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NGSE/D-24

PHILOSOPHY

(Human Values and Ethics)

Paper : B23-VAC-111

Time : Three Hours] [Maximum Marks : 35

Note : Attempt *five* questions in all, selecting *one* question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

नोट : प्रत्येक इकाई से एक प्रश्न का चयन करते हुए, कुल पाँच प्रश्नों के उत्तर दीजिए। प्रश्न संख्या 1 अनिवार्य है। सभी प्रश्नों के अंक समान हैं।

Compulsory Question

(अनिवार्य प्रश्न)

1. Objective Type Question :

वस्तुनिष्ठ प्रश्न :

(i) Value-based education helps individuals to :

- (a) Memorize complex theories
- (b) Develop ethical reasoning and decision-making skills
- (c) Focus solely on academic success
- (d) Neglect societal responsibilities.

मूल्य-आधारित शिक्षा व्यक्तियों को किसमें मदद करती है?

- (अ) जटिल सिद्धांतों को याद रखने में
- (ब) नैतिक तर्क और निर्णय लेने के कौशल विकसित करने में
- (स) केवल शैक्षणिक सफलता पर ध्यान केंद्रित करने में
- (द) सामाजिक जिम्मेदारियों की उपेक्षा करने में।

(ii) Which of this best explains "human values"?

- (a) Monetary rewards achieved through effort
- (b) Guidelines for respectful and ethical behaviour
- (c) Cultural traditions that never change
- (d) Rules imposed by governments.

“मानव मूल्यों को इनमें से कौन सबसे अच्छी तरह समझाता है?

- (अ) प्रयास द्वारा प्राप्त वित्तीय पुरस्कार
- (ब) सम्मानजनक और नैतिक व्यवहार के लिए दिशा निर्देश
- (स) ऐसी सांस्कृतिक परंपराएँ जो कभी नहीं बदलतीं
- (द) सरकारों द्वारा थोपे गए नियम।

(iii) Which of the following best defines "value"?

- (a) A principle that guides behaviour
- (b) A method for solving problems
- (c) A financial assessment
- (d) A technical skill.

“मूल्य” को निम्न में से कौन सबसे अच्छा परिभाषित करता है?

- (अ) एक सिद्धांत जो व्यवहार का मार्गदर्शन करता है
- (ब) समस्याओं को हल करने की विधि
- (स) एक वित्तीय मूल्यांकन
- (द) एक तकनीकी कौशल।

(iv) Which value promotes harmony with nature?

- (a) Transparency
- (b) Accountability
- (c) Sustainability
- (d) Inclusiveness.

कौन-सा मूल्य प्रकृति के साथ सामंजस्य को बढ़ावा देता है?

- (अ) पारदर्शिता
- (ब) उत्तरदायित्व
- (स) सततता
- (द) समावेशन।

(v) Which human value is emphasized in the concept of Brahmavihara?

- (a) Kindness and compassion
- (b) Wealth accumulation
- (c) Professional success
- (d) Power and authority.

ब्रह्मविहार की अवधारणा में किस मानव मूल्य पर जोर दिया गया है?

- (अ) दया और करुणा
 - (ब) धन संचय
 - (स) पेशेवर सफलता
 - (द) शक्ति और अधिकार।
- (vi) Which ethical theory focuses on maximizing happiness for the greatest number?

- (a) Deontology
- (b) Virtue Ethics
- (c) Utilitarianism
- (d) Divine Command Theory.

कौन-सा नैतिक सिद्धांत अधिकतम लोगों के लिए खुशी बढ़ाने पर केंद्रित है?

- (अ) कर्तव्यवाद
- (ब) सद्गुण नैतिकता
- (स) उपयोगितावाद
- (द) दैवीय आदेश सिद्धांत।

(vii) Accountability in professional ethics ensures :

- (a) Ignoring mistakes made by peers
- (b) Accepting responsibility for one's actions
- (c) Promoting personal gains
- (d) Focusing only on individual performance.

पेशेवर नैतिकता में जवाबदेही क्या सुनिश्चित करती है?

- (अ) सहकर्मियों द्वारा की गई गलतियों की अनदेखी करना
- (ब) अपने कार्यों के लिए जिम्मेदारी स्वीकार करना
- (स) व्यक्तिगत लाभ को बढ़ावा देना
- (द) केवल व्यक्तिगत प्रदर्शन पर ध्यान केंद्रित करना।

Descriptive Answer Type Questions.

आत्मनिष्ठ प्रकार के प्रश्न।

UNIT-I (इकाई-I)

2. How do personal values differ from moral values?
Provide examples to illustrate.

व्यक्तिगत मूल्यों और नैतिक मूल्यों में क्या अंतर है? उदाहरण देकर समझाएं।

3. Why is value-based education considered necessary in modern society?

आधुनिक समाज में मूल्य-आधारित शिक्षा को आवश्यक क्यों माना जाता है?

UNIT-II (इकाई-II)

4. What is the difference between deontology and utilitarianism? Explain with examples.

परिणाम निरपेक्ष वाद और उपयोगितावाद के बीच क्या अंतर है?
उदाहरणों के साथ समझाएं।

5. Describe the concept of Loksangrah in the context of human values and ethics.

मानव मूल्यों और नैतिकता के संदर्भ में लोकसंग्रह की अवधारणा का वर्णन करें।

UNIT-III (इकाई-III)

6. Explain the role of the four Antah-karanas (mind, intellect, ego, and consciousness) in integrated personality development.

समग्र व्यक्तित्व विकास में चार अंतःकरण (मन, बुद्धि, अहंकार और चैतन्य) की भूमिका को समझाएं।

7. Discuss the relevance of the three Gunas (Sattva, Rajas, Tamas) in personality analysis.

व्यक्तित्व विश्लेषण में तीन गुणों (सत्व, रजस, तमस) की प्रासंगिकता पर चर्चा करें।

UNIT-IV (इकाई-IV)

8. Define professional values and explain how they influence workplace ethics?

पेशेवर मूल्यों को परिभाषित करें और वे कार्यस्थल नैतिकता को कैसे प्रभावित करते हैं? यह समझाएं।

9. Discuss the importance of accountability and transparency in professional ethics.

पेशेवर नैतिकता में उत्तरदायित्व और पारदर्शिता के महत्व पर चर्चा करें।

3438**NGSE/D-24****ENGLISH**

[English Language and Communication Skills (Level-1)]

Paper : B23-AEC-111

Time : Three Hours]

[Maximum Marks : 35

Note : Attempt all questions selecting *one* question from each unit. Question 1 is compulsory.

Compulsory Question

1. Answer the following in about 30 words each :

- (a) Define communication and its basic elements.
- (b) What is the key difference between verbal and non-verbal communication?
- (c) Explain the importance of formal introductions in workplace communication.
- (d) What are the common barriers to effective listening?
- (e) Define active listening and its significance.
- (f) What is note-taking and why is it important?
- (g) Define conjunction. (1×7=7)

UNIT-I

2. Elaborate on the different theories of communication with suitable examples.

OR

3. Explain the various types of non-verbal communication and their importance in effective communication. (7)

UNIT-II

4. Discuss the essential elements of workplace communication with examples.

OR

5. How does interpersonal communication affect workplace relationships? Explain with examples. (7)

UNIT-III

6. What are the different types of listening skills? Explain their significance in communication.

OR

7. Explain various barriers to effective listening and suggest ways to overcome them. (7)

UNIT-IV

8. Explain in detail nouns and their types.

OR

9. Fill in each blank with the appropriate part of speech indicated in brackets. Attempt any *seven* :

- (a) The _____ cat sleeps on the windowsill. (adjective)
 - (b) She _____ walks to school every morning. (adverb)
 - (c) The children played with their _____ in the park.
(noun)
 - (d) _____ friend helped me with the homework.
(pronoun)
 - (e) The tired dog _____ under the tree. (verb)
 - (f) We met _____ the coffee shop. (preposition)
 - (g) The sun shines _____ today. (adverb)
 - (h) The _____ music helped me relax. (adjective)
 - (i) The children _____ in the playground. (verb)
 - (j) My sister reads _____ . (adverb)
 - (k) The _____ caught many fish today. (noun)
 - (l) He spoke _____ during the meeting. (adverb)
- (7)
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NGSE/D-24

COMPUTER SCIENCE
(Introductory Course in R)

Paper : B23-SEC-105

Time : Three Hours]

[Maximum Marks : 35

Note : Attempt *five* questions. Question No. 1 is compulsory.
In addition to Q. No. 1 attempt *four* questions by selecting *one* question from each unit.

Compulsory Question

1. (a) Write Short note on Vector Equality. (2)
- (b) How can you delete row and column in R? (3)
- (c) Explain EDA using R? (2)

UNIT-I

2. Explain the various loop statement in R with example. (7)
3. Explain various Arithmetic and Boolean Function with example in R? (7)

UNIT-II

4. What is String? Explain the various String operation with example. (7)

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5. What Is Matrix? How can you create matrix in R? Explain various Matrix operation with example. (7)

UNIT-III

6. Explain Matrix-like operations in Frames? (7)
7. Explain different R Operation using Array? (7)

UNIT-IV

8. Explain the common function used with factors by giving example. (7)
9. Explain the R Functions for Statistical Analysis. (7)

1. (a) Write Short note on Vector. (2)
- (b) How can you delete row and column in R? (3)
- (c) Explain EDA using R? (2)

UNIT-I

2. Explain the various loop statement in R with example. (7)

3. Explain various Arithmetic and Boolean Function with example in R? (7)

UNIT-II

4. What is String? Explain the various String operation with example. (7)

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NBCA/D-24

PROBLEM SOLVING THROUGH-C

Paper : B23-CAP-101

(CC-A1)

(BCA)

Time : Three Hours]

[Maximum Marks : 50

Note : Attempt *five* questions in all selecting *one* question from each unit. Question No. 1 is Compulsory. All questions carry equal marks.

Compulsory Question

1. (a) Differentiate between a constant and a variable with example.
- (b) Why puts() and gets() are used and how ?
- (c) If $x = 12$, find the value of y after the execution of :
 - (i) $y = x = ++ x$
 - (ii) $y = x + +$
- (d) Explain break statement.
- (e) What is an arrays of pointer? (2×5=10)

UNIT-I

2. (a) Why 'C' language is more popular than any other language? 5
- (b) Define preprocessor directive #include and # define. 5

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3. (a) Describe different format specifiers. 5
(b) Write a program in C language to swap two numbers using third variable. 5

UNIT-II

4. Write note :
(a) Bitwise operators.
(b) Type conversion.
(c) Library function. 4,3,3
5. (a) What is a loop ? Write a program to find sum of 1 to n natural numbers Using for. 5
(b) Write a note on nesting of for loops. 5

UNIT-III

6. (a) What is a one dimensional array of floating point numbers? How space is allocated in memory to an array? 5
(b) Write a program in c language to generate Fibonacci series i.e.,
0, 1, 1, 2, 3, 5, 8, 13, 5
7. Differentiate an iterative function call and a recursive function call With example of each. 10

UNIT-IV

8. Explain :
(a) * and & pointer operators. 5
(b) Accessing data elements in an array using pointers. 5

9. (a) How a structure is nested into another structure in C language? 5
- (b) Write a program to find sum of all data elements of a one-dimensional array of integers in C-language? 5
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3451

NBCA/D-24

LOGICAL ORGANIZATION OF COMPUTER

(Common With CTIS/DS/AI)

Paper-B23-CAP-103

[BCA-(CC-C1/DS-C1)]

Time : Three Hours]

[Maximum Marks : 50

Note : Attempt any *five* questions. Question No. 1 is compulsory.
Select *one* question from each Unit. All questions carry equal marks.

Compulsory Question

1. (a) Abbreviate ASCII, EBCDIC, PROM, DMA
- (b) Prove by Induction $(a \times b) \times c = a \times (b \times c)$.
- (c) Make TT and diagram for D-FF.
- (d) Make Half adder and its circuit.

UNIT-I

2. Convert :
 - (a) $(13.3)_{10}$ to Binary, Octal and Hexadecimal.
 - (b) What is number in Binary and Octal for 2AF7 ?
 - (c) $(101011101001)_2$ to Octal and Hexadecimal.
 - (d) What is number in Binary and hexadecimal if register stores High Low high low?

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3. (a) Write two coding scheme for Weighted code system.
(b) Perform 2's compliment arithmetic.
-31-02 and -19-12.

UNIT-II

4. (a) Define Boolean algebra, differentiate from ordinary algebra and write its postulates.
(b) Solve Using Boolean Algebra.
(i) $x\bar{x}yy + yyzz + zzzx = x\bar{x}yy + yyzz$.
5. (a) Draw and Label 4 Variable K-Map and solve for four corners.
(b) Solve using K-Map $Z = \Sigma 0,1,4,5,11 + \Sigma_{\phi} 7,10,14,15$.

UNIT-III

6. (a) Make circuit 10 to 4 line encoder.
(b) Make Code Convertor from 8421 to Cyclic.
7. (a) Make Full Adder using NOR Gates.
(b) Explain 2 bit comparator.

UNIT-IV

8. Explain JKFF its problem as Race around and its solution.
9. (a) Make Shift Register to store 1010.
(b) Make Excitation Table of JK FF.

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NBCA/D-24

3605

JAVA OOP FOUNDATIONS

Paper-CC-A3 : B23-CAP-301, B23-CTS-301

Time allowed.: 3 Hours]

[Maximum Marks : 50

Note : Attempt **five** questions in all, selecting **one** question from each unit. Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. Attempt all questions:

- (i) Differentiate class and interface.
- (ii) C Name various character streams.
- (iii) Name few applications of object oriented programming.
- (iv). Discuss AWT containers.
- (v). What do you understand by Java String class?

UNIT-I

2. (a) How is JAVA platform independent and portable, justify?
 - (b) Define Data Types of JAVA. emphasise on Non-Primitive data types.
3. List various operators used in Java with example.

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UNIT-II

4. What is inheritance? Write its types. Explain multiple inheritance with suitable code segments.
5. What is a package? How to access, import a package? Explain with examples.

UNIT-III

6. How Exception handling is done in Java? How to handle it, explain with example?
7. (a) What is File class for file management? Explain with suitable scenarios.
(b) Write a program to copy the contents of one file to other. Read the names of files as command line arguments.

UNIT-IV

8. Explain event model and its types.
9. (a) Explain AWT class Hierarchy. Illustrate Event Source in detail.
(b) What is the role of event handling?

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3607

DATA BASE TECHNOLOGIES

Paper-CC-C3 : B23-CAP-303 / B23-CTS-303

Time allowed : 3 Hours]

[Maximum Marks : 50

Note : Attempt **five** questions in all, selecting **one** question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. Answer the following questions in brief: $4 \times 2\frac{1}{2} = 10$
- (i) Write short note on views.
 - (ii) What is the purpose of Cartesian product operation in relational algebra?
 - (iii) Describe the demerits of hierarchical data model and network data model.
 - (iv) Explain various components of DBMS environment.

UNIT-I

2. What is the purpose of mapping between various layers of the 3-tier architecture of DBMS? Explain with the help of suitable examples. 10

3. What do you understand by Database Administrator? Describe the Role and Responsibilities of Database Administrator. 10

UNIT-II

4. Draw and explain the purpose of various symbolic notations used for designing entity-relationship model. Take an example to illustrate. 10
5. Explain the following with examples (with respect to Entity-Relationship Model): 10
- (a) Entity (b) Entity Sets
(c) Entity Type (d) Type of Attributes.

UNIT-III

6. What do you understand by "complete set of operators" in Relational Algebra? Justify. 10
7. Define Relational Calculus. Explain various types of Relational Calculus. 10

UNIT-IV

8. What is the role of functional dependency during Normalisation of database? State the inference rules for functional dependency. 10
9. Explain the following normal forms along with suitable examples: 10
- (a) 1 NF (b) 2NF
(c) 3 NF (d) BCNF.

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17126

NBCA/D-24

DATA SCIENCE ESSENTIALS WITH PYTHON

Paper-B23-CDS-302

(CC-B3)

(BCA-DS)

Time : Three Hours]

[Maximum Marks : 50

Note : Attempt *five* questions, selecting exactly *one* question from each unit. Question number 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) Comment on the roles of data scientists, data analysts, and data engineers within data science.
- (b) What is the binomial distribution, and in what situations is it used?
- (c) What is the main difference between lists and tuples in Python?
- (d) What is a set in Python, and when would you use it? (2.5×4=10)

UNIT-I

2. Explain the significance of data science in today's digital era. Provide examples of its impact on various industries.

(5)

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- (b) Discuss how the growth of data science has influenced decision-making in organizations. Provide examples. (5)
3. Explain the fundamental framework and architecture of data science. How do data collection, processing, analysis, and visualization fit into this framework? (10)

UNIT-II

4. (a) Describe the roles of mean, median, and mode in descriptive statistics. Provide examples to illustrate their differences. (5)
- (b) Describe the Poisson distribution and discuss one scenario where it is applicable. (5)
5. Describe the various sampling methods used in data science, such as random sampling, stratified sampling, systematic sampling, and cluster sampling. Explain their advantages and potential drawbacks. (10)

UNIT-III

6. (a) Describe the process of installing Python and setting up a basic Python development environment. (5)
- (b) Describe the use of conditional statements (if, else, elif) in Python, with examples. (5)

7. How Discuss input and output operations in Python. Explain the methods for taking user input and displaying output, including formatted strings, and provide relevant examples. (10)

UNIT-IV

8. (a) What are Python collections, and why are they useful in programming? (5)
- (b) What are some common operations you can perform on files in Python? List at least three operations and their uses. (5)
9. Provide a detailed explanation of dictionaries in Python, covering their structure, methods, and typical applications. Include examples of dictionary manipulation. (10)
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NBCA/D-24

LINUX AND SHELL PROGRAMMING

Paper : B23-CDS-304

(CC-M3) [BCA-(DS)]

Time : Three Hours]

[Maximum Marks : 50

Note : Question No. 1 is compulsory. In addition to that, attempt four more questions selecting *one* question from each unit. All questions carry equal marks.

Compulsory Question

1. (a) What are different ways of logging out of Linux? (2.5)
- (b) How can background processing be done in Linux? Discuss. (2.5)
- (c) Discuss various types of files in Linux. (2.5)
- (d) How can shell variables be exported? Explain using example. (2.5)

UNIT-I

2. Discuss the architecture of Linux Operating System and explain the starting and shutting down processes of Linux system. (10)
3. (a) What are the challenges and benefits of using a Linux distribution over proprietary operating systems like Windows? Explain. (5)

- (b) What are the similarities and differences between Linux and Unix? Discuss. (5)

UNIT-II

4. Discuss the following Linux commands using general format and examples :
- (i) bc
 - (ii) mv
 - (iii) comm
 - (iv) expand
 - (v) split. (10)
5. Explain following commands in Linux with their format using suitable examples :
- (i) wc
 - (ii) fgrep
 - (iii) diff
 - (iv) kill
 - (v) nohup. (10)

UNIT-III

6. Discuss the Linux file system along with various types of file systems used in Linux. Also explain the structure of file systems. (10)
7. Define a process. Discuss the mechanism for process creation and explain how process can be controlled using at, batch and time. (10)

UNIT-IV

8. (a) Write short note on vi editor. (3)
- (b) What is the difference between while and until loops? Explain with example. (7)
9. (a) How do you define and call Shell functions? How do Shell functions differ from Shell Scripts? (5)
- (b) Write a shell script to display the number of words and number of lines present in a given file. (5)
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22301

NAEC/D-24

**ENGLISH LANGUAGE AND
COMMUNICATION SKILLS LEVEL-3**

Paper : B23-AEC-311

Time : Three Hours]

[Maximum Marks : 35

Note : Attempt *five* questions in all by choosing at least *one* question from each unit. Question No. 1 is compulsory.

All questions carry equal marks.

Compulsory Question

1. (a) Write a short note on summarizing.
- (b) Write a short note on Data Interpretation.
- (c) Use "bark" as a noun in a sentence.
- (d) Make sentences of the following words :
censor, sensor.
- (e) Give meanings of the following :
Childlike, childish.
- (f) Rearrange the following sentence :
he/hardly/began/stepped out/ when/to rain/had/it
- (g) Write a short note on Interview Skills.

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UNIT-I

2. Fill in the blanks with appropriate words/phrases :

- (a) India will record an increase of 116 percent in Type 1 diabetes cases by 2040, up from 2021. Globally, the number of cases by 106.9 percent.
- (b) Making simple changes to your life and making good habits a part of your routine is simpler than it
- (c) The electricity department will the power for two hours this evening.
- (d) The government has many changes to give relief to the common people.
- (e) As I stood in the balcony and watched the passerby throw paper out of his car, I was by his behavior.
- (f) Making tall promises and not fulfilling them unethical.
- (g) You should your mother for your rude behavior.

OR

3. Paraphrase the following passages : (3+4=7)

- (a) "Color blindness is a visual defect resulting in the inability to distinguish colors. About 8% of men and 0.5% of women experience some difficulty in color perception. Color blindness is usually an inherited sex-linked characteristic, transmitted through, but recessive in, females" (Columbia Encyclopedia, 2000).

- (b) "For over 20th years now biologists have been alarmed that certain populations of amphibians have been declining. These declines have occurred both in areas populated by humans as well as areas seemingly undisturbed by people. However, offering clear proof of the declining numbers of amphibians has been difficult because in most cases there is no reliable data on past population sizes with which to compare recent numbers" (Gitlin, 2001).

UNIT-II

4. Describe the essential components of Presentation Skills.
OR
5. Explain the important ingredients of Interview Skills.

UNIT-III

6. Make sentences of the following :

(a) feat.

(b) flee.

(c) knead.

(d) lessen.

(e) mourning.

(f) pale.

(g) pour.

OR

7. Write meanings of the following pair of words :

(a) dual/duel.

(b) flair/flare.

(c) gait/gate.

- (d) cereal/serial.
- (e) chord/cord.
- (f) council/counsel.
- (g) days/daze.

UNIT-IV

8. Correct the following :
- (a) A bouquet of flowers lend colour and fragrance to the room.
 - (b) Jatin invited him uncle to visit the recording studio where he works.
 - (c) I need a new pajama.
 - (d) We saw a beautiful sceneries.
 - (e) The boy's book's cover is torn.
 - (f) Swimming is a good exercising.
 - (g) The happiness of the children was evident.

OR

9. Correct the following :
- (a) Its a beautiful day.
 - (b) One should always wear their seatbelt.
 - (c) The coffee is my favourite drink in the morning.
 - (d) She plays piano very well.
 - (e) The man, who I saw yesterday, was wearing a long hat.
 - (f) I need a advice.
 - (g) The patience is a virtue.

QUANTITATIVE APTITUDE

Paper : B23-SEC-326

Time : Three Hours] [Maximum Marks : 35

Note : Attempt *five* questions in all, selecting at least *one* question from each unit. Question No. 1 is compulsory.

Compulsory Question

1. (a) A clock is started at noon. Find the angle traced by hour hand at time 10 minutes past 5. (1)
- (b) Express a speed of 18 km/hr in meters per second. (1)
- (c) Find the simple interest on Rs. 8,000 for 9 months at $16\frac{2}{3}$ % p.a. (1)
- (d) A coin is tossed twice. If the second throw results in a head, then a die is thrown. Describe the sample space. (1)
- (e) If the mean and median of a distribution are 270 and 220 respectively, then find the mode of the data. (1)
- (f) Write the formula to find the angle of a sector of a pie diagram. (1)
- (g) Find the value of n if $(n + 3)! = 56(n + 1)!$ (1)

UNIT-I

2. (a) Solve the equation :

$$\frac{6x + 1}{15} - \frac{2x - 4}{7x - 16} = \frac{2x - 1}{5} \quad (3.5)$$

- (b) Solve : $7^{1+x} + 7^{1-x} = 50$. (3.5)

3. (a) The sum of the ages of a man and his son is 45 years. Five years ago, the product of their ages was four times the man's age at that time. Find their present ages. (3.5)

- (b) In every 30 minutes, the time of a watch increases by 3 minutes. If at 5 a.m. the time is correct, then what time will the watch show after 6 hours? (3.5)

UNIT-II

4. (a) A man travelled a distance of 61 km in 9 hours. He travelled partly on foot at the rate of 4 km/hr and partly on bicycle at the rate of 9 km/hr. Find the distance travelled by the man on foot. (3.5)

- (b) The speed of a boat in still water is 15 km/hr. It takes thrice as long to go upstream to a point as to return downstream. What is the speed of the stream? (3.5)

5. (a) Two pipes A and B can fill a tank separately in 12 and 36 hours respectively. If both of them are opened together, how much time will it take to fill the tank completely? (3.5)

- (b) A completely a piece of work in 3 days, B completes it in 5 days and C takes 10 days to complete the same work. How long will they take to complete the work, if they work together? (3.5)

UNIT-III

6. (a) Find the compound interest on Rs. 24,000 at 15% per annum for $2\frac{1}{3}$ years (3.5)
- (b) A, B, C invested Rs. 1,26,000, Rs. 84,000 and 2,10,000 respectively in a partnership business. Find their shares in a profit of Rs. 2,42,000 after a year. (3.5)
7. (a) In a group of people, 50 speak both English and Hindi and 30 people speak English but not Hindi. All the people speak at least one of the two languages. How many people speak English. (3.5)
- (b) A tree 12 m high is broken by the wind in such a way that its top touches the ground and makes an angle of 60 degree with the ground. At what height from the bottom the tree is broken by the wind. (3.5)

UNIT-IV

8. (a) In how many ways can 9 examination papers be arranged so that best and worst never come together? (3.5)
- (b) A man has 7 friends. In how many ways can he invite one or more of them to a party. (3.5)

9. (a) Calculate the median of the following data :

Marks :	20	9	25	50	40	80
No of Students :	6	4	16	7	8	2

(3.5)

(b) A man with monthly income of Rs. 8,900 plans his budget for a month as given below :

Item	Amount (Rs.)
Food	2600
Clothing	1100
Education	1700
Miscellaneous	2000
Saving	1500

Represent the above data by a bar diagram. (3.5)

UNIT-IV