S–4945

Sub. Code
22BCA1C1

B.C.A. DEGREE EXAMINATION, NOVEMBER 2024

First Semester

Computer Application

DATA STRUCTURES AND C PROGRAMMING

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What is Linked List?

2. Define Tree.

3. Mention any two features of C language.

4. Write the different expressions available in C.

5. Draw the structure of switch...case in C programming.

6. What is an Array?

7. What is the scope of the variables?

8. Define Union.

9. How to create a pointer in C?

10. What is file?

Part B (5 × 5 = 25)

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

11. (a) Illustrate the functions of Queue with examples.

Or

(b) How to create a Tree? Explain with an example.

12. (a) What is Constant? Illustrate the different types of constants in C.

Or

(b) Write a C program to sort 'n' elements.

13. (a) Elaborate the procedures to declare and initialize string variables.

Or

(b) What are the operations available for Characters in C? Explain them.

14. (a) Write a short note on Nesting of functions.

Or

(b) How to create the array of structures in C? Explicate with sample program.

15. (a) How to pass pointers to the functions? Explain with an example.

Or

(b) Write the procedures to open and close the files.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe the different types of data structures in detail.

17. Write a C program to check whether a given number is prime or not.

18. Discuss the various string functions in C.

19. Write a C program to create a structure for the students' information.

20. Elaborate the procedures to handle errors during I/O operations.

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S–4946

Sub. Code
22BCAA1

B.C.A. DEGREE EXAMINATION, NOVEMBER 2024

Computer Applications

Allied – DATA STRUCTURES AND C

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is a data types?

2. Write short notes on an Array.

3. What is a Function?

4. Define a Pointer.

5. Illustrate practically where we are implementing stack concept.

6. Explain a linked list.

7. Briefly explain a Binary Tree.

8. Explain about a Tree.

9. Explain sorting.

10. What is a search?

Part B (5 × 5 = 25)

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

11. (a) Construct the structure of C program.

Or

(b) Explain about the operators used in C.

12. (a) Explain the Recursion function with a example program.

Or

(b) Illustrate Union with a example program.

13. (a) Explain Array, how it is used as a data structure in storage.

Or

(b) Explain Linked List and its types.

14. (a) Illustrate the difference between Tree and a Binary Tree.

Or

(b) Explain the Traversal of a Graph.

15. (a) Explain the Hash Table.

Or

(b) Explain the Binary Search with algorithm.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe an Array and its types.

17. List out the difference between Structure and Union.

18. Explain the Linked List based implementation of Stack and Queue.

19. Explain the types of traversals in Binary Tree.

20. Explain Sorting and its types.

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S–4947

Sub. Code
22BCA2C1

B.C.A. DEGREE EXAMINATION, NOVEMBER 2024

Second Semester

Computer Application

OBJECT ORIENTED PROGRAMMING IN C++

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define Class.
2. What is User Defined data type?
3. Write a note on const argument.
4. Mention any two memory allocation functions in C++.
5. What is Derived Class?
6. Write the significance of Destructor.
7. What is pointer? Give an Example.
8. Short note on read() and write() function.
9. Define Exception.
10. What is meant by template parameter and its validity?

Part B (5 × 5 = 25)

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

11. (a) Write a C++ program to find whether the given number is prime or not.

Or

(b) Explain any two control structure of C++ with example.

12. (a) Discuss on friend function with suitable example.

Or

(b) Explain the nesting of member function with an example.

13. (a) Illustrate the principle of manipulators in C++.

Or

(b) Explain (i) Copy constructor (ii) Parameterized constructor.

14. (a) Elucidate the command line arguments in C++.

Or

(b) Explain pure virtual function.

15. (a) Briefly explain about Exception Handling in C++.

Or

(b) Write a C++ program to add two integer, two float and two double numbers using function template.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain the various object oriented programming concepts in C++.

17. Give explanation to function overloading and operator overloading with example.

18. Write a C++ Program to demonstrate multilevel, multiple and hybrid Inheritance concept.

19. Explain the classes of File Stream operations in C++.

20. Define Template. Explain class template with example.

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S–4948

Sub. Code
22BCAA2

B.C.A. DEGREE EXAMINATION, NOVEMBER 2024

Computer Application

Allied – DESKTOP PUBLISHING

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Shortly explain about a Corel Draw.

2. What are the basic shapes used in Corel Draw?

3. What are the Text Tool used in Desktop publishing?

4. How to Wrapping a Text.

5. Define a Bitmap.

6. Explain 3D Effect.

7. List the Menus in Photoshop.

8. List some tools in Toolbox of Photoshop.

9. How Layers used in Photoshop?

10. Explain the uses of Filters in Photoshop.

Part B (5 × 5 = 25)

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

11. (a) Explain the features of Corel Draw.

Or

(b) Explain how Reshaping Objects.

12. (a) Describe how to Embedding Objects into Text.

Or

(b) How to creating Depth Effects?

13. (a) How to convert objects into Bitmap?

Or

(b) How to apply effects on Bitmap printing?

14. (a) How to customize the interface in Photoshop?

Or

(b) How to work with a images in Photoshop?

15. (a) Explain the Layer Effects in Photoshop.

Or

(b) Explain the Masking in Photoshop.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain how to get start with a Corel Draw.

17. List out the types of effects used in applying on Text.

18. List out the types of effects used in Bitmap.

19. Illustrate how to work with images in Photoshop.

20. List out any five types of filters and explain how to apply filters to images.

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S–4949

Sub. Code
22BCA3C1

B.C.A. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Computer Application

DATABASE MANAGEMENT SYSTEM

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Database Language?
2. What is E-R Diagram?
3. What is Relational Database?
4. Define Decomposition of Database.
5. What is Distributed Database?
6. What are the types of Network?
7. What is Data Integrity?
8. What is a Indexes?
9. What is PL/SQL?
10. What is a Package?

Part B (5 × 5 = 25)

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

11. (a) Discuss the purpose of Database Systems.

Or

(b) Discuss the Transaction Management in Database Systems.

12. (a) Discuss about the features of a good Database design.

Or

(b) Explain the Database design process.

13. (a) What is Server System Architecture?

Or

(b) Write a note Distributed Data storage.

14. (a) Discuss about views in a Schema.

Or

(b) Write a note on Table creation and maintenance.

15. (a) Discuss about PL/SQL Functions.

Or

(b) Write briefly about Cursor.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Discuss about Data storage and querying.

17. Discuss about Functional Dependency Theory.

18. Explain Parallel Databases.

19. Discuss about Schema Objects.

20. Discuss about Triggers.

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S–4950

Sub. Code
22BCA3C2

B.C.A. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Computer Application

OPERATING SYSTEM

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is operating system?
2. Explain kernel.
3. What is Mutual Exclusion?
4. Explain Race Condition.
5. Difference between logical and physical address space.
6. Define internal fragmentation.
7. Difference between fields and records.
8. What is file management system?
9. Define seek time and latency time.
10. What is INPUT/OUTPUT system in OS?

Part B (5 × 5 = 25)

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

11. (a) Explain operating system structure and components.

Or

(b) Explain Interprocess communication in operating system.

12. (a) Explain critical-section problem in operating system.

Or

(b) Describe four necessary conditions for Deadlock.

13. (a) Explain fragmentation in Memory management.

Or

(b) Explain Hardware protection in Memory management.

14. (a) Explain Demand paging in virtual memory management.

Or

(b) Describe file allocation methods in file system.

15. (a) Explain about Authentication in secondary storage.

Or

(b) Explain INPUT/OUTPUT hardware in I/O system.

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

Answer any **three** questions.

16. Explain CPU scheduling algorithm.

17. Explain deadlock avoidance banker's algorithm in OS.

18. Explain non-contiguous memory allocation in OS.

19. Explain about page replacement algorithm in OS.

20. Explain about Encryption in secondary storage.

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S–4951

Sub. Code
22BCAA3

B.C.A. DEGREE EXAMINATION, NOVEMBER 2024

Computer Application

Allied – DISCRETE MATHEMATICS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. If $A = \{c, d\}$, $B = \{1, 2\}$, $C = \{2, 3\}$ find

   (a) $A \times (B \cup C)$

   (b) $A \times (B \cap C)$

2. Define injections and surjection.

3. Construct truth table for $(P \to Q) \wedge (Q \to P)$.

4. Define conjunction and disjunction.

5. Define disjunctive normal form.

6. What do you mean by bound variable and free variable?

7. What is a subgraph? Give an examples.

8. Define : Path and Cycle.

9. What is a spanning tree?

10. Define a cut-set.

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

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

11. (a) If $R = \{<1, 2>, <3, 4>, <2, 2>\}$ and $S = \{<4, 2>, <2, 5>, <3,12>, <1, 3>\}$ Find

(i) $R \circ S$

(ii) $S \circ R$

(iii) $R \circ R \circ R$

(iv) $(R \circ S) \circ R$

(v) $R \circ (S \circ R)$

Or

(b) If $A = \{a,b,c\}$, $B = \{1,2,3\}$ list

(i) All one-to-one functions from A into B

(ii) On to functions from A onto B

12. (a) Construct truth table for

$$(P \wedge Q) \vee (\neg P \wedge Q) \vee (P \wedge \neg Q) \vee (\neg P \wedge \neg Q)$$

Or

(b) Construct truth table for

$$\neg(P \wedge Q) \rightleftarrows (\neg P \vee \neg Q)$$

13. (a) Find the disjunctive normal form of

$$(P \wedge \neg(Q \vee R)) \vee (((P \wedge Q) \vee \neg R) \wedge P).$$

Or

(b) Show that $P \rightarrow S$ can be derived from the premises $\neg P \vee Q, \neg Q \vee R, R \rightarrow S$

14. (a) Explain graph isomorphism with an examples.

Or

(b) Prove that, in any graph, the number of vertices of odd degree is even.

15. (a) State and prove demorgan's laws in a Boolean algebra.

Or

(b) Explain prims algorithm with a suitable example.

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

Answer any **three** questions.

16. State and prove Demorgan's laws on sets.

17. Show the following implications without constructing the truth tables.

$(Q \to (P \wedge \neg P)) \to (R \to (P \wedge \neg P)) \Rightarrow (R \to Q)$

18. (a) Obtain PDNF of $(Q \wedge \neg R \wedge \neg S) \vee (R \wedge S)$

(b) Obtain PCNF of $(\neg P \to R) \wedge (Q \leftrightarrow P)$

19. Prove that a graph G is disconnected if and only if its vertex set V can be portioned into two non empty subsets V_1 and V_2 such that these exists no edge in G whose one and vertex is in V_1 and the other in V_2.

20. Explain Dijkstra's algorithm with a suitable example.

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S–4952

Sub. Code
22BCA4C1

B.C.A DEGREE EXAMINATION, NOVEMBER 2024

Fourth Semester

Computer Applications

JAVA PROGRAMMING

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Write any four features of Java.

2. Mention the software requirements of Java.

3. What are the difference between the >> and >>> operators?

4. How the arithmetic expressions can be evaluated?

5. How can you declare two dimensional arrays?

6. Define Wrapper class.

7. Which package is always imported by default?

8. How can a dead thread be restarted?

9. Write the method to running the Applet.

10. List out the advantages of graphics class.

Part B (5 × 5 = 25)

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

11. (a) Describe the structure of a JAVA program.

Or

(b) Write brief note on applications of Object Oriented Programming.

12. (a) Explain about any three types of operators with their syntax and usages.

Or

(b) Write a Java program to find the smallest of three numbers using constructor.

13. (a) Write short note on final method, final class with an example.

Or

(b) Write a Java program to get two strings and merge them into one.

14. (a) Explain the threading exceptions.

Or

(b) Discuss the various types of errors with an example.

15. (a) How can you design a web page using applet?

Or

(b) Write a program to draw a bar chart using graphics class in Java.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain in detail on WWW and web browsers.

17. Write a Java program to find biggest of three numbers using IF statement.

18. Write a Java program to implement the method overloading concept.

19. Write brief note on thread priority, synchronization and implementing the Runnable Interfaces.

20. How applets differ from applications? Also to draw a Indian flag.

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S–4953

Sub. Code
22BCA4C2

B.C.A. DEGREE EXAMINATION, NOVEMBER 2024

Fourth Semester

Computer Application

COMPUTER NETWORKS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define ATM.
2. What is communication satellite?
3. Define HDLC.
4. List the multiple access protocols.
5. What is Routing?
6. What is Multicasting?
7. What is Buffering?
8. Define UDP.
9. What is Multimedia?
10. Define DNS.

Part B (5 × 5 = 25)

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

11. (a) What is network topology? Explain the different network topologies.

Or

(b) Explain the various components of a Computer Network.

12. (a) Illustrate the elementary data link protocols in data link layers.

Or

(b) Explain the concepts of protocol specification and verification in computer networks.

13. (a) Explain the functionalities of Tunneling and Fragmentation in network layer.

Or

(b) Write a note on internet multicasting with an example.

14. (a) Briefly explain the internet transport protocols with an example.

Or

(b) How to measure network performance through transport layer?

15. (a) Explain the need of data compression in World Wide Web.

Or

(b) What is network security in application layer?

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain the wireless transmission media in details.

17. Describe the uses of drink protocols in detail.

18. Explain the network layers in ATM networks.

19. Explain crash recovery process and elaborate the performance issues in transport layer.

20. What is cryptography? Explain the secret and public key algorithms.

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S–4954

Sub. Code
22BCAA4

B.C.A. DEGREE EXAMINATION, NOVEMBER 2024

Computer Application

Allied – COMPUTER – ORIENTED STATISTICAL METHODS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

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

Answer **all** questions

1. Write any two merits of median.
2. Define : Quartile deviation.
3. What do you mean by mutually exclusive events?
4. What is the chance that a leap year selected at random will contain 53 Sundays?
5. Define: Point Estimate.
6. What do you mean by level of significance?
7. Write the P.D.F. of the binomial distribution.
8. Define F-test.
9. State the principles of least squares.
10. Define $100(1-\alpha)$ y confidence interval for the mean response $\mu_{y_1 x_0}$

Section B (5 × 5 = 25)

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

11. (a) Find the arithmetic mean for the data given below:

x	1	2	3	4	5	6	7
f	5	9	12	17	14	10	6

Or

(b) Calculate quartile deviation:

Marks	0–10	10–20	20–30	30–40	40–50	50–60	60–70
No. of students	6	5	8	15	7	6	8

12. (a) Two unbiased dice are thrown. Find the probability that

(i) both the dice show the same number

(ii) the first dice shows 6.

(iii) the total of the numbers on the dice is 8.

Or

(b) Explain the software demonstration of elementary sampling theory.

13. (a) Find the correlation coefficient between X and Y.

		x		
$f(x,y)$		0	1	2
y	0	$\frac{3}{28}$	$\frac{9}{28}$	$\frac{3}{28}$
	1	$\frac{3}{14}$	$\frac{3}{14}$	0
	2	$\frac{1}{28}$	0	0

Or

(b) Explain Type I and Type II errors.

14. (a) The probability that a patient recovers from a rare blood disease is 0.4. If 15 people are known to have contracted this disease. What is the probability that

(i) at least 10 survive

(ii) from 3 to 8 survive and

(iii) exactly 5 survive?

Or

(b) Define χ^2-test and discuss its uses.

15. (a) Find the regression line of y on x.

x	1	2	3	4	5	6	7	8	9
y	9	8	10	12	11	13	14	16	15

Or

(b) Explain the properties of the least square estimators.

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

Answer any **three** questions.

16. Find mean and coefficient of variation for the following data.

Interval	170–180	180–190	190–200	200–210	210–220
frequency	52	68	85	92	100
Interval	220–230	230–240	240–250		
frequency	95	70	28		

17. State and prove Bayes theorem.

18. State and prove Chebyshev's theorem.

19. The theory predicts that the proportion of an object available in four groups A, B, C, D should be 9 : 3 : 3 : 1. In an experiment among 1600 items of this object the numbers in the four groups were 882, 313, 287 and 118. Use χ^2-test to verify whether the experimental result supports the theory.

20. Given the data:

x	0	1	2	3	4	5	6	7	8	9
y	9.1	7.3	3.2	4.6	4.8	2.9	5.7	7.1	8.8	10.2

Fit a regression curve of the firm.

$\mu_{y1_x} = \beta_0 + \beta_x + \beta_2 x^2$.

S–4955

Sub. Code
22BCA5C1

B.C.A DEGREE EXAMINATION, NOVEMBER 2024

Fifth Semester

Computer Application

. NET PROGRAMMING

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

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

Answer ALL the questions

1. What is an IDE in Visual Basic?

2. What are the differences between implicit and explicit variable declarations?

3. Explain any two methods related to form object.

4. What is form layout in visual basic?

5. Tell the usage of List Box in VB.Net.

6. What is the differences between menu bar and tool bar in Vb.Net?

7. How do you through an exception in a try block? Give an example.

8. List the features of Font Dialogue in visual basic.

9. What is the use of ADO.Net object mode?

10. What is difference between DataGridView and GridView?

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

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

11. (a) Demonstrate the difference between Constants and Variables.

Or

(b) Explain various components of Visual Studio IDE.

12. (a) Categorize the features of event driven programming.

Or

(b) Interpret on binding of Text Box and Check Box

13. (a) Discuss and compare Rich Text Box Masked Text Box.

Or

(b) Examine with example to create, insert and delete menus in .Net framework.

14. (a) What is an MDI form? Explain with an example.

Or

(b) Describe Pass by Value and Pass by reference with example.

15. (a) Explain Dataset class in ADO.net.

Or

(b) Write a note on ADO object model.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Summaries the control structure and loops of VB.Net Platform.

17. Explain properties, methods and events of Text Box control and Group box control.

18. Design GUI and write a code for following in VB.Net using RichTextBox:

    (a) Change font color of selected text.

    (b) Change font size of selected text.

    (c) Exit

19. Explain methods for handling exception in VB.Net. Design a VB.Net window based application and write code to handle exceptions.

20. Design and write a Visual Basic program to validate the username and password from the database and display the appropriate message (use ADO data control.

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S–4956

Sub. Code
22BCA5C2

B.C.A DEGREE EXAMINATION, NOVEMBER 2024

Fifth Semester

Computer Application

PYTHON PROGRAMMING

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions

1. How to use indentation in python?
2. What the rules for naming a variable?
3. Write the syntax and usage of while loop.
4. What is a set data type in python?
5. What is the use of dir() function?
6. Tell the use of NumPy.
7. Define the features of dictionary.
8. What are the basic list operations that can be performed in python?
9. How to open a new file in python?
10. List out keywords used in exception handing.

Part B (5 × 5 = 25)

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

11. (a) Discuss python identifiers and keywords.

Or

(b) Mention and explain the python features in brief.

12. (a) Describe the syntax and semantics of any two loop structure provided by python.

Or

(b) What type of conditional structure are present in a programming language? How many of They are supported python.

13. (a) Define arrays and how to access elements from an array in python?

Or

(b) What are modules in python? Explain.

14. (a) Describe set in python with suitable example.

Or

(b) What is dictionary? Explain python dictionaries in detail.

15. (a) Design a python program which will throw exception if the value entered by user is less than zero.

Or

(b) Explain in detail about python files and their operations with example.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Demonstrate the use of Input/output functions in python.

17. Explain different loop available in python with suitable example.

18. Explain in detail about packages and how modules are imported from a package?

19. Write a detailed note on object oriented programming in python.

20. List some common Exception types and explain when they occur.

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S–4957

Sub. Code
22BCA5C3

B.C.A. DEGREE EXAMINATION, NOVEMBER 2024

Fifth Semester

Computer Application

WEB DESIGN TECHNOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. What is a web browser? Mention any three web browsers.
2. What is a protocol? State any two protocols.
3. Define image tag with an example.
4. Distinguish HTML and XHTML
5. What is DHTML?
6. What are the rules for variable declaration in JavaScript?
7. Define XML schema.
8. List various string functions in PHP.
9. Why do we need a database?
10. What are bugs in database?

Part B (5 × 5 = 25)

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

11. (a) How to design an effective web page? Explain with example.

Or

(b) Discuss in detail about understanding the working of Internet.

12. (a) Define table tags and their attributes with an example.

Or

(b) Explain Cascading Style Sheets with an example.

13. (a) Write a note on DOM. Explain it.

Or

(b) What are the key rules for objects in JavaScript? And define the types of JavaScript built-in objects.

14. (a) Define the purpose of array in PHP. What are the types of arrays supported by PHP?

Or

(b) Define session and cookies. Explain with an example program.

15. (a) What is PHP? And write the features of PHP.

Or

(b) How to query a MySql database in PHP? Explain with sample queries.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain the role of navigation in web design. What are the most used navigation design in web development?

17. What is a form? What are the major attributes of the form? Explain any six form components with example.

18. What are loops and conditional statements in JavaScript? Give detailed description with sample code.

19. Explain the predefined and user defined functions in PHP with an example.

20. Manipulate database creation and write a query to connect MySQL database using PHP.

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S–4958

Sub. Code
22BCA5C4

B.C.A DEGREE EXAMINATION, NOVEMBER 2024

Fifth Semester

Computer Application

COMPUTER ARCHITECTURE AND ORGANIZATION

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. Give the equivalent binary number for the decimal number 45.

2. Specify how the internal hardware organization of a digital computer is defined?

3. Define instruction code. Mention its parts.

4. State the usage of LDA.

5. Mention the items specified in the instruction field of an assembly language program.

6. List the three machine instructions that perform logical operation in basic computer.

7. Define microprogram control unit and microprogram.

8. Distinguish between microprogram and a microprocessor.

9. List the two operations of stack withiest purpose.

10. State the use of LOAD and STORE instruction.

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

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

11. (a) Write a down the steps involved to subtract two n-digit unsigned number M-N in base r where N should not be zero.

Or

(b) Design a four-bit combinational circuit decrementer using four frill adder circuits.

12. (a) With a neat sketch explain stored program organization.

Or

(b) With illustration, explain branch and save return address.

13. (a) Outline the flowchart for second pass assembler.

Or

(b) Write a note on shift operations and its instructions.

14. (a) Sketch and explain microprogrammed control organization.

Or

(b) Write a detailed note on computer instruction format and four computer instructions.

15. (a) With illustration, Compare three address instruction with two address instruction.

Or

(b) List and explain program control instructions with its mnemonics.

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

Answer any **three** questions.

16. Sketch and explain the bus system for four registers.

17. Sketch the flowchart for interrupt cycle and explain.

18. Write a detailed note on programming arithmetic and logic operations.

19. Sketch and explain block diagram of control memory.

20. Explain in detail about addressing modes.

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