S–2700	Sub. Code
	23BIT1C1

B.Sc. (IT) DEGREE EXAMINATION, APRIL 2024

First Semester

Information Technology

PROGRAMMING IN C

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Define Expressions.
2. Draw the basic structure of a C program.
3. How to create the character array?
4. What are the uses of 'goto' statement?
5. Give an example for function declaration.
6. What is recursion?
7. Specify the mechanism to declare the structure variables.
8. What do you mean by union?
9. How to access the address of a variable?
10. What is File?

Part B (5 × 5 = 25)

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

11. (a) Write the criteria for language evaluation.

Or

(b) How to manage input and output operations in C?

12. (a) Write a C program to find the biggest of two numbers.

Or

(b) Write a short note on nested IF with an example.

13. (a) What is recursion? Explicate with sample program.

Or

(b) Elaborate the merits of user-defined functions in C.

14. (a) Write the procedures to access the structure members.

Or

(b) Write a C program to implement arrays within structures.

15. (a) Write a C program swap two integer numbers using pointers.

Or

(b) How will you pass the pointer as function argument? Explain.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Write a C program to perform arithmetic operations on a given number.

17. Explain the concept of 'Switch Case' statement with an example.

18. Elaborate the procedures to implement Recursion with sample program.

19. Write a C Program to store the students information using Structure.

20. Give a brief account on File Management in C.

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S–2701	Sub. Code
	23BITA1

B.Sc. (IT) DEGREE EXAMINATION, APRIL 2024.

Information Technology

Allied – DIGITAL LOGIC FUNDAMENTALS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** the questions.

1. What is logic gate?

2. Specify any two applications of Octal Number System

3. What is K-Map?

4. Simplify $Y = A + AB + ABC + ABCD$.

5. Write the uses of Demultiplexer.

6. What is the purpose of code converters?

7. Define Shift Register.

8. Differentiate sequential and combinational circuits.

9. What is Ripple Counter?

10. Enlist the types of RAMs.

Part B (5 × 5 = 25)

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

11. (a) Convert the F3A7 to Binary.

Or

(b) Construct the OR gate using NAND and NOR.

12. (a) List and explain the DeMorgan's theorems.

Or

(b) Simplify the following: $Y = (AB + AC)' + A'B'C$.

13. (a) Illustrate the 4-1 Multiplexer with neat diagram.

Or

(b) Elaborate the uses of parity generators and checkers.

14. (a) List and explain the applications of Flip-flop.

Or

(b) Describe the logical design of RS flip flop.

15. (a) Draw and explicate the functionalities of BCD Counters.

Or

(b) Describe the hierarchy of memory in detail.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Write the truth table and logical symbol of Universal gates.

17. Simplify using K-Map $Y = \sum m(0, 5, 8, 10, 13, 14, 15) + \sum d(11, 12)$. Implement the result with logical circuit.

18. State and elaborate the concepts of Combinational Circuits with examples.

19. Give a brief account on various types of Flip-Flops.

20. Discuss the working of Ring Counters with neat diagram.

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S–2702	Sub. Code 23BIT1S1

B.Sc. DEGREE EXAMINATION, APRIL 2024

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. Write the uses of memory unit in computer.

2. List out any two features of UNIX operating systems.

3. Mention the uses of word processing software.

4. What are the differences between print and print preview option?

5. How data analytics can be done in Excel?

6. What do you meant by Work sheet and Workbook?

7. Define Data Base Management Systems.

8. How to search the records in database?

9. List out the features of power point.

10. Write the steps to include audio in presentation.

Part B (5 × 5 = 25)

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

11. (a) Write short note on any two output devices.

Or

(b) Enumerate the Central Processing Unit.

12. (a) Describe the steps to perform the paragraph alignment.

Or

(b) Write short note on Title Bar and Tool Bar in MS-Word.

13. (a) What do you mean by formatting and navigating in Excel?

Or

(b) Write the steps to prepare financial statements.

14. (a) How to develop menu driven applications in MS-ACCESS?

Or

(b) Write the steps to linking data files in MS-Access.

15. (a) How do you insert Objects in power point?

Or

(b) Write the steps to insert page number audio in Power point.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Write brief note on operating systems and its features.

17. Explain various steps to be performed in Mail merge.

18. Discuss about any five date and numerical functions available in MS-EXCEL with an example.

19. How to sorting and indexing the data in a databases? Give an example.

20. Illustrate the slide transition and picture insertion in presentation.

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S–2703	Sub. Code 23BIT1FC

B.Sc. DEGREE EXAMINATION, APRIL 2024

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. What are the key characteristics of computer?
2. Define ALU.
3. What is the purpose of operating system?
4. List down the limitation of assembly language.
5. What is the benefit of algorithm?
6. Define problem solving.
7. What is the meant by variables?
8. Write down any four data types.
9. How local variables are differ from global variables?
10. What is the purpose of modularity?

Part B (5 × 5 = 25)

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

11. (a) Write the role of the control unit in a computer system.

Or

(b) Discuss memory hierarchy in brief.

12. (a) How machine code differs from high level programming language?

Or

(b) Trace evolution of programming languages.

13. (a) Briefly write the concept of problem representation.

Or

(b) How trial and error helps in problem solving?

14. (a) Draw a flow chart to add two numbers and print the result.

Or

(b) Describe the purpose and structure of a function.

15. (a) Write a short note on loops.

Or

(b) Tell about conditional statements.

Part C (3 × 10 = 30)

Answer any **Three** questions.

16. Explain the basic organization of computer system.

17. Discuss the importance of compilers.

18. Describe about the role of computer in problem-solving.

19. Discuss about different type of operators.

20. Discuss the advantages of using functions with return values and parameters.

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S–2704	Sub. Code
	23BIT2C1

B.Sc. DEGREE EXAMINATION, APRIL 2024

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 are tokens in Java programming? Give an example.

2. Explain the concept of Java Virtual Machine (JVM) in brief

3. Explain the difference between a while loop and a do-while loop.

4. Describe the role of relational operators in decision making in programming.

5. What are static members in a class? Provide a brief explanation.

6. Define constructor overloading with a simple code snippet.

7. How does a class implement an interface in Java?

8. Describe the role of access specifiers in Java packages.

9. Describe the functionality of the List Box in AWT.

10. What is the primary use of the Check Box Group in Java AWT?

Part B $(5 \times 5 = 25)$

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

11. (a) Provide examples of Java statements and explain their significance in programming.

Or

(b) Compare and contrast the concepts of object-oriented programming with procedural programming, highlighting their differences and advantages.

12. (a) Implement a program to find the factorial of a given number using a recursive function. Provide the necessary explanation for the recursive function. Example: Input: n = 5.

Or

(b) Discuss the importance of using string manipulation functions in programming with an example code demonstrating the usage of the strcat function.

13. (a) Explain with an example how static members are utilized within a class in Python.

Or

(b) Demonstrate the concept of method overriding in object-oriented programming using a Python code snippet.

14. (a) Explain the significance of static variables and methods in object-oriented programming with a suitable example.

Or

(b) Illustrate the concept of constructor overloading in Java with a program that includes multiple constructors.

15. (a) Discuss the importance of layout managers in designing user interfaces with AWT components.

Or

(b) Write a Java program that draws a rectangle using the Graphics class in AWT.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. (a) Difference between AWT and Swings.

(b) Write the difference between String and String Buffer classes.

17. What is the multiple inheritance? Write a java program to implement multiple inheritance.

18. Differentiate between Input stream class and Reader class.

19. Develop a multithreaded Java application that simulates a banking system where multiple customers can deposit and withdraw money concurrently, ensuring thread safety and handling exceptions appropriately.

20. Develop a Java application that utilizes AWT components to create a simple text editor with features like font selection, color customization, and text alignment.

S–2705

Sub. Code
23BITA2

B.Sc. DEGREE EXAMINATION, APRIL 2024

Information Technology

Allied — INTERNET AND WEB DESIGN

(CBCS – 2023 onwards)

Time : Three Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is a URL?

2. Define the concept of an intranet and provide one example of its application.

3. How can you create a hyperlink in HTML?

4. What is the purpose of positioning and formatting divisions in HTML?

5. Which attribute is used to set the width of a column in an HTML table?

6. What are the multimedia elements supported by HTML5?

7. What is a user-defined function in Javascript?

8. What is the purpose of conditional statements in JavaScript?

9. State the use of the Anchor object.

10. Give an example of an event commonly used in web development.

Part B $(5 \times 5 = 25)$

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

11. (a) Describe the evolution of the World Wide Web, key developments, and milestones that have shaped its current form.

Or

(b) Describe the components and functionalities of a typical web browser and explain how it enables users to navigate the Internet.

12. (a) Explain the significance of HTML5 compared to its predecessors, focusing on its new features and improvements in multimedia support.

Or

(b) Discuss the various methods for redirecting users to another URL in HTML.

13. (a) Discuss the steps involved in creating a basic form in HTML and the use of form elements such as text inputs, text areas, and buttons.

Or

(b) Explain the process of merging table cells in HTML with the necessary illustration.

14. (a) Explain the concept of JavaScript objects. How they are defined, accessed, and manipulated in code?

Or

(b) Explain the purpose and usage of JavaScript arrays.

15. (a) Explain the role of the document object in HTML and provide its properties and methods for accessing and manipulating document content.

Or

(b) Analyze the role of event handlers in responding to user interactions and triggering specific actions or behaviors within web applications.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe the functions of routers, gateways, bridges, switches, and subnets in computer networking, emphasizing their importance in data transmission.

17. Describe the role of style sheets (CSS) in web design, highlighting their ability to separate content from presentation and enhance the visual appeal of web pages.

18. Describe the different types of lists that can be created in HTML forms.

19. Explore the various security risks associated with JavaScript development and propose strategies for mitigating these risks.

20. Explore the challenges and opportunities of incorporating Java applets into web pages using the Applet object, discussing its capabilities and limitations.

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S–2706	Sub. Code
	23BITA3

B.Sc. DEGREE EXAMINATION, APRIL 2024

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 the purpose of stack pointer?

2. Write short note on: Multiplexed Address bus or data bus.

3. Write any two arithmetic instructions.

4. What is the use of HOLD and HLDA pin in 8085 microprocessors?

5. List the interrupts available in 8085 microprocessors.

6. Draw the format of Read Interrupt Mask (RIM) instruction set.

7. What is microcontroller?

8. What is the use of data pointer register?

9. Define: Interrupt Service Routine (ISR).

10. What are the control registers available in 8051 for timer or counter?

Part B (5 × 5 = 25)

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

11. (a) Explain 8085 bus organization with neat diagram. Why use Bus organization in 8085 microprocessors? What are the advantages, issues and disadvantages of Bus organization in 8085 microprocessors?

Or

(b) Briefly explain the peripheral initiated operations. What are its advantages and disadvantages?

12. (a) Draw the pin diagram of 8085 microprocessor and explain its functions.

Or

(b) Write any five data transfer instructions and explain with examples.

13. (a) How Direct Memory Address (DMA) operations are performed in 8085 microprocessors.

Or

(b) Explain the non vectored interrupt in 8085 microprocessors.

14. (a) Differentiate between microprocessors and microcontrollers.

Or

(b) Draw the pin diagram of 8051 microcontroller and explain its significance.

15. (a) Briefly explain the modes of operation in 8051 timer.

Or

(b) Explain the interrupt vector table in 8051 microcontrollers.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain in detail about microprocessor initiated operations in 8085 microprocessors.

17. Draw and explain the block diagram for 8085 microprocessors.

18. Discuss in detail about 8259 programmable interrupt controllers.

19. Explain the architecture of 8051 micro controller with neat diagram.

20. Describe the interrupts control registers available in 8051 microcontrollers.

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S–2707

Sub. Code
23BITA4

B.Sc. DEGREE EXAMINATION, APRIL 2024

Information Technology

Allied – MULTIMEDIA AND ITS APPLICATIONS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. Define interactive multimedia. What are its application areas?

2. What is hypertext? Give examples.

3. Enumerate the components of multimedia.

4. List out various types of image file formats.

5. Define animation and describe how it can be used in multimedia.

6. What you mean by Non-Linear Editing (NLE).

7. What are the two most significant platforms (operating systems) for producing and delivering multimedia projects?

8. What is internet address? Give examples.

9. What is the workspace in Adobe Animate?

10. What tools are commonly used when working with shapes in Adobe Animate?

Part B $(5 \times 5 = 25)$

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

11. (a) Explain the use of multimedia in Education and describe the primary multimedia delivery methods.

Or

(b) Write short note on: CD-ROM, DVD, Flash Drives.

12. (a) How vector drawings work? Explain.

Or

(b) Briefly explain about 3D drawing and rendering with examples.

13. (a) What are the principles of animation? Explain.

Or

(b) Write short note on : Video file converters and obtaining video clips.

14. (a) What are the stages of multimedia project? Explain.

Or

(b) Identify the typical members of a multimedia project team and describe the skills that they need for their work.

15. (a) Write short note on: Interactive motion graphics for the web.

Or

(b) How do you create a graphic symbol in Adobe Animate? Explain.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain in detail about the measurement types of Fonts and faces.

17. Discuss in detail about computerized color, computer color models, color palettes in multimedia.

18. How will perform storyboarding, lighting, chroma keys and composition during shooting and editing videos. What techniques would you use to produce the best possible video, at a reasonable cost?

19. Explain the types of multimedia authoring (icon, object and time) based tools.

20. Describe the ways for animating with diverse techniques of multimedia.

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S–2708

Sub. Code
23BIT2S1

B.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Information Technology

BASICS OF INTERNET

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** the questions.

1. Name any two key technological advancements that facilitated the emergence of the internet as a mass medium.

2. Discuss the role of ARPANET in the development of the internet as a mass medium.

3. Define the metadata and its significance in organizing and managing digital information.

4. Discuss at least four different file formats and their significance.

5. Define infotainment and what is the significance in the context of the internet.

6. Differentiate between informative and entertaining content on the internet.

7. List out the effect of the internet on values.

8. How does the internet influence lifestyles?

9. Outline two potential future advancements in encryption algorithms for enhancing cybersecurity.

10. Describe the significance of primary keys and foreign keys in relational database tables for ensuring data integrity.

Part B $(5 \times 5 = 25)$

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

11. (a) Discuss the concept of HTML tags and attributes with reference to an example code.

Or

(b) Illustrate how tags are used to define the structure and content of a web page, while attributes provide additional information or functionality.

12. (a) Discuss the impact of CSS and Bootstrap on user experience (UX) in webpage design, citing specific examples.

Or

(b) Compare and contrast the utilization of CSS and Bootstrap in webpage design, highlighting their respective advantages and limitations.

13. (a) Analyze the role of social media platforms in transforming the internet into a powerful mass medium for communication and information dissemination.

Or

(b) Describe the impact of adhering to design concept principles on improving user experience. Offer specific instances illustrating enhanced usability.

14. (a) Discuss how understanding the attitudes, interests, and lifestyles of internet users can influence marketing like tactics, instagram etc..

Or

(b) Explore how social media platforms shape societal values and influence lifestyle choices. Provide examples of online communities that have emerged due to the internet's impact on values.

15. (a) Explore the future possibilities and challenges in combating cybercrime in the context of emerging technologies.

Or

(b) Discuss the increasing threat of cybercrime in the context of online banking.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Trace the historical evolution of the internet from its origins as a military and academic network to its status as a global mass medium.

17. Evaluate the societal and economic impact of the internet's core features, citing examples that demonstrate scalability, accessibility, and interoperability.

18. Analyze infotainment's societal effects, addressing media literacy and consumption responsibility, considering tech and apps' roles.

19. Discuss the importance of creating links to email addresses in web communication strategies.

20. Discuss the implementation of block chain technology in addressing cybersecurity challenges. Analyze the technical aspects of block chain-based solutions for data integrity, authentication, and decentralized identity management.

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S–2709

Sub. Code
23BIT2S2

B.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Information Technology

PROBLEM – SOLVING TECHNIQUES

(CBCS – 2023 onwards)

Time : Three Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** the questions.

1. What does it mean to work backward from the solution in problem-solving?

2. What is meant by top-down design in problem-solving?

3. Define the counting algorithm

4. Implement an algorithm to compute the factorial of a given number using recursion

5. Write an algorithm to find the smallest divisor of an integer.

6. What does partitioning an array involve?

7. How do you find the maximum number in a set using arrays?

8. Write a short note about the Longest monotone subsequence.

9. Define left and right justification of text.

10. How is permutation generation accomplished?

Part B $(5 \times 5 = 25)$

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

11. (a) Describe the different phases involved in the problem-solving aspect.

Or

(b) Discuss the concept of recursion in problem-solving and examine its advantages, and challenges in different problem domains.

12. (a) Implement an algorithm to exchange the values of two variables in a programming language.

Or

(b) Write an algorithm to reverse the digits of the given integer and explain how it is working.

13. (a) Create a program to compute the n^{th} Fibonacci number using an iterative or recursive algorithm.

Or

(b) Explore the concept of generating prime numbers algorithmically and discuss methods for testing primality and generating large prime numbers efficiently.

14. (a) Write a program to reverse the order of elements in an array.

Or

(b) Create a function to find the k^{th} smallest element in a sorted array using a partition-based approach like quick select.

15. (a) Compare and contrast linear pattern search with other pattern-searching algorithms.

Or

(b) Discuss the importance of text line length adjustment in document formatting.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Evaluate different general problem-solving strategies and discuss their advantages, limitations, and suitability for different problem types.

17. Implement a base conversion algorithm to convert numbers between binary, decimal, and hexadecimal numeral systems.

18. Analyze the computational complexity of raising a number to a large power algorithmically, and discuss techniques for optimizing exponentiation algorithms.

19. Critically assess the process of removing duplicates from an ordered array and consider various algorithms and their trade-offs.

20. How does Towers of Hanoi represent a problem that can be solved recursively? Explain with an example.

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