

Roll No. ....

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BCA/M-23

1864

ADVANCED PROGRAMMING IN C  
BCA-121

Time : Three Hours]

[Maximum Marks : 80

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

1. Explain the following with example : 4×4=16
- (a) Structure
  - (b) Union
  - (c) Preprocessor
  - (d) malloc() and calloc().

**Unit I**

2. Explain standard library functions to handle strings in C  
with suitable examples. 16
3. Explain the following with suitable example : 4×4=16
- (a) Structure within structures
  - (b) Typedef

- (c) Enumeration
- (d) Union of Structures.

### Unit II

- 4. What is pointer ? How would you declare and initialize a pointer variable ? Explain the concept of pointer to pointer with suitable example. 16
- 5. (a) Differentiate between pointer to an array and array of pointers with example. 8
- (b) What do you mean by static and dynamic memory allocation in C ? Explain with example. 8

### Unit III

- 6. Explain the following functions in C using suitable examples : 4×4=16
  - (a) Fseek()
  - (b) fgets()
  - (c) rewind()
  - (d) ftell()
- 7. What are different file opening modes in C ? Write a program in C that merges the contents of two files and write result into a new file. 16

## Unit IV

8. Explain the following using suitable example in C :  $4 \times 4 = 16$
- (a) #error
  - (b) #ifdef
  - (c) #undef
  - (d) #define
9. (a) Differentiate between macro and functions with example. 8
- (b) Explain command line arguments with example. 8

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BCA/M-23

1865

LOGICAL ORGANIZATION OF  
COMPUTER-II

BCA-122

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all. Q. No. 1 is compulsory.  
Attempt *four* more questions, selecting one question  
from each Unit.

1. (a) What is Race-Around Condition ?
- (b) Explain IOP.
- (c) What is a Flash Memory ? How is it used ?
- (d) Define Sequential Circuit and write its properties.

4×4=16

Unit I

2. Describe working of Master-Slave flip-flop in detail with example. 16
3. (a) Write Excitation Table of JK and T-FF. 8
- (b) What is JK flip-flop ? Write its disadvantage also.

8

## Unit II

4. (a) Explain Serial In and Parallel Out 4-Bit Register. 8
- (b) Write down the design procedure of Synchronous Counter. Design Synchronous MOD-5 Counter. 8
5. What is Register ? State different types of Registers and also define various modes of operations performed on registers. 16

## Unit III

6. (a) Write a note on Hard-Copy Output Devices. 8
- (b) Explain different types of Optical Scanners. 8
7. Define Memory and its types. Explain difference between ROM and RAM. Also write types of ROM and RAM. 16

## Unit IV

8. (a) Describe Program Controlled and Interrupt Driven Data Transfer Techniques. 8
- (b) Explain basic structure of CPU. 8
9. (a) Write a note on DMA. 8
- (b) Explain I/O Channels. 8

BCA/M-23

1866

## MATHEMATICAL FOUNDATIONS-II

BCA-123

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory.

**(Compulsory Question)**

1. (a) If  $p$  and  $q$  be any statement then construct the truth table  $\sim (p \wedge q)$ .
- (b) Define subgroup.
- (c) Define skew-symmetric matrix with example.
- (d) Define prime ideal of a ring.
- (e) State Cayley-Hamilton Theorem.
- (f) Define Singular matrix.
- (g) Define order of an element of a group.
- (h) Construct a  $2 \times 2$  matrix whose elements are given by  $a_{ij} = i \cdot j$ . 8×2=16

**Unit I**

2. (a) Prove that  $[(p \Leftrightarrow q) \wedge (q \Rightarrow r) \wedge r] \Rightarrow r$  is a tautology. 8
- (b) Prove that  $3^{2n+2} - 8n - 9$  is divisible by 64. 8

3. (a) Prove that  $3^n > 2^n$  by Principle of Mathematical Induction for all  $n \in \mathbb{N}$ . 8

(b) Show that : 8

$$\sim(p \leftrightarrow q) \equiv (\sim p) \leftrightarrow q \equiv p \leftrightarrow (\sim q).$$

### Unit II

4. (a) Let  $G = \{0, 1, 2, 3, 4\}$ , find the order of the elements of the group  $G$  under the binary operation addition modulo 5. 8

(b) If every element of a group is its own inverse, then show that the group is abelian. 8

5. (a) Prove that intersection of the two subring is a ring. 8

(b) Let  $R$  be a ring of  $2 \times 2$  matrices over integers. Let  $S = \left\{ \begin{bmatrix} a & 0 \\ b & 0 \end{bmatrix} : a, b \text{ integers} \right\}$ , then  $S$  is a left ideal but not right ideal. 8

### Unit III

6. (a) Find rank of the Matrix  $\begin{bmatrix} 9 & 0 & 2 & 3 \\ 0 & 1 & 5 & 6 \\ 4 & 5 & 3 & 0 \end{bmatrix}$  by reducing it to Normal Form. 8

(b) If  $A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & -2 & 1 \\ 4 & 2 & 1 \end{bmatrix}$ , show that : 8

$$A^3 - 23A - 40I = 0.$$

7. (a) Solve using rank method : 8

$$x + y + z = 0$$

$$2x - 3y + z = 9$$

$$x - y + z = 0.$$

(b) Solve : 8

$$x - y + z = 0$$

$$x + 2y - z = 0$$

$$2x + y + 3z = 0.$$

#### Unit IV

8. Find eigen values and eigen vectors of the Matrix

$$\begin{bmatrix} 1 & 2 & 2 \\ 0 & 2 & 1 \\ -1 & 2 & 2 \end{bmatrix}. \quad 16$$

9. Verify Cayley-Hamilton Theorem for the Matrix

$$A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}, \text{ and hence find its inverse.} \quad 16$$

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1867

OFFICE AUTOMATION TOOLS

BCA-124

Time : Three Hours]

[Maximum Marks : 80

Note : Q. No. 1 is compulsory. Attempt *Five* questions in all, selecting *one* question from each Unit in addition to compulsory Q. No. 1. All questions carry equal marks.

1. (a) What is the purpose of control palette in Page Maker ? 3
- (b) What do you understand by Orphan Control in Page Maker ? 3
- (c) What is Hanging Indents used in PageMaker ? Write down steps to set Hanging Indents in a publication ? 3
- (d) Distinguish between Save and SaveAs option in MS-Word. 3
- (e) Define Macro with a suitable example. 2
- (f) Write steps to insert a chart in a slide. 2

Unit I

2. (a) What is Desktop Publishing (DTP) ? Discuss various applications of DTP. 8

- (b) What is the use of preferences command in PageMaker ? Explain different options available in preferences dialog box. 8
- 3. (a) Write a short note on Adobe Photoshop. 8
- (b) What are the hardware and software requirements for DTP ? 8

### Unit II

- 4. (a) What is paragraph formatting ? Explain various options available in Paragraph Specifications dialog box in Pagemaker. 8
- (b) What do you mean by Hyphenation ? Explain steps to control hyphenation. 8
- 5. (a) What is Story Editor ? What are the advantages of Story Editor ? Explain. 8
- (b) What is indent ? Discuss various steps to set indents in PageMaker. 8

### Unit III

- 6. (a) What do you mean by Office Automation ? Discuss advantages of office automation. 8
- (b) Explain various steps to add header and footer in a MS-Word document. 8

7. Write short notes on the following : 16

- (a) Text alignment
- (b) Document Dictionary
- (c) Mail merge
- (d) Autotext.

#### Unit IV

8. (a) What do you understand by presentation ? Write steps to create a presentation in Powerpoint. 8
- (b) Explain briefly different views used in a PowerPoint presentation. 8
9. (a) Write down and explain various steps to insert a table in a slide. 8
- (b) What is Hyperlink ? How to insert a hyperlink in a slide ? 8

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BCA/M-23

1868

STRUCTURED SYSTEM ANALYSIS AND  
DESIGN  
BCA-125

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. (a) What is a system ?
- (b) Write characteristics of system.
- (c) Discuss Economic Feasibility.
- (e) Differentiate open and closed system.

**Unit I**

- 2: Define Elements of System and explain the types of System.
3. Explain System Development Life-Cycle.

**Unit II**

4. (a) Explain Fact gathering process and techniques.
- (b) Discuss Technical and economic feasibility.

5. (a) Explain the role of HIPO and Gantt Chart in System Design.
- (b) What is Decision Table ? Give example to explain.

### **Unit III**

6. Explain concept of Cost and Benefit analysis of system.
7. (a) Discuss Logical view of Data.
- (b) Explain Input Form Design.

### **Unit IV**

8. Explain the process of implementation, emphasize on Parallel and Pilot implementation.
9. (a) Discuss SQA process.
- (b) Discuss testing process.

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BCA/M-23

1869

PERSONALITY DEVELOPMENT

Paper-126

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *Five* questions in all. Q. No. 1 is compulsory. *Four* more questions are to be attempted selecting *one* question from each Unit. All questions carry equal marks.

(Compulsory Question)

1. Write short notes on the following : 4×4=16
- (a) Determinants of personality
  - (b) Conflict Management
  - (c) Advantages of Mock Interviews
  - (d) Essentials of an effective resume.

Unit I

- 2. What is effective listening ? Describe the advantages of effective listening.
- 3. Discuss the advantages of effective communication.

## Unit II

4. Attempt a detailed note on the importance of interpersonal skills.
5. Discuss the aspects that have to be taken care of while dealing with colleagues.

## Unit III

6. Give an account of the preparation and steps that are to be taken for effective group discussion.
7. Discuss the factors affecting presentations.

## Unit IV

8. You are an MBA with specialization in Marketing. Write down the resume you would send to the personnel officer of Gupta and Company, Delhi. Also write a covering letter.
9. Interviews are planned conversations with a predetermined purpose that involves asking and answering questions. Elaborate.

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BCA/M-23

1870

ADVANCED DATA STRUCTURE

BCA-241

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

**(Compulsory Question)**

1. Explain the following in brief : **8×2=16**
- (i) Binary Tree
  - (ii) General Tree
  - (iii) Graph
  - (iv) Shortest Path in a Graph
  - (v) Internal Sorting
  - (vi) Complexity of an Algorithm
  - (vii) File
  - (viii) Hashing.

## Unit I

2. What is Binary Search Tree (BST) ? Write an algorithm to search an element in a BST. Explain in detail using suitable examples. 16
3. What is Huffman's Algorithm ? Explain using suitable examples and state its applications in detail. 16

## Unit II

4. (a) Discuss the various ways to represent graphs in computer memory using suitable examples. 8  
(b) Write Warshall algorithm for finding the shortest path. 8
5. What are the various ways to traverse a graph ? Explain in detail by writing suitable algorithms and examples. 16

## Unit III

6. What is Quick Sort ? Explain by writing its algorithm and using suitable examples. Also comment on its complexity. 16
7. What are the various Searching Algorithms ? Explain by writing algorithms and comparing them on the basis on complexity. 16

## Unit IV

8. What are the various operations that are performed on a file ? Explain in brief. Explain any three-four functions in detail using suitable examples. 16
9. What are the various types of file organizations ? Explain in detail and compare them on the basis of various parameters. 16

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BCA/M-23

1871

ADVANCED PROGRAMMING USING C++

BCA-242

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

**(Compulsory Question)**

1. (a) What are the rules for creating virtual functions ?  
3
- (b) Design a template to find sum of an array. 3
- (c) What is the meaning of the following statement :  
fp = fopen ("abc.x", wb+) ? 3
- (d) When do we use multiple exception handlers ? 3
- (e) How eof() function detects end of file ? 2
- (f) Explain syntax for float to int typeconversion using  
typecasting. 2

**Unit i**

2. (a) What are abstract class ? Why are abstract classes  
needed ? 8
- (b) How run time polymorphism is achieved ? Explain  
with an example. 8

- (b) What are the advantages of using exception handling mechanism in a program ? 8
- 9. Differentiate between the following :
  - (a) a text stream and a binary stream 8
  - (b) seekg() and seekp() file pointer manipulators. 8

3. Write notes on the following :
- (a) Virtual class 8
  - (b) 'This' pointer. 8

### Unit II

4. (a) When do we use the protected visibility specifier to a class member ? 8
- (b) What is an operator function ? Explain with an example. 8
5. Explain with example :
- (a) Basic data to class data type conversion 8
  - (b) One class to another class type conversion. 8

### Unit III

6. Write syntax of the following :
- (a) Multilevel Inheritance 8
  - (b) Hybrid Inheritance. 8
7. Differentiate between the following :
- (a) Containership and inheritance 8
  - (b) A template and a macro. 8

### Unit IV

8. (a) What is the difference between opening a file with :
- (i) using a constructor
  - (ii) using open() function. 8

- (b) What are the advantages of using exception handling mechanism in a program ? 8
9. Differentiate between the following :
- (a) a text stream and a binary stream 8
- (b) seekg() and seekp() file pointer manipulators. 8

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BCA/M-23  
E-COMMERCE  
BCA-243

1872

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

(Compulsory Question)

1. Briefly define the following : 2×8=16

- (i) SHTP
- (ii) Cybercash
- (iii) B2G
- (iv) EDI
- (v) e-Auction
- (vi) Online Stock Trading
- (vii) Digital Certificate
- (viii) Digital Signature.

Unit I

2. Explain various types of e-Commerce systems along with their pros. and cons.

3. Explain various Indian Payment Models.

### **Unit II**

4. Draw a comparison between traditional departmental stores and online shopping environment like Amazon, Flipkart etc.
5. Explain EDI in governance along with B2G and G2C.

### **Unit III**

6. Discuss the impact of e-Commerce on tour and travel industry.
7. Explain B2C models along with examples.

### **Unit IV**

8. Explain the applications of B2B. What issues are involved in these applications ?
9. Describe the legal and security issues related to e-Commerce.

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BCA/M-23

1873

RELATIONAL DATABASE MANAGEMENT  
SYSTEM  
BCA-244

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

**Compulsory Question**

1. (a) What makes a DBMS as RDBMS ? 4
- (b) Explain the concept of functional dependency and fully functional dependency with suitable examples. 4
- (c) Elaborate any four DDL commands with suitable examples. 4
- (d) What is the full form of PL/SQL ? Explain PL/SQL character set. 4

**Unit I**

2. What is Relational Calculus ? Explain various types of Relational Calculus with suitable examples. 16

3. Explain the Union, Intersection, Difference, Select, Project, Product and Join Operations in Relational Algebra. Give suitable examples. 16

## Unit II

4. Define Normalization. Explain various normalization techniques with suitable examples. 16
5. Explain the concept of relational constraints and update anomalies along with suitable examples. 16

## UNIT-III

6. Explain at least four DML and four DCL Commands in SQL along with their purpose, syntax and examples. 16
7. Define SQL. Write short note on SQL Operators, SQL data types, Tables and Views with suitable examples. 16

## UNIT-IV

8. Explain various conditional control and loop control statements supported in PL/SQL along with their purpose, syntax and examples. 16
9. Explain PL/SQL architecture. What are Generic PL/SQL Block and PL/SQL Execution Environment ? Write a program in PL/SQL to find sum of series  $(1 + 2 + 3 + \dots + n)$  using appropriate control statements. 16

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BCA/M-23

1874

COMPUTER ORIENTED STATISTICAL  
METHOD  
BCA-245

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

**(Compulsory Question)**

1. (a) Differentiate an ungrouped and a grouped frequency table. 4
- (b) Write normal distribution formula and calculate its mean. 4
- (c) Define a linear regression formula and derive its equations. 4
- (d) What is the significance of Chi-square Test ? Write its formula. 4

## Unit I

2. Find Mean, Mode and Median for data given below : 16

Class	Frequency
0-3	20
3-6	12
6-9	17
9-12	16
12-15	3

3. (a) For the following distribution :

X	F
0-10	15
10-20	23
20-30	35
30-40	49
40-50	32
50-60	28
60-70	12
70-80	6

Calculate first four moments  $u_1, u_2, u_3$  and  $u_4$  about arithmetic mean  $\bar{X}$  ? 8

- (b) Find standard deviation and coefficient of variation for following data : 8

X	F
1	6
2	12
3	18

4	26
5	16
6	10
7	8

### Unit II

4. (a) Calculate arithmetic mean and variance of Binomial Distribution. 8
- (b) Differentiate discrete random variable and continuous random variable. 8
5. (a) Calculate Karl Pearson's correlation coefficient between student Attendance and their score : 8

Average attendance (in %)	Score (in %)
------------------------------	--------------

60	39
65	34
70	52
75	57
80	56
85	67
90	69

- (b) Ten students secured the following marks in statistics and maths :

Statistics	Mathematics
31	41
45	47

39	27
48	38
24	29
33	37
42	40
36	30
29	35
41	39

Compute their ranks in two subjects and coefficient of rank correlation. 8

### Unit III

6. (a) Find the equation of lines of regressions : 8

X	:	1	3	5	6	7	8
Y	:	14	9	7	10	13	6

(b) Find the standard error of estimate of  $y$  on  $x$  : 8

$x$	:	1	2	3	4	5
$y$	:	10	9	11	13	12

7. Fit a second degree parabola  $Y = a + bx + cx^2$  for the following data : 16

Y	:	0	1	2	3	4
X	:	0	1	4	9	12

#### Unit IV

8. (a) The theory predicts the proportion of beans in the four groups A,B,C and D should be 9 : 3 : 3 : 1. In an experiment with 1600 beans the nos. in four groups were 892, 310, 290, 108. Does the experiment result support the theory ? (Value of Chi-square for 3 d.f. at 5% level of significance 7.81). 8
- (b) What is a Student's  $t$ -distribution ? Write its formula and uses. 8
9. Write notes on the following :
- (a) Sampling method and rule for sample size. 8
- (b) One-way classification of data with an example. 8

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BCA/M-23

1875

MANAGEMENT INFORMATION SYSTEM

BCA-246

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question each from Unit I to Unit IV. Question No. 1 is compulsory. All questions carry equal marks.

(Compulsory Question)

1. (a) Define system and sub-system.
  - (b) What is EDP ?
  - (c) Compare between formal and informal systems.
  - (d) List the common requirement of an MIS.
  - (e) How do you evaluate an information system ?
  - (f) Highlight the major problems for developing MIS.
  - (g) Differentiate between e-business and e-Commerce.
  - (h) Highlight the characteristics of decision support system.
- 8×2=16

## Unit I

2. What are the different types of systems ? Explain the characteristics of information system. Differentiate between information system and management information system. 16
3. Explore the role of information system for decision making in various MIS management levels. Differentiate between EDP/MIS and DSS. 16

## Unit II

4. What are the characteristics of MIS ? Outline the framework for understanding MIS. List and explain the essential components of MIS. 16
5. Write a detailed note on structured and un-structured decisions. Explain Simon's model of decision making. 16

## Unit III

6. What is the purpose of information system analysis and design ? Elaborate the steps involved in analysing and designing of an information system. 16
7. Elaborate the factors which influence the implementation of information system in an organization. Discuss implementation activities. 16

## Unit IV

8. Write in detail the functional aspects of MIS in personnel and production. 16
9. Explain the innovative technologies of e-Commerce. How do these technologies support business applications ? 16

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BCA/M-23

1876

WEB DESIGNING USING ADVANCED  
TOOLS  
BCA-361

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. (a) Which is faster between JavaScript and an ASP script ?
- (b) What are the rules to name variable in VBScript ?
- (c) Write file extension used for ASP files.
- (d) What is ExecuteReader in ASP ?
- (e) How can we convert ASP pages to PHP pages ?
- (f) What are cascading style sheet ?
- (g) Explain the Marquee tag briefly.
- (h) How do we import files into a Front Page web ? 16

Unit I

2. (a) Explain various data types available in JavaScript.
- (b) Discuss the control statement in VBScript. 8,8

3. How are Event Handlers utilized in JavaScript ? Explain with example. 16

### Unit II

4. (a) What do you understand by the site management tool in dreamweaver ? How can you upload the file to a web server using dreamweaver ? 8  
(b) What is PHP ? Explain the various features of PHP. 8
5. What is Client-Server Model? Explain in detail. 16

### Unit III

6. What is DHTML ? Explain the features of DHTML over the HTML. 16
7. Design an Online Admission Form for the college. 16

### Unit IV

8. What is the difference between Microsoft FrontPage and Dreamweaver ? 16
9. (a) What is difference between XML and HTML ?  
(b) Explain Color and background properties in XML. 8,8

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BCA/M-23

1877

OPERATING SYSTEM

BCA-362

Time : Three Hours]

[Maximum Marks : 80

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

**(Compulsory Question)**

1. (a) What are the problems in initial implementation of a semaphore ? 4
- (b) Discuss the disk structure. 4
- (c) How can the processes be connected with pipes ? Discuss about the output of the command : 4  
ls | tee list.txt
- (d) What do you understand by a process in Linux/Unix ? How is it created ? 4

**Unit I**

2. What is critical section problem ? Explain the algorithms for solving critical section problem for two processes and multiple processes. 16

3. (a) Differentiate between a tree and an acyclic graph directory structure. 8
- (b) Discuss the Readers-Writers problem along with its solution. 8

### Unit II

4. Discuss the disk scheduling criteria and various disk scheduling algorithms using suitable examples. 16
5. Discuss the following : 16
- (a) Remote Login
- (b) Remote File Transfer.

### Unit III

6. (a) Discuss the features of Linux. How is Linux different from UNIX ? 8
- (b) Discuss various communication oriented commands using examples. 8
7. Differentiate between internal and external commands. Also explain the following in Linux : 16
- (a) chmod
- (b) find
- (c) mkdir
- (d) chgrp
- (e) dd
- (f) head
- (g) expand.

## Unit IV

8. What do you understand by a file in Linux/Unix ? Explain various categories of file. Also explain the structure and components of file system along with various types of file systems. 16
  
9. Explain various iterative statements available in bash shell using examples. Also write a menu driven shell script to copy, rename and delete a file. 16

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BCA/M-23

1878

COMPUTER GRAPHICS

BCA-363

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. (a) What is the meaning and purpose of refresh rate ?
- (b) State the purpose of a lookup table.
- (c) State the various side effects of scan conversion ?
- (d) Enlist the various methods to draw a line in computer graphics.
- (e) What is meant by inverse transformations ?
- (f) Enlist the various pointing techniques used in computer graphics.
- (g) What do you mean by viewing transformation ?
- (h) - Enlist the various three-dimensional display methods.

8×2=16

### Unit I

2. Explain working of (i) Colour CRT monitors and (ii) LCD monitors, in detail along with advantages and disadvantage of both in detail. 16

3. Write short notes on the following :
- (i) Interlacing
  - (ii) General purpose graphics software. 16

### Unit II

4. Write down the algorithm for drawing a line using DDA line algorithm and explain its steps using suitable example. 16
5. (a) Write down the steps to plot a line using the slope method. 8
- (b) Write and explain the flood fill algorithm. 8

### Unit III

6. How can you perform ? 16
- (i) Scaling
  - (ii) Translation
  - (iii) Rotation
  - (iv) Reflection, in two-dimensional transformation ?
7. Write short notes on the following : 16
- (i) Gravity field technique
  - (ii) Rubber band technique
  - (iii) Inking and painting
  - (iv) Dragging.

## Unit IV

8. Write and explain the Sutherland-Hodgeman algorithm for polygon clipping. 16
9. Define window and viewport. Derive window to viewport transformation. 16

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BCA/M-23

1879

INTERNET TECHNOLOGIES

BCA-364

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. Attempt all the following : 4×4=16
- (a) DNS Mapping
  - (b) DHCP
  - (c) SMTP
  - (d) Firewall.

Unit I

2. (a) What is Internet ? Explain history and services of Internet. 8
- (b) Explain the following terms related to internet : Client-Server, Chat and Bulletin Board, URL and Web browsers. 8
3. (a) Explain various layers in TCP/IP reference model. 10
- (b) Distinguish between Internet and Intranet. 6

## Unit II

4. What do you mean by IP Address ? Explain various classes of IPv4 address. Explain IPv4 header format in detail and distinguish between IPv4 and IPv6. 16
5. Explain the following terms with header format :  $4 \times 4 = 16$
- (a) TCP
  - (b) UDP
  - (c) ARP
  - (d) ICMP.

## Unit III

6. (a) Explain FTP and distinguish between FTP and TFTP. 8
- (b) Explain RTP and RTCP in detail. 8
7. Explain the following terms :  $4 \times 4 = 16$
- (a) Telnet
  - (b) IMAP
  - (c) RSVP
  - (d) POP.

## Unit IV

8. (a) Explain OSPF protocol in detail. 8
- (b) What is Virtual Private Network ? Explain with proper diagram. 8

9. Explain the following terms :

4×4=16

- (a) BGP
- (b) Mobile IP
- (c) NAT
- (d) Firewall.

Roll No. ....

Total Pages : 03

BCA/M-23

1880

ADVANCED PROGRAMMING WITH  
VISUAL BASIC  
BCA-365

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. (a) What is a form in Visual Basic ? 3
- (b) Write the steps for adding a menu separator. 4
- (c) Define ADO. 3
- (d) What is the purpose of tool bar control in VB ? 3
- (e) Explain fill style property of graphics in VB. 3

Unit I

2. Define collection. Explain the methods to access or manipulate items to collection. 16

3. Explain the following form methods : 4×4=16
- (i) show
  - (ii) hide
  - (iii) refresh
  - (iv) move.

### Unit II

4. How can we create static and dynamic menu in VB ?  
Explain with the help of suitable example. 16
5. Define tree view control, list view control and image view control. How can we show the relationship of these controls ? Explain with the help of an appropriate project. 16

### Unit III

6. (a) Explain various steps to create a sequential file. 10
- (b) Explain EOF() functions. 6
7. (a) Explain various statements used for reading and writing random file. 8
- (b) Explain the following in graphics of VB : 4×2=8
- (i) Loadpicture function
  - (ii) Picture box control.

## Unit IV

8. How can we use DAO data control ? Explain the various methods to access Database. 16
9. Explain various database access mechanisms in VB. 16

Roll No. ....

Total Pages : 03

BCA/M-23

1881

PROGRAMMING IN CORE JAVA

BCA-366

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all. Q. No. 1 is compulsory.  
Attempt *four* more questions, selecting exactly *one*  
question from each Unit.

### Compulsory Question

1. (a) State the purpose of JVM.
- (b) Name the various data types in Java.
- (c) How can you create an object from a class in Java ?
- (d) What is meant by an abstract class ?
- (e) State the purpose of super keyword.
- (f) What is CLASSPATH setting for packages ?
- (g) What are the differences between checked and unchecked exceptions ?
- (h) Enlist the various layout managers in Java.

8×2=16

### Unit I

2. Explain various control structures in Java using suitable examples.

16

3. (a) How is Java different from procedural and other object-oriented languages ? Explain. 8
- (b) Explain the following terms w.r.t. Java : 8
- (i) Keywords
  - (ii) Literals
  - (iii) Command line arguments.

### Unit II

4. Write a program in Java to create a class named as matrix. This program should be able to multiply and add two matrices. 16
5. Write a program in Java to perform the following operations on strings : 16
- (i) finding string length
  - (ii) compare two strings
  - (iii) concatenate two strings
  - (iv) copy a string.

### Unit III

6. What do you understand by inheritance ? Explain various types of inheritances using suitable examples in Java in detail. 16
7. Explain any four pre-defined packages along with their classes and methods in detail using suitable examples. 16

## Unit IV

8. Explain the following keywords :

(i) try

(ii) catch

(iii) throw

(iv) throws

(v) finally.

Also write a program using all of the above keywords.

16

9. What is an applet life-cycle ? Create an applet that receives a number as input from a text box and find the sum of the digits of the input number and displays it. 16