

Roll No.

Total Pages : 3

3449

NBCA/D-24

PROBLEM SOLVING THROUGH-C

Paper : B23-CAP-101

(CC-A1)

(BCA)

Time : Three Hours]

[Maximum Marks : 50

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

Compulsory Question

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

UNIT-I

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

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

UNIT-II

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

UNIT-III

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

UNIT-IV

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

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

Roll No.

1st sem

Total Pages : 2

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NBCA/D-24

LOGICAL ORGANIZATION OF COMPUTER

(Common With CTIS/DS/AI)

Paper-B23-CAP-103

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

Time : Three Hours]

[Maximum Marks : 50

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

Compulsory Question

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

UNIT-I

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

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

UNIT-II

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

UNIT-III

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

UNIT-IV

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

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GSE/D-24

1058

MATHEMATICAL FOUNDATIONS-I

BCA 113

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) Define set with example.
- (b) What is reflexive relation ?
- (c) Write the derivative of $\sin x$ and $\cos x$ with respect to x .
- (d) What is the value of $\lim_{y \rightarrow 2} \frac{y^2 - 4}{y - 2}$?
- (e) Define ordinary differential equation.
- (f) What is degree of a differential equation ?
- (g) What is the linear differential equation ?
- (h) Write *two* applications of differential equations to geometry.

8×2=16

Unit I

2. Describe how Venn diagrams can be used to visualize the relationships between multiple sets. Illustrate your answer with a specific example involving three sets. 16
3. (a) In a basket with 5 apples and 3 oranges, how many ways can you choose 3 fruits if at least 1 must be an apple ? 8
(b) Explain Lattice with the help of an example. 8

Unit II

4. How do you use the product rule in calculus ? Compute the derivative of $h(x) = e^{2x} \sin(x)$ using the product rule. 16
5. What is a limit, and how does it differ from evaluating a function at a specific point ? Why do we need limits to understand the behaviour of functions ? 16

Unit III

6. In solving differential equations, what is meant by a general solution and a particular solution ? How do initial conditions or boundary conditions play a role in finding a particular solution ? 16

7. Define an exact differential equation and explain the conditions under which a first-order differential equation is considered exact. 16

Unit IV

8. What is general solution of ordinary differential equation ? Determine the general solution of the equation : 16

$$y'' + y = \cos(x).$$

9. Describe the cases when the characteristic equation has real distinct roots, real repeated roots, or complex conjugate roots. How does each case affect the form of the general solution ? 16

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BCA-1st

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NGSE/D-24

ENGLISH

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

Paper : B23-AEC-111

Time : Three Hours]

[Maximum Marks : 35

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

Compulsory Question

1. Answer the following in about 30 words each :

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

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UNIT-I

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

OR

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

UNIT-II

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

OR

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

UNIT-III

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

OR

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

UNIT-IV

8. Explain in detail nouns and their types.

OR

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

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