to do when he entered the bank?
2. How much money did the narrator deposit?
3. How long did the narrator's banking transaction take?
4. What did the cashier give the narrator in exchange for the money?
5. What was the narrator's emotional state after completing the transaction?
ii. Narrate the experience of Stephen Leacock in the bank.
10. A. i. Where the clear stream of reason has not lost its way into the dreary desert sand of dead habit.- Annotate. **5 Marks**
5 Marks

ii. Write the phonetic transcription to the following words

5 Marks

1. cat 2. girl 3. school 4. chant 5. zoo

OR

B. i. Mingled with the many shades green-for each tree has its own 5 Marks

Individual color –are vivid splashed of orange, gold, lilac, pink and red. -Annotate

ii. Read the passage below and answer the questions that follow.

5 Marks

When the hot winds blow in April these pods will explore like anti- aircraft shells and a white cloud of silk cotton (kapok used in life belts), each section carrying a seed, will drift away in the wind to regenerate nature's garden. All seeds that are not carried from one place to another by birds or animals are provided with buoyant material or with parchment sails or propellers, to enable the winds of heaven to carry them from place to place.

1. What happens to the pods when hot winds blow in April?
2. What carries the seeds away from the exploded pods?
3. What is the purpose of the silk cotton (kapok) attached to the seeds?
4. How do seeds travel from one place to another besides the wind?
5. Why are seeds provided with parchment sails or propellers?

11. A. i. "I began to feel a sense of pride and dignity". Annotate.

5 Marks

ii. Rewrite the following Sentences as directed.

5 Marks

1. The boy killed the spider. (Change into Passive Voice)
2. He was betrayed by his own brother. (Change into Active Voice)
3. We advise early booking. (Change into Passive Voice)
4. I was taught grammar by him. (Change into Active Voice)
5. She gave me a pen. (Change into Passive Voice)

OR

B. i. Match the idioms with their meanings.

5 Marks

1. what's up - a) ask someone what the problem is
2. take it easy - b) to help some out
3. lend a hand - c) to relax; to calm down
4. titanic - d) greed for money
5. itching palm - e) huge, difficult

ii. Preethi wants to open a new bank account. She approaches the clerk at the counter.

Write a dialogue between Preethi and the clerk.

5 Marks

12. A: i. Hope for the Best but Prepare for the Worst. Discuss.

5 Marks

ii. Write words to the following Phonetic Transcription.

5 Marks

1. /mæt/ 2. wɪʃ 3. kɪŋ 4. əbəʊt 5. θɪŋk

OR

B. i. Write a paragraph on 'Decision Making Skill.'

5 Marks

ii. Supply the past verb forms to the following words.

5 Marks

1. ask 2. drop 3. cry 4. bury 5. Dance

13. A: i. Write a narrative paragraph on an eventful cricket/football/hockey match. 5 Marks

ii. Write antonyms to the following words.

5 Marks

1. known 2. do 3. agree 4. read 5. manage

OR

B. i. Write a paragraph on the maxim, 'Early Bird Catches the Worm'.

5 Marks

ii. Write the meanings to the following words.

5 Marks

1. Call off 2. Eat out 3. Set off 4. Give up 5. Take up

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Examinations Nov/Dec-2024
PAPER: TELUGU-III

Time: 3 Hours

Max Marks: 70

విభాగము- ఎ

I ఈక్రిందివానిలో ఏవేని నాలుగు ప్రశ్నలకు సమాధానాలు రాయండి. 4×5=20
 1. "నీవు సంకటపడి యెడు దేవ పదవి యైన నేనొల్ల". సందర్భ సహిత వ్యాఖ్య రాయండి.

2. "చదవబెట్టిరి వాని ఆచార్యు నొద్ద" సందర్భ సహిత వ్యాఖ్య రాయండి.

3. "ఈ అస్త్రంబును సామాన్యులపై ప్రయోగించరాదు" సందర్భ సహిత వ్యాఖ్య రాయండి

4. "కానీ పాతాళ యంత్ర మాతనిలోని ఊహ " సందర్భ సహిత వ్యాఖ్య వ్రాయండి.

5. గోన బుద్ధారెడ్డి ని పరిచయం చేయండి

6. 'వానమామలై జగన్నాథాచార్యులు' ను పరిచయం చేయండి.

విభాగము- బి

II ఈ క్రింది వానిలో అన్ని ప్రశ్నలకు సమాధానములు రాయండి. 5×10=50

ఒక పద్యానికి కవి పరిచయం, సందర్భం, ప్రతిపదార్థ తాత్పర్యం, వ్యాకరణాంశాలు తెలపండి.

7) a) మనమున బక్షపాత గతి మాదెస మానుము ధర్మనీతి ప
 ర్తనముల రెండు దిక్కుల హితంబును బెంపును గల్గునట్టి చొ
 ప్పున విదురాది సజ్జనుల బుద్ధికి రా నుచితంబుతోడి మె
 ల్పున బరుసందనంబునను భూపతులెల్ల నెరుంగ నాడుమీ
 లేదా

b) విడువకు నీవు పట్టణము వీధుల వీధుల వెర్రివాడవై
 చెడుగుల గూడి ధౌర్జములు సేయ మహీ రమణుడె రింగె నే
 విడుచును సోమయాజి మనువృత్తులు చేకొను నెల్ల భంగులన్
 జెడుదుము నీ కతంబునను జీరయుగూడును లేక పుత్రకా!

8) a) గుణ నిధి 'గుణశీలములను గురించి రాయండి.

లేదా

b) ధర్మజుని వాక్యాతుర్యమును వివరించండి?

9) a) "గుడిసెలు కాలిపోతున్నాయి" కావ్య సందేశాన్ని వివరించండి.

లేదా

b) గురుదక్షిణ పాఠ్యాంశాన్ని పరిచయం చేయండి.

10) ఈ క్రింది వానిలో రెండింటికీ లక్ష్య లక్షణ సమన్వయము చేయండి.

a) ఉపమ అలంకారము

b) శ్లేష అలంకారము

c) అతని పుత్రుండు గుణనిధి అనేది వాడు

దర్పకుని తోడి జోడు సౌందర్య రేఖ

d) "అక్షదూర్తులలోన నీ య నుగు గొ డుకు

దొరయునంతటి యక్ష దూర్తుండు లేడు

క్షితి తలంబున యాగదీక్షితులలోన

కీర్తి నీ యట్టి యాగ దీక్షితుడు లేడు "

11) ఈ క్రింది వానిలో రెండింటికీ లక్ష్య లక్షణ సమన్వయము చేయండి.

a) యమకము

b) అంత్యప్రాస అలంకారము

c) వదలలేదు మాధవ మాధవ స్మృతులను

d) కమలాక్షు నర్పించుకరములు కరములు

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PAPER: HINDI-III

Time: 3 Hours

Max Marks: 70

भाग-‘अ’

निम्नलिखित छह प्रश्नों में से किन्हीं चार प्रश्नों के उत्तर दीजिए।

(4×5=20)

1. कबीरदास जी का कवि परिचय लिखिए ?
2. कवि नौजवानों के लिए किस प्रकार उत्तेजित किया ?
3. दोहा की संदर्भ सहित व्याख्या कीजिए ?
तुलसी मीठे वचन ते-----
तज दे वचन कठोर
4. दोहा की संदर्भ सहित व्याख्या कीजिए ?
काल करे सो आज कर-----
बहुरि करेगा कब
5. हिंदी साहित्य इतिहास चार कालों की काल विभाजन कीजिए ?
6. रामभक्ति शाखा के बारे में आप क्या जानते हो, अपने शब्दों में समझाइये ?

भाग-‘आ’

7. निम्न में से किसी एक कविता का सारांश लिखिए । (1×10=10)
(अ) भारत कविता का सारांश संक्षिप्त में लिखिए ।
(आ) नवयुवकों से कविता सारांश पर प्रकाश डालिए ।
(इ) मेरा नया वचन कविता पर प्रकाश डालिए ।
8. निम्न में से किसी एक प्रश्न का उत्तर दीजिए । (1×10=10)
(अ) आदिकालीन सामाजिक आर्थिक परिस्थितियों का वर्णन कीजिए ।
(आ) सगुण भक्तिधारा के बारे में समझाइये ।
9. निम्नलिखित में से किन्हीं दो कवियों पर टिप्पणी लिखिए। (1×10=10)
(अ) मैथिलीशरण गुप्त (आ) रामधारी सिंह दिनकर (इ) तुलसीदास
10. निम्नलिखित में से किन्हीं एक विषय पर निबंध लिखिए । (1×10=10)
(अ) आधुनिक शिक्षा और नारी (आ) भारतीय समाज में नारी का स्थान
(इ) समाचार पत्र का महत्व
11. निम्नलिखित दस वाक्यों को हिंदी से अंग्रेजी में अनुवाद कीजिए । (1×10=10)
 1. यह मेरा घर है।
 2. कश्मीर सुंदर प्रदेश है।
 3. मेरी दादी मुझे बहुत प्यार करती है।
 4. कल मैं गाँव गया था ।
 5. मैं झरना देखने गया ।
 6. पटरी से रेल अलग हुई है ।
 7. हमारी राजधानी हैदराबाद है ।
 8. कोयल की आवाज मधुर है ।
 9. मैं ने पत्र भेजा ।
 10. वह मेरी पुस्तक है ।

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PAPER: SANSKRIT-III

Time: 3 Hours

Max Marks: 70

1. चत्वारि प्रश्नाः समाधेयाः

1. श्लोकारय आषान्तरीकरणम् कुरुत।

यस्य ज्ञानदयासिन्धोरगाश्चर्यन्त्या गुणाः।
सेव्यतामञ्जरौ धीरा खत्रियै चामृताय च॥

2. स्पन्दर्थं व्याख्यात।

का ते माता ? कस्ते पिता ? कथं वेदानामागमः ?

3. लिङ्गविभक्ति वचनानि प्रत्याभिजानीत।

1. जलमुन्मु 2. वरिष्ठः 3. मरुते 4. भगवता 5. भवति

4. स्पन्दर्थं व्याख्यात।

सुरासुरवृशः स्योत्र स्पन्तीकस्तपस्यति।

5. सूर्यनारायणशास्त्रिपाण्डितस्य शास्त्रवैदुष्यं विवृणुत।

6. लिङ्गविभक्ति वचनानि प्रत्याभिजानीत।

1. अहम् 2. मनः 3. गुणी 4. त्वम् 5. नाम

7. सर्वे प्रश्नाः समाधेयाः।

PART-B

आ - विशाखा

द्वयोः श्लोकयोः प्रतिपदार्थं तात्पर्यञ्च लिखत।

(अ) प्रथमोपकृतं मरुत्वतः परिपत्त्या लघु मन्यते भवान्।

माणयत्यवदानविस्मितो भवतः स्योपि न सक्तियागुणान्॥

(अथवा)

- ३०) अक्षिणीतया यामतुसमदं निष्पन्नस्य ।
प्रप्रतोलेतुं सिद्धासिं जलान्तरा यत्नति ॥
- ३१) उदेते पूर्वं कुशुम् ततः फलं धनोदयः प्रातःकनन्तरं पयः ।
निमित्तनौमितिकयोर्थं त्रगस्तव प्रसादस्य पुरस्तु सज्जदः ॥
(अथवा)
- ३२) प्रवर्ततां प्रकृतिहिताय पार्थिवः
स्वरस्वती श्रुतिमदतां मदीयताम् ।
ममापि च झपयतु नोललोहितः
पुनर्ब्रवीं परिगतशक्तिशाम्भुः ॥
९. "नवश्रमानि" इति पाठ्यांशस्य स्यादर्थं लिखत ?
(अथवा)
प्रवर्ततां प्रकृतिहिताय पार्थिवः इति पाठ्यांशस्य स्यादर्थं लिखत ?
१०. देव महतीयं कथा यदि कौतूहलम् आकर्ष्यताम् इति वैशम्पायनः
कां वाक्याम् अव्यावयत् ? विवृणुत ?
(अथवा)
कंचनवोपन्नः कथं रामदासः अव्यावत् ? तत्र इतिहासः कः ?
विशदयत ।
- ॥ द्वयोः शब्दौ स्वस्वेषु विशक्तिषु लिखत ।
अ) जलमुक्त्वा अ) मरुत् इ) राजन् ई) युष्मद्

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BA/B.Com/BSc II-Year, CBCS-III Semester Regular Examinations
Nov/Dec-2024
PAPER: PROFESSIONAL SKILLS

Time: 2 Hours

Max Marks: 40

Section-A

I. Answer any TWO of the following questions (2x5=10 Marks)

- 1.What are the essential components of a Resume?
- 2.Explain the difference between open and close ended questions in an interview?
- 3.Define Simulation in group discussion with example?
- 4.What are the benefits of knowing oneself?

Section-B

II. Answer any of the following questions (2x15=30 Marks)

- 5.(a)What is the difference between a Resume, a CV and Bio data?

(OR)

- (b).How does the STAR approach help an interviewee during an interview?

- 6.(a)Explain the process of group discussion and describe the methods used to conduct it?

(OR)

- (b).What are the reliable sources of career information including job requirement, skills needed and resources for self-employment opportunities?

Faculty of Science

B.Sc II-Year, CBCS-III Semester Regular Examinations Nov/Dec-2024

PAPER: REAL ANALYSIS

Time: 3 Hours

Max Marks: 70

Section-A

I. Answer any SIX of the following questions (6x5=30 Marks)

1. Define convergent sequence and prove that $\lim_{n \rightarrow \infty} \frac{1}{n^2} = 0$ using it.
2. Test the Convergence of the series $\sum \frac{1}{n^2+1}$
3. Define continuity and uniform continuity
4. Find left and right hand limits of $f(x) = \frac{x}{|x|}$ at $x=0$
5. Prove that if 'f' is derivable on $[a, b]$ then 'f' is continuous on $[a, b]$
6. Using mean value theorem prove that $|\cos x - \cos y| \leq |x - y| \forall x, y \in \mathbb{R}$
7. Define lower and upper Darboux sum of 'f' on $[a, b]$.
8. Prove that if 'f' is Riemann integrable on $[a, b]$ then $|f|$ is Riemann integrable on $[a, b]$
9. Prove that every convergent sequence is bounded.
10. Evaluate $\lim_{x \rightarrow 0} \left(\frac{1}{\sin x} - \frac{1}{x} \right)$

Section-B

II. Answer the following questions (4x10=40 Marks)

- 11.(a) State and prove Squeeze (Sandwich) theorem on Sequences.

OR

- (b) State and prove Root test in infinite Series.

- 12.(a) Prove that if 'f' is continuous on $[a, b]$ then 'f' is bounded on $[a, b]$.

OR

- (b) Prove that if f is continuous on $[a, b]$ then f is uniformly continuous on $[a, b]$

- 13.(a) State and Prove Lagranges mean Value Theorem.

OR

- (b) Evaluate : i) $\lim_{x \rightarrow \infty} \left(1 - \frac{1}{x}\right)^x$ ii) Evaluate $\lim_{x \rightarrow 0} \frac{x^3}{\sin x - x}$

- 14.(a) Show that if 'f' is monotonic on $[a, b]$ then 'f' is Riemann integrable on $[a, b]$.

OR

- (b) State and prove second fundamental theorem of Integral Calculus.

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B.Sc (Physics) II-Year, CBCS-III Semester Regular Examinations
Nov/Dec-2024

PAPER: ELECTRO MAGNETIC THEORY

Time: 3 Hours

Max Marks: 70

Section-A

I. Answer any SIX of the following questions (6x5=30 Marks)

1. Explain Gauss's law in differential form?
2. Explain about the concept of electric field lines?
3. Mention few applications of Ampere's law?
4. Define magnetic field and magnetic field strength?
5. Explain the properties of magnetic induction?
6. Define self and mutual inductance?
7. State Reciprocity theorem?
8. Write a short notes on power sources?
9. What is displacement current?
10. Define Q-factor. What is its significance?

Section-B

II. Answer the following questions (4x10=40 Marks)

- 11.(A).Derive an expression for electric field due to uniformly distributed charged Sphere?

OR

- (B). Derive an expression for electric potential due spherical shell?

- 12.(A). state and explain Biot - savart law?

OR

- (B).Derive the expression for magnetic field due to solenoid?

- 13.(A).State and prove poyting's theorem?

OR

- (B). write Maxwell's equations in differential form and integral form?

14. (A) state and prove thevenin's theorem?

OR

- (B) Discuss the growth of charge in CR circuit?

Faculty of Science

B.Sc II-Year, CBCS-III Semester Regular Examinations Nov/Dec-2024

PAPER: DATA ENGINEERING WITH PYTHON

Time: 3 Hours

Max Marks: 70

Section-A

I. Answer any SIX of the following questions (6x5=30 Marks)

- 1) Explain JSON and XML formats in Python. How are they used in data interchange, and what modules are required for processing them?
- 2) Explain the use of the open method in Python for reading and writing files. How do the different modes ('r', 'w', 'a') work?
- 3) What are special characters in regular expressions? List any five special characters and explain their use with examples.
- 4) Write a Python script to extract and print all the text content within <title> tags from an HTML file.
- 5) Write a SQL query to create a table in MySQL with columns for id, name, and age. Then, insert three records into the table.
- 6) Write a Python program to create a NumPy array of integers and use boolean indexing to extract all elements greater than 10.
- 7) What are the key differences between a Pandas Series and a Pandas DataFrame?
- 8) Explain the process of transforming data in Pandas.
- 9) Write a Python program to open a text file, read its contents, and print.
- 10) Discuss the purpose and advantages of combining data from multiple sources in Pandas

Section-B

II. Answer the following questions (4x10=40 Marks)**11.(a)** Explain about CSV module in detail?**OR****(b)** Describe the structure of a well-organized Data Science report?**12.(a)** Write a Python program that reads an HTML file, extracts all the text within <p> tags, and displays it. Use any suitable library like BeautifulSoup for parsing?**OR****(b)** Explain the concept of named groups in Python regular expressions**13.(a)** Explain the process of creating NumPy arrays using the array() function. Discuss how array attributes (e.g., shape, dtype) can be accessed and modified in NumPy**OR****(b)** Explain about DDL and DML commands with examples.**14.(a)** Explain about Plotting in detail.?**OR****(b)** Explain about Matplotlib for data visualization.?

Faculty of Science

B.Sc II-Year, CBCS-III Semester Regular Examinations Nov/Dec-2024

PAPER: DATA STRUCTURES USING C++

Time: 3 Hours

Max Marks: 70

Section-A

I. Answer any SIX of the following questions (6x5=30 Marks)

- 1) What is data structure? Explain various types of data structure.
- 2) The following sequence of operations are performed on a stack:
push(1), push(2), pop, push(1), push(2), pop, pop, pop, push(2), pop.
What is the sequence of popped out elements?
- 3) What are the applications of queue data structure?
- 4) Give any 6 operations which can be performed on Linked-List.
- 5) Define binary tree? What are in-order, pre-order and post-order?
- 6) Define both linear search and binary search? Give example for each.
- 7) Explain about Breadth First Search (BFS) algorithm with example.
- 8) What are the differences between chaining and rehashing?
- 9) Write about insertion sort with your own example.
- 10) Define circular queue? Give an example

Section-B

II. Answer the following questions (4x10=40 Marks)

- 11) a) Define stack? Explain about stack ADT in detail with examples.

OR

- b) Write a C++ program to demonstrate basic operations on stack.

- 12) a) Define queue? Write about different types of queues in detail.

OR

- b) Write a C++ program to create double linked-list.

- 13) a) What is binary tree? Explain various types of operations on Binary Tree.

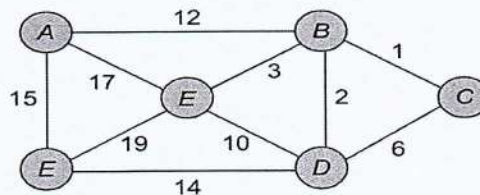
OR

- b) Using the bubble sort algorithm, manually sort the following list and show your work in each pass: 7, 23, 31, 40, 56, 78, 9, 2.

- 14) a) Define chaining and explain collision resolution strategies.

OR

- b) Construct a minimum spanning tree (step-by-step) from the following graph using Kruskal's algorithm.



Time: 3 Hours

Max. Marks: 70

SECTION – A

I. Answer any SIX questions. All questions carry equal Marks

(6 x 5 = 30 Marks)

1. What is Scatter diagram ?
2. Define positive correlation? Example.?
3. Define association of attributes. ?
4. If $(A)=450$, $(B)=650$, $(AB)=310$, $N=1000$ find whether A and B are independent or associated?
5. Define χ^2 distribution?
6. Define point and interval estimation?
7. Define Fisher Neyman Factorization theorem?
8. Define method of moments?
9. Define Spearman's rank correlation?
10. Define principle of least square?

SECTION B

II. Answer ALL questions. All questions carry equal Marks

(4 x 10 = 40 Marks)

11. (a) Define Karl Pearson's coefficient of correlation and its Assumptions. Explain it's properties?

OR

- (b) Compute the coefficient of rank correlation from the following data?

x : 15 20 28 12 40 60 20 80

y: 40 30 50 30 20 18 30 60

12. (a) Explain the method of fitting of an exponential curves of from
i) $y=ab^x$ (Power curve) and ii) $y=ae^{bx}$ (Exponential curve) to the given data ?

OR

- (b) What do you understand by independence of attributes give a criterion of independence For attributes A & B

13. (a) Explain the following: (i) population (ii) Sample (iii) Parameter (iv) Statistics
(v) Sampling (vi) standard error

OR

- (b) Define F distributions, state it's properties uses?

14. (a) Explain the maximum likelihood method of estimation state the properties of maximum likelihood estimation.

OR

- (b) If $x_1, x_2, x_3, \dots, x_n$ is a random sample from $N(\mu, \sigma^2)$ population? Find sufficient estimator for μ, σ^2 ?

Faculty of Science
BSC (Data Science) II Year CBCS-III Semester Regular Examinations
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PAPER: THEORY OF EQUATIONS

Time: 2 Hours

Max Marks: 40

Section-A

I. Answer any TWO of the following questions (2x5=10 Marks)

1. Find the Maximum value of $X^3-6X^2+9X+15$
2. Form a polynomial Equation whose roots are $1\pm 2i$, $2\pm 1i$
3. Find sum and Product of the roots of $12X^3-24X^2+12X-24=0$
4. If 1,2,3 and 4 are the roots of $X^4+aX^3+bX^2+cX+d=0$, then find the value of a,b,c and d.

Section-B

II. Answer the following questions (2x15=30 Marks)

5. (a) Find the nature of the roots $X^4+15X^2+7X-11=0$

(OR)

- (b) Solve the equation $16x^3 - 40x^2 + 37x - 40 = 0$ two being the roots

6. (a) Solve the equation $X^4+15X^3+70X^2+120X+64=0$ whose roots are in G.P.

(OR)

- (b) Given that the sum of two roots of $X^4-2X^3+4X^2+6X-21=0$ is zero. Find the roots of the equation.

Faculty of Science
B.Sc (Honours) II-Year, CBCS-III Semester Regular Examinations
Nov/Dec-2024
PAPER: DISCRETE MATHEMATICS

Time: 3 Hours

Max Marks: 70

Section-A

I. Answer any SIX of the following questions (6x5=30 Marks)

1. By using quantified propositions solve (i) All birds can fly (ii) Not all birds can fly.
2. Define Boolean Algebra. & In any Boolean algebra every element has unique complement.
3. How many permutation are there in the word BHOOMAIAH.
4. Find the number of even numbers that can be formed from 0,2,3,5,7.
5. Explain about recurrence relation.
6. Solve $a_n - 7a_{n-1} + 10a_{n-2} = 0$
7. Define A Tree , Rooted tree, Directed tree.
8. Define Graph ,Order and Size of a graph
9. Find the sum of all 4 digit numbers that can be obtained by using the digits 2,3,5 and 7.
10. Show that there is unique path between every two vertices.

Section-B

II. Answer the following questions (4x10=40 Marks)

- 11. a)** Discuss the method of proof i.e Direct proof, Indirect proof, Proof by contradiction, positive proof by contradiction.

OR

- b)** Prepare the truth table for the following K-map and find SOP & POS.

	00	01	11	10
00	1			1
01		1	1	
11		1	1	
10	1			1

- 12. a)** How many arrangements are there of the letters of the word NISHITHA with (i) both I's before both H's end (ii) start with S end with T.

OR

- b)** Find the number of integers between 1 and 1000 inclusive that are divisible by none of 5,6 and 8.

- 13. a)** Solve the recurrence relation $a_n = -3a_{n-1} - 3a_{n-2} - a_{n-3}$ given that $a_0=5$, $a_1=9$ and $a_2=15$

OR

- b)** Explain the concept of non Homogeneous recurrence relation.

- 14. a)** If G is a connected planar graph with vertices 'v' and edge 'e' and regions 'r' then prove that $v-e+r=2$.

OR

- b)** A simple nondirected graph G is a tree iff G is connected and contain no cycles.

Faculty of Science
B.Sc (Honours) II Year CBCS-III Semester Regular Examinations
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PAPER: LINUX TOOLS AND UTILITIES

Time: 2 Hours

Max Marks: 40

Section-A

I. Answer any TWO of the following questions **(2x5=10 Marks)**

1. Write about grep and awk.
2. Write about mkdir and rmdir.
3. Explain about debugging.
4. Explain about Vim and Nano.

Section-B

II. Answer the following questions **(2x15=30 Marks)**

5. a). Explain about file management tools.

(OR)

- b). Explain about Regular Expressions for pattern matching.

6. a). Explain about Integrated Development Environments on Linux.

(OR)

- b). Explain about version control concepts.

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PAPER: DATA STRUCTURE AND ALGORITHM

Time: 3 Hours

Max Marks: 70

Section-A

I. Answer any SIX of the following questions (6x5=30 Marks)

1. Write about Asymptotic notations? What is time complexity & Space complexity?
2. Write about skip list.
3. What is an AVL tree? Explain the process of left rotation and right rotation with examples.
4. Explain pre-order, in-order and post-order binary tree traversals.
5. Define a graph and explain its key properties.
6. What are the differences between Depth First Search (DFS) and Breadth First Search (BFS) in terms of traversal order
7. Write about binary search algorithm with example.
8. Explain about quick sort algorithm.
9. What are the applications of stacks.
10. Explain about merge sort.

Section-B

II. Answer the following questions (4x10=40 Marks)

- 11.a) Define linked list? Explain about types of lists.
OR
b) Discuss about queues in detail.
- 12.a) Explain the concept of an AVL tree and how it differs from a regular binary search tree.
OR
b) Define a binary search tree (BST). Discuss the properties of a BST.
- 13.a) Explain about Kruskal's Algorithm.
OR
b) Explain about Dijkstra's algorithm.
- 14.a) Consider the array: [29, 10, 14, 37, 13, 38]. Sort using bubble sort algorithm and show the steps.
OR
b) Write about any greedy algorithm in detail.

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PAPER: STATISTICAL METHODS

Time: 3 Hours

Max Marks: 70

Section-A

I. Answer any SIX of the following questions

(6x5=30 Marks)

1. Define correlation coefficient.
2. Write any two properties of Regression.
3. Find normal equation to straight line.
4. Define time series models.
5. Write uses of Index numbers.
6. Explain about chain base index numbers.
7. Define ANOVA.
8. What are the principles of experimental design.
9. Define scatter diagram.
10. Explain (i) population (ii) sample with examples.

Section-B

II. Answer the following questions

(4x10=40 Marks)

11.(a) Define Spearman's rank correlation coefficient.

(OR)

(b) State the advantages and dis-advantages of correlation Regression.

12.(a) Show that the correlation coefficient independent of change of origin and scale.

(OR)

(b) Explain (i) Sampling error (ii) Non-sampling error.

13.(a) Explain the criteria of good index numbers.

(OR)

(b) Explain cost living index numbers.

14.(a) State the statistical analysis model of ANOVA one way classification.

(OR)

(b) Define layout completely randomized block design.

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PAPER: OBJECT ORIENTED PROGRAMMING USING JAVA

Time: 3 Hours

Max Marks: 70

Section-A

I. Answer any SIX of the following questions

(6x5=30 Marks)

1. Write about object oriented benefits
2. Explain class and methods with example?
3. Explain about Byte stream classes?
4. Define Exception and Explain try and catch statements?
5. Explain List and methods in collection interface?
6. Explain about string Tokenizer with example?
7. Explain AWT classes?
8. Write about Labels and Button AWT controls ?
9. Explain operators in java
10. Define Thread and explain thread with thread class?

Section-B

II. Answer the following questions

(4x10=40 Marks)

- 11.(a) Explain Data types in java with example?
OR
(b) Define Inheritance and explain types of inheritances?
- 12.(a) Explain about Reading Console input and output?
OR
(b) Explain about String Handling methods in java?
- 13.(a) Explain about Array list and its methods with example?
OR
(b) Explain Collections and advantages of collection?
- 14.(a) Explain Two Event handling mechanism?
OR
(b) Explain about layout managers?

Faculty of Science
BSC II Year CBCS-III Semester Regular Examinations Nov/Dec-2024
PAPER: PYTHON-I

Time: 2 Hours

Max Marks: 40

Section-A

I. Answer any TWO of the following questions (2x5=10 Marks)

1. What is variable and how to declare a variable in python?
2. How to compare two strings using python program?
3. What is global constant?
4. What is Exception?

Section-B

II. Answer the following questions (2x15=30 Marks)

5. a) What are operators in python?

(OR)

- b) Explain Decision Structures in python with example?

6. a) Explain functions in python with example?

(OR)

- b) Explain math module?

Faculty of Science
BCA II-Year, CBCS-III Semester Regular Examinations Nov/Dec-2024
PAPER: APPLIED MATHEMATICS

Time: 3 Hours

Max Marks: 70

Section-A**I. Answer any FIVE of the following questions (5x4=20 Marks)**

1. Define the Euler's theorem and verify $f(x,y) = ax^2 + 2hxy + by^2$
2. If $u = x^3 + y^3$ where $x = a \cos t$, $y = b \sin t$ then evaluate $\frac{\partial u}{\partial t}$ and verify the result.
3. Define the consistent, Inconsistent equations.
4. Define Linear Dependent, Linear Independent Vectors.
5. Find the value D^5 of $D = \begin{bmatrix} 2 & 0 \\ 0 & 3 \end{bmatrix}$
6. Show that the intersection of any two subspace of a vector space V is subspace of V .
7. Define Eigen value, Eigen vector of a matrix A . find Eigen value of matrix $\begin{pmatrix} 2024 & 0 \\ 0 & 2025 \end{pmatrix}$
8. If $u = y e^{xy} \sin x$ then find $\frac{dy}{dx}$, at $O(0,0)$

Section-B**II. Answer the following questions (5x10=50 Marks)**

9. (a) If $u = \log(x^3 + y^3 + z^3 - 3xyz)$ then show that $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial z^2} = \frac{-3}{(x+y+z)^2}$

OR

- (b) State and prove Euler's theorem on homogeneous functions.

10. (a) Prove that if the perimeter of a triangle is constant, its area is Maximum when the triangle is equilateral

OR

- (b) If $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ then prove that $\frac{d^2y}{dx^2} = \frac{abc + 2fgh - af^2 - bg^2 - ch^2}{(hx + by + f)^2}$

11. (a) Check the given linear equation consistence or Inconsistent $x - 3y + 2z + 2w = 1$; $2x - 2z = 3$; $4x - 6y + 2z + 4w = 6$.

OR

- (b) Determine whether the vectors $V_1 = \{-1, 0, -2\}$, $V_2 = \{2, 3, -4\}$, $V_3 = \{-3, -5, 1\}$ Linear Independent or Linear Dependent. In R^3 .

12. (a) $A = \begin{pmatrix} 4 & 2 & 2 \\ 2 & 4 & 2 \\ 2 & 2 & 4 \end{pmatrix}$ then find Eigen values and Eigen Vectors

OR

- (b) Find the Characteristic equation, and values of the matrix $\begin{pmatrix} 1 & 0 & -1 \\ 2 & 3 & -1 \\ 0 & 6 & 0 \end{pmatrix}$

13. (a) Diagonalize the matrix $\begin{pmatrix} 2 & 2 & -1 \\ 1 & 3 & -1 \\ -1 & -2 & 2 \end{pmatrix}$; if possible.

OR

- (b) An $n \times n$ matrix A is diagonalizable if and only if it has n linearly independent Eigen Vectors.

Faculty of Science
BCA II-Year, CBCS-III Semester Regular Examinations Nov/Dec-2024
PAPER: DATABASE DESIGN

Time: 3 Hours

Max Marks: 70

Section-A

I. Answer any FIVE of the following questions

(5x4=20 Marks)

1. What is an entity? Write about types of entities.
2. Explain the concept of cardinality in the context of an E-R model.
3. Write about BCNF.
4. Describe the structure of a B+ Tree.
5. List and define aggregate functions in SQL.
6. Define a PRIMARY KEY constraint and explain its purpose.
7. What is a shared lock, and when is it used in databases?
8. What is the role of a DBMS in a database environment?

Section-B

II. Answer the following questions

(5x10=50 Marks)

9. a) What is database? List and explain different limitations of traditional file processing systems.

OR

- b) Explain about *three schema architecture* with neat diagram.

10. a) Define normalization? Explain about 1NF, 2NF, 3NF and BCNF with examples.

OR

- b) Explain about supertype/subtype hierarchies in detail.

11. a) Explain about DDL and DML commands with syntax and example.

OR

- b) Explain the concept and purpose of SQL triggers.

12. a) What are indexing data structures? Describe the main types of indexing data structures used in databases.

OR

- b) List and explain common types of file organizations used in databases

- 13.a) What is Two-Phase Locking (2PL)? Explain how it ensures serializability.

OR

- b) What is a deadlock in database systems? Explain how deadlocks occur and discuss methods used to detect and resolve deadlocks.

Faculty of Science
BCA II-Year, CBCS-III Semester Regular Examinations Nov/Dec-2024
PAPER: JAVA PROGRAMMING

Time: 3 Hours

Max Marks: 70

Section-A

I. Answer any FIVE of the following questions

(5x4=20 Marks)

1. Difference between C & JAVA?
2. What is an Event?
3. What is a Package?
4. What are the different Data types in Java?
5. What is Vector?
6. What is Swing?
7. What is Dead Lock?
8. What is Stream?

Section-B

II. Answer the following questions

(5x10=50 Marks)

9. (a) Explain Java Features?

OR

- (b) Explain method overloading & constructor overloading?

- 10.(a) What is an Array? Explain about java.util.array class is used to create array using program?

OR

- (b) Explain method overriding with program?

- 11.(a) What is Exception. Explain how to handle Exceptions?

OR

- (b) Explain Thread and its life cycle?

12. (a) Explain GUI(AWT) controls with help of program?

OR

- (b) Explain Applet with program?

13. (a) Explain Reader & writer class with help of program?

OR

- (b) Explain Collection frame work with program?

Faculty of Science
BCA II-Year, CBCS-III Semester Regular Examinations Nov/Dec-2024
PAPER: OPERATING SYSTEM CONCEPTS

Time: 3 Hours

Max Marks: 70

Section-A**I. Answer any FIVE of the following questions (5x4=20 Marks)**

1. What are system calls? Give examples of different types of system calls.
2. List the requirements for a solution to the critical-section problem.
3. What is the purpose of swapping in memory management?
4. Briefly explain the bitmap approach to free-space management.
5. What is a Trojan horse? Explain how it poses a security risk.
6. What are the main objectives of CPU scheduling in an operating system?
7. What is the role of synchronization hardware in solving critical-section problems?
8. What is disk formatting? Why is it necessary?

Section-B**II. Answer the following questions (5x10=50 Marks)**

9. a) Define process? Describe about process life cycle with neat diagram.

OR

- b) Consider the following set of processes, with their arrival times and burst times given below. Calculate the waiting time and turnaround time for each process using the FCFS scheduling algorithm.

Process	Arrival Time	Burst Time
P1	0	5
P2	2	3
P3	4	1
P4	6	2

10. a) What are semaphores? Explain types and their role in solving the producer-consumer problem

OR

- b) Explain the methods for handling deadlocks. Discuss deadlock prevention, avoidance, detection, and recovery in detail.

11. a) Consider a page reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 3 with three frames. Using the FIFO page replacement algorithm, determine the page faults.

OR

- b) Discuss contiguous memory allocation and its techniques. Explain the challenges with this allocation method and solutions like memory compaction.

12. a) Explain the different types of access methods for files. Describe each method with examples of its usage

OR

- b) Discuss file protection mechanisms. Explain how access control lists (ACLs) and user/group permissions work in modern file systems.

13. a) Explain about system security in detail.

OR

- b) Describe the security threats that can arise in programs.

Faculty of Science
BCA II-Year, CBCS-III Semester Regular Examinations Nov/Dec-2024
PAPER: ENVIRONMENTAL SCIENCE

Time: 3 Hours

Max Marks: 70

Section-A

I. Answer any FIVE of the following questions

(5x4=20 Marks)

1. Importance of Environmental studies
2. Write a note on Ecological pyramids
3. Endangered species
4. Air pollution
5. Watershed management
6. Energy flow in ecosystem
7. Thermal Pollution
8. Disaster management

Section-B

II. Answer the following questions

(5x10=50 Marks)

9. (a) Write about use and over-utilization of surface and ground water.

(OR)

- (b) Effects of modern agriculture on Environment

10. (a) Write is Ecosystem and explain its structure.

(OR)

- (b) Write about Renewable and Non-renewable energy resources

11. (a) Biodiversity threats?

(OR)

- (b) Write about Biodiversity conservation

12. (a) What is soil pollution? Write about its causes and control measures to reduce

(OR)

- (b) Wild life protection Act?

13. (a) Ozone layer depletion?

(OR)

- (b) Impact of Disasters on Environment
