

S-2404

Sub. Code

23BIT1C1

B.Sc. DEGREE EXAMINATION, APRIL 2026

First Semester

Information Technology

PROGRAMMING IN C

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. List the categories of programming languages.
2. Say about programming Environments.
3. Why looping statements?
4. Define the term String.
5. Mention the general format of a function.
6. What are the types of return values in a function?
7. Compare Structure and Union.
8. Comment on Size of structures.
9. Write the features of pointers.
10. Comment on pointer expression.

Part B

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Explain the structure of C programming language.

Or

- (b) Write short notes on Expression.

12. (a) Write a note on Character arrays.

Or

- (b) Write a program to find the biggest among the given three numbers.

13. (a) How can you call a function?

Or

- (b) Give an example for nesting of functions.

14. (a) Write a program to access the members of structure of members.

Or

- (b) How to initialize the structure?

15. (a) How to use pointer with character strings?

Or

- (b) Write a program to return values using pointers from a function.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. How to manage input and output operations? Give illustration.

17. Write a program to add two given matrices.

18. Discuss the categories of functions.
 19. Write a program using arrays within structures.
 20. Develop a program to store the details of a stock like product ID, name, date of issue and quantity issued in to a file. Read the file and show the details of each.
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S-2405

Sub. Code

23BITA1

U.G. DEGREE EXAMINATION, APRIL 2026

Information Technology

Allied – DIGITAL LOGIC FUNDAMENTALS

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. Define a number system.
2. Recall any two types of binary codes.
3. Name the universal logic gates.
4. What is Boolean algebra?
5. Identify one difference between SOP and POS forms.
6. Define a K-map.
7. List any three arithmetic building blocks.
8. What is a multiplexer?
9. Recall the full form of ROM.
10. Identify two types of flip-flops.

Part B

(5 × 5 = 25)

Answer **all** the questions, choosing either (a) or (b).

11. (a) Describe the process of base conversion with an example.

Or

- (b) Classify the different types of logic gates.

12. (a) Illustrate the simplification of Boolean functions using K-map.

Or

- (b) Explicate the working of binary addition and subtraction.

13. (a) Summarize the role of encoders and decoders in digital systems.

Or

- (b) Elaborate on the function of parity generators and checkers.

14. (a) Illuminate the working of JK flip-flops.

Or

- (b) Describe the types of shift registers.

15. (a) Illustrate the operation of synchronous counters.

Or

- (b) Explicate the types of RAM used in memory systems.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the laws and theorems of Boolean algebra and justify their applications.
 17. Elaborate the prime implicant method for Boolean simplification with examples.
 18. Interpret the design of combinational logic circuits and construct a sample truth table.
 19. Analyze the differences between asynchronous and synchronous counters and develop examples.
 20. Summarize the types of ROMs and create a structured explanation of their uses.
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S-2406

Sub. Code

23BIT1S1

B.Sc. DEGREE EXAMINATION, APRIL 2026

First Semester

Information Technology

OFFICE AUTOMATION

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. What is UNIX?
2. Write a note on RAM.
3. How will you open a ms-word document.
4. Write the indentation in document formation.
5. How will you splitting and merging of cells.
6. What is data analytics?
7. Define Record.
8. What is the use of file?
9. Show the method of saving a power point file.
10. Write a note on viewing slides in the power point.

Part B

(5 × 5 = 25)

Answer **all** the questions choosing either (a) or (b).

11. (a) Write in details about programming languages.

Or

- (b) Discuss about output devices.

12. (a) Give the steps to insert header and footer.

Or

- (b) Explain the importance of paragraph alignments.

13. (a) Explain the features of Excel.

Or

- (b) Write down the steps to creating chart.

14. (a) Describe briefly about Searching.

Or

- (b) Elaborate on the concept of DBMS.

15. (a) Show the steps involved in animation effect of power point.

Or

- (b) Write short notes on features of power point.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss about operating system and its features.

17. Give a detail note on the document formatting in word.

18. Demonstrate the formula used in the excel sheet with examples.
 19. Describe the detail about types of sorting? Explain it.
 20. Explain in detail about to create the power point by using objects and pictures.
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S-2407

Sub. Code

23BIT1FC

B.Sc. DEGREE EXAMINATION, APRIL 2026

First Semester

Information Technology

FUNDAMENTALS OF COMPUTERS

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Compare: RAM and ROM.
2. What is the use of ALU?
3. Define: Software.
4. Write the advantage of high level language.
5. Write the key components of problem solving.
6. Comment on a well-defined problem.
7. What are variables?
8. Define: Pseudo code.
9. What is parameter?
10. List the decision making statements.

Part B

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Discuss the characteristics of computer.

Or

- (b) Write short notes on storage unit.

12. (a) Explain about high level languages.

Or

- (b) Write about object oriented languages.

13. (a) Explain about the types of problems.

Or

- (b) Describe the difficulties of problem solving techniques.

14. (a) Differentiate algorithm and flowchart.

Or

- (b) Explain about expressions and equations.

15. (a) Compare the difference between local and global variables.

Or

- (b) Discuss about the sequential logic structure.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about the working process of CPU.

17. Discuss about machine languages and assembly languages.

18. Discuss the phases of problem solving life cycle.
 19. Explain about various data types.
 20. Explain the problem solving with looping structure.
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S-2408

Sub. Code

23BIT2C1

B.Sc. DEGREE EXAMINATION, APRIL 2026

Second Semester

Information Technology

JAVA PROGRAMMING

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is Class?
2. Define Polymorphism.
3. What is called Constant?
4. Why Type Casting?
5. Write the use of 'Super' and 'this' keyword.
6. What is Finalization in Java?
7. Express the meaning of Interface.
8. What is called Multiprogramming?
9. Define Labels.
10. Comment on AWT.

Part B

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) List out Features of java.

Or

- (b) Discuss about JVM.

12. (a) Briefly discuss about Switch statement in Java.

Or

- (b) Write a java program to sort a given N numbers in Ascending order.

13. (a) Briefly discuss about Constructor.

Or

- (b) Write a java program to find factorial of N numbers using nesting of function.

14. (a) Illustrate the concept of Interface in Java.

Or

- (b) Give short notes on thread life cycle.

15. (a) Discuss the check box and list box.

Or

- (b) Write a java program to draw an arc, line and polygon in a window.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Examine the OOP concepts.

17. Discuss about decision making with looping structure.

18. Demonstrate method overloading with an example.
 19. Explain about Inheritance and its Types.
 20. Describe the AWT components in Java.
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S-2409

Sub. Code

23BITA2

U.G. DEGREE EXAMINATION, APRIL 2026

Information Technology

Allied – INTERNET AND WEB DESIGN

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Define Web page.
2. What is Internet?
3. Comment on Style sheet.
4. Expand URL, FTP, HTTP, WWW.
5. Define Form.
6. Give the definition for multimedia.
7. Comment on Client and Server.
8. Define the term Array.
9. What is an Applet?
10. Why event handlers?

Part B

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Brief about Internet Service provider and domain name server.

Or

- (b) Discuss about Routers, Gateway and switches.

12. (a) How to do formatting text by using tags. list and background.

Or

- (b) Discuss about how to create text based and graphics-based navigation bar.

13. (a) How to do formatting a table? Discuss.

Or

- (b) Write the steps to add video and audio clips on web page?

14. (a) Discuss about conditional statement in java script.

Or

- (b) Brief about string and its functions in java script.

15. (a) What can java script do? Discuss.

Or

- (b) Discuss the mouse move events briefly.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain about WWW architecture and its components.
 17. How to create HTML5 Semantic layout and Formatted division?
 18. Create a Form using check box, text box, option button and list.
 19. Explain about array and its types.
 20. Describe the ways that the Event handler can be used to trigger Events or Functions.
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S-2410

Sub. Code

23BITA3

U.G. DEGREE EXAMINATION, APRIL 2026

Information Technology

**Allied – MICROPROCESSOR AND
MICROCONTROLLER**

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is called data bus?
2. Define opcode.
3. Write the function of INTR and INTA.
4. List the classification group of instruction set.
5. Define software interrupt.
6. What is called cycle-stealing Technique?
7. What is called microcontroller?
8. Define Program Counter.
9. What is vectored interrupt?
10. List the operating mode of timer/counter 2 in 8051.

Part B

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Differentiate address bus and data bus.

Or

- (b) Discuss the registers in 8085.

12. (a) Give the structure of flag register and its bit position.

Or

- (b) Explain the logical operations instruction set in 8085.

13. (a) Discuss about 8059 programmable Interrupt controller.

Or

- (b) Brief on 8085 Interrupts.

14. (a) Differentiate microprocessor and microcontroller.

Or

- (b) Write the features of 8051 series of microcontroller.

15. (a) Discuss about 8051 Interrupts and its operation.

Or

- (b) Write short notes about Interrupt vector table in 8057 microcontrollers.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Elucidate the architecture and the operations of 8085.
 17. Elaborate the Pinout and signals of 8085.
 18. What is Direct Memory Access? Explain in detail.
 19. Draw the pin description of 8051 and its function in detail.
 20. Explain about Timer and Counter of 8051.
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S-2411

Sub. Code

23BITA4

U.G. DEGREE EXAMINATION, APRIL 2026

Information Technology

Allied : MULTIMEDIA AND ITS APPLICATIONS

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Define typeface.
2. List any two uses of multimedia.
3. Define digital audio.
4. State the purpose of system sound in multimedia.
5. Define frame rate.
6. State the meaning of digital video.
7. Define communication devices in multimedia systems.
8. Identify an output device with one example.
9. Describe the workspace in Adobe Animate.
10. Define a symbol in Adobe Animate.

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Describe the concept of hypermedia and its applications.

Or

- (b) Illustrate the use of faces and fonts in multimedia design.

12. (a) Outline the procedure for creating still images in multimedia applications.

Or

- (b) Differentiate MIDI audio and digital audio..

13. (a) Summarize the major video recording formats and their importance.

Or

- (b) Describe the role of motion in animation.

14. (a) Classify the input and output devices used in multimedia systems.

Or

- (b) Discuss the role of communication devices in multimedia applications.

15. (a) Demonstrate the procedure for customizing tools and panels in Adobe Animate.

Or

- (b) Illustrate the steps involved in creating tweens in Adobe Animate.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Analyse the process of delivering multimedia and evaluate the major uses of multimedia in real-world applications.
 17. Compare and analyse different image file formats and justify the importance of understanding natural light and colour in digital images.
 18. Analyse how video works and evaluate the relevance of broadcast video standards and computer-television integration.
 19. Assess the multimedia skills required for designing effective applications for the World Wide Web.
 20. Design and demonstrate interactive motion graphics for the web and evaluate the role of layers in character design using Adobe Animate.
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S-2412

Sub. Code

23BIT2S1

B.Sc. DEGREE EXAMINATION, APRIL 2026

Second Semester

Information Technology

BASICS OF INTERNET

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Comment on IP address.
2. What is browser?
3. What is called protocols?
4. Give any two uses of Internet.
5. Write the meaning of infotainment?
6. What is the purpose of style classification?
7. List the types of demographics.
8. What are the types of audience?
9. What is the main issue of cybercrime?
10. Name any two cyber security threats.

Part B

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Write the History of Internet briefly.

Or

- (b) How does the Internet work?

12. (a) Explain about Telnet.

Or

- (b) Write short notes on Internet relay chat.

13. (a) Discuss the traditional media in infotainment.

Or

- (b) Explain about Infotainment news.

14. (a) Outline the psychographic characteristics.

Or

- (b) Give a note on Internet audience.

15. (a) Analyze the present issues in cybercrime.

Or

- (b) Identify the challenges in cybercrime.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss about World Wide Web.

17. List out and explain the Features of Internet.

18. How do you classify the internet based on content? Explain.
 19. Explain about the effect of internet on the values and life style.
 20. Analyze the future possibilities of cybercrime.
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S-2413

Sub. Code

23BIT2S2

B.Sc. DEGREE EXAMINATION, APRIL 2026

Second Semester

Information Technology

PROBLEM SOLVING TECHNIQUES

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is the difference between an algorithm and a program?
2. Define top-down design approach in problem solving.
3. What is the purpose of the counting algorithm?
4. Define base conversion with one example.
5. State the Euclidean algorithm for finding GCD of two integers.
6. List the first 5 prime numbers.
7. Define histogramming in the context of arrays.
8. How do you find the second largest element in an array?
9. What is meant by text line length adjustment?
10. Define permutation generation in recursion.

Part B

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Explain top-down design with a simple diagram/example.

Or

- (b) Write a recursive function in Python to calculate factorial of a number.

12. (a) Write an algorithm to exchange the values of two variables without using a third variable.

Or

- (b) Write pseudocode to count the number of even numbers in a list of N integers.

13. (a) Explain the Euclidean algorithm for finding the GCD with an example.

Or

- (b) Write a program to compute the smallest divisor of a given integer.

14. (a) Write the basic principle of partitioning around a pivot element.

Or

- (b) Explain with an example the concept of a longest monotone subsequence.

15. (a) How to write linear pattern search in a given text string.

Or

- (b) Differentiate between recursion and iteration with a simple example.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the importance of working backwards from the solution with a real-life problem example.
 17. Create an algorithm to check if number is palindrome using digit reversal technique.
 18. Write and explain an algorithm to remove duplicates from an ordered array. Show the working with an example.
 19. Write and explain an algorithm to remove duplicates from an ordered array.
 20. Explain the process in detail. Write algorithms for insert, delete and replace operations, text line editing.
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S-2414

Sub. Code

23BIT3C1

B.Sc. DEGREE EXAMINATION, APRIL 2026

Third Semester

Information Technology

PHP PROGRAMMING

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Define a variable and a constant in PHP.
2. What are the basic data types supported by PHP?
3. Define Array.
4. What is the purpose of regular expressions in string processing?
5. How do you open and close a file in PHP?
6. What is a recursive function?
7. Write the purpose of Security tag.
8. What is error tracking and why is it important in PHP development?
9. What is the purpose of session control in PHP?
10. How do you set a cookie in PHP?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) How does PHP handle HTML form data? Discuss the role of the GET and POST methods.

Or

- (b) Discuss the importance of basic syntax rules in PHP and provide examples of common syntax elements.

12. (a) Discuss the importance of string formatting in PHP and provide examples of commonly used string formatting functions.

Or

- (b) Describe how you can use loops to process arrays in PHP. Include examples of for and for each loops.

13. (a) Explain the concept of call by value and call by reference with examples in PHP.

Or

- (b) How can you read data from a file and write data to a file in PHP? Provide code snippets.

14. (a) How does exception handling improve the robustness of PHP applications? Provide an example scenario where exception handling is crucial.

Or

- (b) Discuss the role of security tags in PHP exception handling. How do they help in maintaining secure code?

15. (a) Explain the concept of session functionality in PHP. How are sessions used to maintain user data across multiple pages?

Or

- (b) Describe the process of setting and storing data in cookies in PHP. Provide a code example.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Develop a detailed guide on handling HTML forms using PHP, covering form creation, data capture and redirection after submission.
17. Explain the importance of string manipulation and regular expressions in PHP. Describe how these tools help in performing complex string operations. Provide simple code examples to show their use.
18. Explain file and directory operations in PHP, including reading, writing, copying, renaming, deleting and creating directories, with code examples.
19. Discuss the role of error tracking, debugging and security tags in PHP. How do they help build secure and reliable applications? Include examples.
20. Explain session control in PHP, including how sessions work, managing session data and destroying sessions. Provide an example.
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S-2415

Sub. Code

23BIT3S1

B.Sc. DEGREE EXAMINATION, APRIL 2026

Third Semester

Information Technology

CYBER FORENSICS

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. What is Computer Forensics?
2. Define Law Enforcement.
3. Define Evidence collection.
4. What is meant by Data Seizure?
5. What is Duplication in Computer Forensics?
6. Why need of Evidential Authentication.
7. How to Identification of data in Computer Forensics?
8. What is Forensic Identification?
9. Define System Testing in Computer Forensic.
10. What is meant by Unusable file formats?

Part B

(5 × 5 = 25)

Answer **all** the questions, choosing either (a) or (b).

11. (a) Explain Types of Business Computer Forensic Technology.

Or

- (b) What are the uses of Computer Forensics in Law Enforcement?

12. (a) Describe the Data backup and recovery.

Or

- (b) What are the general procedures for method of collections in computer forensics?

13. (a) Discuss the Legal Aspects of collecting and preserving computer forensic evidence.

Or

- (b) Illustrate the Computer Image Verification and Authentication.

14. (a) Explain the Discovery of Electronic Evidence.

Or

- (b) Describe the Electronic Document Discovery.

15. (a) Elaborate on Destruction of E-Mail.

Or

- (b) Describes about Network Forensics Scenario.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the Types of Military Computer Forensics Technology.
 17. Describe in detail about Data Recovery Solutions.
 18. Discuss about Practical Consideration and Implementation in Computer Forensics.
 19. Explain the forensic identification and analysis of technical surveillance devices.
 20. Elucidate in detail about usable file formats.
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S-2416

Sub. Code

23BIT3S2

B.Sc. DEGREE EXAMINATION, APRIL 2026

Third Semester

Information Technology

ENTERPRISE RESOURCE PLANNING

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. Define ERP.
2. What are the benefits of ERP?
3. What is meant by OLAP?
4. Define Data Mining.
5. What is CRM?
6. What is meant by Material Management?
7. What is the role of SDLC?
8. Define Vendors.
9. What is meant by SAP?
10. What are the usages of Oracle?

Part B

(5 × 5 = 25)

Answer **all** the questions, choosing either (a) or (b).

11. (a) Discuss about Evolution of ERP.

Or

- (b) Explain the structure of ERP.

12. (a) Difference between Logical Vs. Physical System Integration.

Or

- (b) Describe the Supply Chain Management.

13. (a) Illustrate the Functional Modules of ERP Software.

Or

- (b) Explain the Integration of ERP.

14. (a) Discuss the Object Oriented Architecture.

Or

- (b) Write short notes on ERP Implementation Strategy.

15. (a) Discuss about E-Commerce.

Or

- (b) Explain the Future Directives of ERP.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the benefits and limitations of ERP Packages.

17. Discuss in detail about benefits and limitations of System Integration.

18. Describe about Market Place Dynamics in ERP.
 19. Explain in detail about ERP Implementation Life Cycle.
 20. Discuss about Integrating ERP into Organizational culture.
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S-2417

Sub. Code

23BIT4C1

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fourth Semester

Information Technology

PYTHON PROGRAMMING

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. What is the purpose of indentation in Python?
2. How do you take input from the user in Python?
3. Name any two list methods and their purpose.
4. Can you update or delete a tuple element?
5. Name two types of arguments in Python functions.
6. Write command to open a file in read mode.
7. What is the use of the self variable?
8. Define an assert statement.
9. What is a widget in Tkinter?
10. Give an example of a keyboard event.

Part B

(5 × 5 = 25)

Answer **all** the questions, choosing either (a) or (b).

11. (a) Explain the various built-in data types in Python with examples.

Or

- (b) State the role of operators and expressions in Python. Provide an example of an arithmetic expression.

12. (a) Write Python code to clone a list.

Or

- (b) Compare and contrast Python lists, tuples and dictionaries. Discuss their mutability.

13. (a) Demonstrate function calling with multiple argument types.

Or

- (b) Explain the process of renaming and deleting a file in Python.

14. (a) Explain the role of methods in a class with an example.

Or

- (b) What are custom exceptions? Write the steps to create one.

15. (a) Write a note on mouse events in Tkinter.

Or

- (b) Write a note on Menu and Message widgets.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Describe different types of looping statements in Python with examples.
 17. Write a program demonstrating add/remove/check operations on a set.
 18. Explain the process of creating, importing and reloading a module in Python with suitable examples.
 19. Short note on inheritance in Python. Explain different types with examples.
 20. Write a detailed note on graphics using turtle with examples.
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S-2418

Sub. Code

23BIT4S1

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fourth Semester

Information Technology

ROBOTICS AND ITS APPLICATIONS

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. Define the robotics.
2. Write any two applications of robotics.
3. What is a sensor?
4. Discuss the D-H Matrix.
5. List out any two challenges in localization.
6. What is meant by self localization?
7. Give an account of depth measurement.
8. Define road map.
9. What is the purpose of cleaning?
10. How will you define spot welding?

Part B

(5 × 5 = 25)

Answer **all** the questions, choosing either (a) or (b).

11. (a) Describe the various components of robotics.

Or

- (b) Write down the classification of robotics.

12. (a) Explain the types of actuators.

Or

- (b) Discuss the representation of joints and frames.

13. (a) Write short notes on GPS localization systems.

Or

- (b) Discuss the ultrasonic based localizations.

14. (a) Elaborate on the obstacle avoidance.

Or

- (b) Write the note on the object recognition.

15. (a) Give an account of assembly operation in robotics.

Or

- (b) Explain the application of robots in material handling.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about the uses of Artificial intelligence in robotics.
17. Briefly discuss the homogeneous matrix.

18. Give a detailed note on the various challenges in localization.
 19. Discuss in detail about the Robotic vision system.
 20. Describe the use of the robotics for military application.
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S-2419

Sub. Code

23BIT4S2

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fourth Semester

Information Technology

ORGANIZATIONAL BEHAVIOUR

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. What is Organizational Behaviour?
2. How does Organizational Behaviours support innovation?
3. Define reinforcement.
4. What is Herzberg's Two-Factor Theory?
5. What are group norms?
6. Mention two types of teams.
7. What is organizational culture?
8. What is meant by 'liability of culture'?
9. What is organizational change?
10. What is functional conflict?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss any five disciplines that contribute to Organizational Behaviour.

Or

- (b) Write a short note on the role of Organizational Behaviour in improving customer service.

12. (a) Explain types of reinforcement.

Or

- (b) Explain the concept of perception and how it affects decision making.

13. (a) Explain the five-stage model of group development.

Or

- (b) Differentiate between groupthink and group shift.

14. (a) How is organizational culture created and sustained?

Or

- (b) Compare functional and divisional structures.

15. (a) What is organizational development? Mention its key techniques.

Or

- (b) What are some common sources of conflict within organizations?

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss its nature, scope and importance in modern organizations.
 17. Define learning. Explain different learning theories including conditioning, shaping and Reinforcement.
 18. Discuss the role of group dynamics in improving team effectiveness.
 19. How do culture and structure together impact organizational performance and employee behaviour?
 20. Discuss the various forces driving change and how organizations can plan for change.
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S-2420

Sub. Code

23BIT5C1

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fifth Semester

Information Technology

DATA COMMUNICATIONS AND NETWORKING

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Mention the three ways of data flow.
2. Define protocol.
3. Differentiate analog and digital signals.
4. What is bandwidth?
5. Define error control.
6. What is bit and byte oriented protocols?
7. Name the sublayers of data link layer.
8. Define hub and list its types.
9. What is unicast and multicast?
10. Define datagram.

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Name the types of topologies and explain.

Or

- (b) Describe the functions of data link layer and network layer.

12. (a) Differentiate noisy channel and noiseless channel.

Or

- (b) Write short notes on line coding schemes.

13. (a) Explain about virtual circuit networks.

Or

- (b) Describe about stop and wait protocols.

14. (a) Write short notes on standard Ethernet.

Or

- (b) Discuss about Bluetooth technology.

15. (a) Explain about dynamic and static routing.

Or

- (b) Discuss about border gateway protocol.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the TCP/IP protocol suite.

17. Elaborate the various transmission modes.

18. Discuss about cyclic redundancy check.
 19. Elucidate the addressing of IPv6.
 20. Give a detailed note on link state routing method.
-

S-2421

Sub. Code

23BIT5C2

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fifth Semester

Information Technology

.NET PROGRAMMING

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Write any two features of .NET
2. Define the term CLR.
3. Write the advantages of VB.Net.
4. What is encapsulation?
5. Mention the use of exit statement.
6. Define dialog box.
7. Write the use of splitters.
8. Say the types of ASP.Net controls.
9. What are the types of objects in ADO.NET?
10. Define connection string.

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss about .NET Framework Class Library (FCL).

Or

- (b) Write the steps to build a simple class module with example.

12. (a) Illustrate the types of option statement.

Or

- (b) Write short note on inheritance.

13. (a) Explain about the properties and purpose of rich text box.

Or

- (b) Discuss about timer control.

14. (a) Explain the various file types in ASP.NET.

Or

- (b) Briefly explain about HTTP Request properties.

15. (a) Explain how to add ADO.NET parameters in SQL server.

Or

- (b) How do you create a database connection command?

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Elucidate the components of .NET framework.
 17. Explain in detail about various data types provided by VB.NET.
 18. Define MDI application. Write the steps for creating a parent and child form.
 19. Give a detailed note on server utility class.
 20. Explain about ADO.NET data providers.
-

S-2422

Sub. Code

23BIT5C3

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fifth Semester

Information Technology

E-COMMERCE AND DIGITAL MARKETING

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. List two differences between E-Commerce and Traditional Commerce.
2. What does SCM stand for?
3. Name one platform that uses the C2C model.
4. What is the role of strategy in E-Commerce?
5. What is an e-cheque?
6. Define an electronic purse.
7. Define the POEM framework.
8. State two major digital advertising platforms in India.
9. What is Google Analytics used for?
10. Compare manual vs programmatic ad buying models.

Part B

(5 × 5 = 25)

Answer **all** the questions, choosing either (a) or (b).

11. (a) Describe the features and benefits of E-Commerce.

Or

- (b) Explain the role of E-Commerce in Supply Chain Management.

12. (a) Elaborate the B2E E-Commerce model and its uses.

Or

- (b) Explain any five factors that influence successful E-Commerce implementation.

13. (a) Describe the working. features, advantages and disadvantages of Smart Cards.

Or

- (b) How the digital signatures help in securing e-commerce transactions?

14. (a) Illustrate the stages of the consumer decision journey.

Or

- (b) Discuss the importance of segmenting and customizing messages in digital marketing with examples.

15. (a) Write a short note on Google Webmaster tools.

Or

- (b) Describe in detail the techniques of SEO and how they improve website ranking.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. What are the different types of E-Commerce models? Explain with examples.
 17. Explain the various business models of E-Commerce.
 18. Explain the concept of e-Cash and e-Cheque. How are they used in online payments?
 19. Elaborate on the digital marketing landscape and its key components.
 20. Discuss various types of mobile marketing and their effectiveness.
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S-2423

Sub. Code

23BIT5E1

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fifth Semester

Information Technology

**Elective – RELATIONAL DATABASE MANAGEMENT
SYSTEM**

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Define the term 'Database'.
2. What are instances?
3. Comment on 'Tuple'.
4. Compare Select and Project.
5. What is an Entity?
6. List the types of mapping cardinalities.
7. What is normal form?
8. Compare the determinant and dependent in functional dependency?
9. Write the use exception handlers.
10. Comment on Triggers.

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write a note on database languages and interfaces.

Or

- (b) Explain the classification of DBMS.

12. (a) Explain the constraints of Relational model.

Or

- (b) Give a note on transactions in relational model.

13. (a) How can you do database design using high Level conceptual data model?

Or

- (b) Explain the types of relationships.

14. (a) Explain Second normal with an example.

Or

- (b) Write the types of functional dependencies.

15. (a) How can you do error handling in PL/SQL.

Or

- (b) Explain the types of triggers.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the architecture of DBMS with a neat diagram.
17. Describe the relational algebra operations in detail.

18. How to do mapping a conceptual design into logical design? Illustrate in detail.
 19. Demonstrate the BCNF with suitable example.
 20. Describe the stored procedures and functions in detail.
-

S-2424

Sub. Code

23BIT5E2

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fifth Semester

Information Technology

Elective – DATA MINING

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is data warehousing?
2. ETL stands for?
3. Define market basket analysis.
4. Mention the properties of Apriori.
5. When will the class imbalance problem occurs?
6. What is ensemble methods?
7. Define cluster.
8. Mention the two types of hierarchical methods.
9. List out the types of outliers.
10. What is proximity based method?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss about the attribute types.

Or

- (b) Write short notes on data cleaning process.

12. (a) Brief about mining frequent itemsets using vertical data format.

Or

- (b) Explain the techniques which are used to improve the efficiency of Apriori?

13. (a) Describe the metrics which are used for evaluating classifier performance.

Or

- (b) Discuss about bootstrap methods.

14. (a) Explain CLIQUE an Apriori-like Subspace Clustering Method.

Or

- (b) Write about DENCLUE Clustering Based on Density Distribution Functions.

15. (a) Explain distance based outlier detection.

Or

- (b) Discuss about density based outlier detection.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain about the measuring the central tendency Mean, Median and Mode.
 17. Demonstrate the Apriori algorithm.
 18. Describe about rule based classification method.
 19. Give a detailed note on k-means partitioning algorithm.
 20. Write about the parametric methods of outlier detection.
-

S-2425

Sub. Code

23BIT5E3

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fifth Semester

Information Technology

Elective – ARTIFICIAL INTELLIGENCE

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. Define Intelligent agent.
2. Name any two AI programming languages.
3. What is a problem space in AI?
4. Expand the terms BFS and DFS.
5. Give an example of a first-order predicate.
6. Mention one limitation of propositional logic in knowledge representation.
7. How planning can be viewed as a search problem?
8. State one reason probabilistic reasoning is important in AI.
9. Mention one assumption made in utility theory.
10. Identify the memorization-based learning.

Part B

(5 × 5 = 25)

Answer **all** the questions, choosing either (a) or (b).

11. (a) Discuss the key problem and various approaches of AI.

Or

- (b) Differentiate reactive agents and deliberative agents with examples.

12. (a) Write a short notes on Best-First Search.

Or

- (b) Explain heuristic search in detail with emphasis on Best-First Search.

13. (a) Differentiate propositional and predicate logic.

Or

- (b) Describe the concept of inheritance in semantic networks with a diagram.

14. (a) Explain how planning graphs are constructed and how they support planning.

Or

- (b) Analyze the role of Bayes' Rule, conditional independence in reasoning under uncertainty.

15. (a) Explain about utility and its use in decision-making.

Or

- (b) Discuss the role of examples in supervised machine learning.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain Artificial Intelligence programming techniques with examples.
 17. Describe the working of the MinMax algorithm in game playing.
 18. Illustrate the role of frames in capturing stereotypical knowledge structures.
 19. Discuss the Bayesian belief networks.
 20. Write a detailed explanation of Machine Learning and Knowledge Acquisition.
-

S-2426

Sub. Code

23BIT5E4

B.Sc. DEGREE EXAMINATION, APRIL 2026

Fifth Semester

Information Technology

Elective – MACHINE LEARNING

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Define Machine learning.
2. Write the drawbacks of underfitting.
3. What is density estimation?
4. Define nonparametric regression.
5. Mention the use of potential function.
6. What is backpropagation?
7. Define Stacked Generalization.
8. What is agent in reinforcement learning?
9. Define training and testing data.
10. What is feature extraction?

Part B

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Discuss about the applications of machine learning.

Or

- (b) Write short note on association rules.

12. (a) Explain about parametric classification.

Or

- (b) Write about Condensed Nearest Neighbor.

13. (a) Explain about pairwise separation of classes.

Or

- (b) Illustrate about perceptron.

14. (a) Describe the bagging method.

Or

- (b) Explain model based learning in reinforcement.

15. (a) Explain about data visualization techniques.

Or

- (b) Discuss about feature selection methods.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss about the model selection in supervised learning.

17. Explain the Multinomial Density and Gaussian (Normal) Density.

18. Describe about Geometry of the linear Discriminant.
 19. Discuss the elements of reinforcement learning.
 20. Explain the implementation of random forest algorithm in python.
-

S-2427

Sub. Code

23BIT6C1

B.Sc. DEGREE EXAMINATION, APRIL 2026

Sixth Semester

Information Technology

SOFTWARE PROJECT MANAGEMENT

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. Define Software Project.
2. What is the role of project planning?
3. Describe Agile Methods.
4. List out the project life cycle model.
5. What is PERT?
6. Write any two objectives of activity planning.
7. Write down the contract management.
8. Notify the significance of project tracking.
9. How will you work in project teams?
10. What is Leadership?

Part B

(5 × 5 = 25)

Answer **all** the questions choosing either (a) or (b).

11. (a) Explain the importance of SPM.

Or

- (b) Discuss different categorization of software projects.

12. (a) Elaborate on the project life cycle and effort estimation.

Or

- (b) Give an account of dynamic system development methods.

13. (a) How will you allocate the resources? Explain it.

Or

- (b) Write the purpose of forward pass and backward pass techniques.

14. (a) Discuss about the framework for management and control.

Or

- (b) Write short notes on project tracking.

15. (a) What are the best methods of staff selection? Explain it.

Or

- (b) Write down the purpose of organizational behaviour.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Briefly explain about step wise project planning.
 17. Elucidate the details of software process and process models.
 18. Discuss in detail about the various objectives of activity planning.
 19. Describe the significance of software configuration management.
 20. Give a detail account of staffing in software projects.
-

S-2428

Sub. Code

23BIT6E1

B.Sc. DEGREE EXAMINATION, APRIL 2026

Sixth Semester

Information Technology

**Elective – INTERNET OF THINGS AND ITS
APPLICATIONS**

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Define IoT.
2. List the visions of IoT.
3. Compare IoT and M2M.
4. Comment on IoT value chains.
5. What is sensor?
6. Define Actuators.
7. List the expected influences in value creation.
8. What do mean by brownfield IoT?
9. Comment on IoT privacy.
10. What is IoT governance.

Part B

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Explain the infrastructure for IoT.

Or

(b) Write a note on device level entry issues in IoT.

12. (a) Explain the industrial structure of IoT.

Or

(b) Give a note on IoT standards.

13. (a) Explain the state of the art in IoT architecture.

Or

(b) Outline the layers in IoT reference model.

14. (a) Explain smart applications of IoT.

Or

(b) How IoT will be used in retail industry?

15. (a) Explain the security risks of IoT.

Or

(b) Outline the approaches to enhance security, privacy and trust.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the applications of IoT.

17. Describe how IoT evolved from M2M in detail.

18. Annotate architectural views of IoT.
 19. Elaborate the applications of IoT in industry.
 20. Demonstrate data platforms for smart cities in detail.
-

S-2429

Sub. Code

23BIT6E2

B.Sc. DEGREE EXAMINATION, APRIL 2026

Sixth Semester

Information Technology

Elective : CLOUD COMPUTING

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Define the term “on-demand self-service”.
2. What are cloud delivery models?
3. How does virtualization works in cloud computing?
4. State any two features of web technology that support cloud computing.
5. What is the NIST cloud computing reference model?
6. Mention any two examples of PaaS platforms.
7. Define inter-cloud resource management.
8. What is a digital signature?
9. Give one example each for IaaS, PaaS and SaaS
10. List any two optimization techniques for SaaS environments.

Part B

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) What are the pros and cons of cloud computing? Explain.

Or

- (b) Discuss the three cloud service models in detail.

12. (a) Explain the role of broadband networks in enabling cloud services.

Or

- (b) How virtual servers and resource replication works?

13. (a) Describe the layered cloud architecture design and its components in detail.

Or

- (b) Write a short note on Amazon S3 and its use cases.

14. (a) Describe about resource provisioning methods in cloud computing.

Or

- (b) What are cloud-based security groups, and how do they enhance security?

15. (a) Compare the roles of provider vs consumer in an IaaS environment.

Or

- (b) How can providers ensure scalability and availability in SaaS delivery?

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Describe the basic concepts and key terminology used in cloud computing.
 17. Discuss the importance of data centres in cloud infrastructure.
 18. Briefly explain the three service models with examples.
 19. Draw a diagram; explain how a digital signature is generated and verified using public-private key pairs
 20. Explain how a cloud consumer works with IaaS, PaaS and SaaS.
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S-2430

Sub. Code

23BIT6E3

B.Sc. DEGREE EXAMINATION, APRIL 2026

Sixth Semester

Information Technology

Elective : INTRODUCTION TO DATA SCIENCE

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is meant by data science?
2. Write any two applications of data science.
3. In what way data is cleansed.
4. Define data reduction.
5. What does heat map.
6. How will you define EDA?
7. What is skewness?
8. Write about the distribution plot.
9. Discuss prediction.
10. How will you cross validation in data science?

Part B

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Discuss the various benefits of data science in current era.

Or

- (b) Explain the role of data science.

12. (a) Why do we need pre-processing of data?

Or

- (b) Discuss about the data discretization.

13. (a) Write the significance of pivot table.

Or

- (b) Write short notes on ANOVA.

14. (a) Briefly explain the role of prediction and decision making.

Or

- (b) Describe about the residual plot.

15. (a) Write in detail about overfitting.

Or

- (b) How the data is prediction by using ridge regression.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about various issues in data security.
 17. Discuss in detail about data integration and transformation.
 18. Give a detail note on the correlation statistics.
 19. Briefly discuss about the polynomial regression and pipelines.
 20. Elaborate on the aspect of testing multiple parameters by using grid search.
-

S-2431

Sub. Code

23BIT6E4

B.Sc. DEGREE EXAMINATION, APRIL 2026

Sixth Semester

Information Technology

Elective : BIG DATA ANALYTICS

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is big data?
2. Write any two types of analytical tools.
3. Define Machine learning.
4. Write down the basics of descriptive analytics.
5. What are the benefits of regression in analytics?
6. Discuss Bigraphs.
7. What is SVM?
8. Write any benefit of neural network in analytics.
9. What is the purpose of hadoop in data analytics?
10. Give any two benefits of the k-means algorithm.

Part B

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Elaborate on the data preparation.

Or

- (b) Give an account of analytical terminology.

12. (a) Discuss about the dimensionality reduction.

Or

- (b) Explain about social network analytics.

13. (a) Give a detailed note on the Relational logistic regression.

Or

- (b) Describe about collective inferencing.

14. (a) Write short notes on decision and regression trees.

Or

- (b) Explain about ensemble methods.

15. (a) How to choose Analytical tools? Explain it.

Or

- (b) What is HDFS? Explain it.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Give a detailed note on various types of analytics.

17. Explain in detail about features of machine learning.

18. Give a detailed note on the Relational neighbour classifier.
 19. Explain the importance of the generalised linear models.
 20. Discuss the K-Nearest Neighbour classification.
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S-2432

Sub. Code

23BIT6S1

B.Sc. DEGREE EXAMINATION, APRIL 2026

Sixth Semester

Information Technology

QUANTITATIVE APTITUDE

(CBCS – 2023 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Find LCM of $2^3 \times 3^2, 2^2 \times 5$?
2. What are the odd numbers exactly divisible by 6,15?
3. Mary is four years older than Ravi. If Ravi is ten years old, how old is Mary?
4. A number increase from 50 to 65. What is the percentage increase?
5. A train travel 80km/h. How many meters will it travel in 15 mins?
6. Find the area of the circle with diameter 50 cm?
7. Find the odd man out of 8, 27, 64, 100, 125, 216, 343?
8. If the height of pole is $2\sqrt{3}$ meters and the length of is shadow is 2 meters, find angle elevation of the sun.

9. Find cost of Rs 5000, 5% stock at 55?
10. If today is Monday, what day will it be 125 later?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Find LCM and HCF of 72, 108, 2100?

Or

(b) (i) Simplify: $\frac{(6 + 6 + 6 + 6) \div 6}{4 + 4 + 4 + 4 \div 4}$

(ii) Find the value of $(2.99)^{\wedge} 2$?

12. (a) If $(3x + 5y); (2x + 3y) = 29 : 18$, what is the value of $x : y$?

Or

- (b) If 5 students utilize 18 pencils in 9 days, how at the rate, will 66 pencils last for 15 students?

13. (a) Find the volume and surface area of a cuboid 10m long, 15m broad and 20m high.

Or

- (b) Find compound interest on Rs. 20000 in 2 years at 4% per annum, the interest being compounded half yearly.

14. (a) How many arrangements can be made out of the letters of the word ENGINEERING?

Or

- (b) The true discount on a bill due 9 months hence at 12% per annum is Rs. 540. Find amount of the bill and its present worth?

15. (a) What was the day of the week on 21 August 1995?

Or

- (b) At what time between 2 and 3 o'clock will hands of a clock be together?

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. The sum and difference of the LCM and HCF of two numbers are 592 and 518 respectively. If the sum of the numbers be 296, find the numbers?
17. (a) A book was sold for Rs. 30 with a profit of 10%. If it were sold Rs. 25 then what would have been the percentage of profit or loss? (5)
- (b) The age father 10 years ago was thrice the age of his son. 10 years hence father's age will be twice that of his son. Find the ratio of their present ages? (5)
18. A and B can do a piece of work in 9 days; B and C can do it in 12 days; A and C can do it in 18 days. In how many days will A, B and C finish it, working together and separately?
19. From a group of 5 Indians, 6 Australians, 7 Americans, 4 people are selected. Find probability it will consist of (a) Two Indians and two Australians (b) One Indian, one Australian, two Americans. (c) Four American (d) At least two Indians. (e) At most two Indians?
20. Study the table given below and answer the questions that follow. Total number of employees in different department of an organizations and percentage of Males and Females.