B-211

B.C.A. EXAMINATION, May 2018

(Second Semester)

(B. Scheme) (Main & Re-appear)

BCA102B

DIGITAL CIRCUITS AND LOGIC DESIGN

Time : 3 Hours]   [*Maximum Marks : 75*

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions from given eight and any *one* at least from each Section. All questions carry equal marks.

Unit I

1. (a) Explain the floating point way of representation of numbers. **5**

   (b) Solve the following using K-Map : **10**

   $f(A, B, C, D) = \Sigma(1, 3, 5, 7, 9, 11, 13) + d(2, 12).$

2. Explain error detecting and correcting codes with the help of an example. **15**

Unit II

3. (a) State and explain De Morgan's theorem. **5**

   (b) Explain ASCII and EBCDIC Codes. **5**

   (c) What are the Venn diagrams ? Where these are used ? **5**

4. Convert the following : **15**

   $(10011.011)_2 = (\quad)_8$

   $(245.61)_8 = (\quad)_{16}$

   $(4F2.6A)_{16} = (\quad)_{12}$

   $(10101.1010)_2 = (\quad)_{10}$

Unit III

5. (a) Realize OR, AND and NOT gates with the help of only NAND gates. **7½**

   (b) Explain the working of multi level NAND and NOR Circuits. **7½**

6. (a) Realize a Excess three Code Converter. **7½**

   (b) Realize Binary to Gray Code Converter. **7½**

Unit IV

7. (a) Realize XOR gate with the help of only four NAND Gates. **5**

   (b) Explain working and design of BCD to Seven Segment decoder. **10**

8. Write short notes on the following : **15**

   (a) Demultiplexer

   (b) Comparator.

7. Using the concept of structure and arrays write a program in C language to store the data of all the students of your class each student record should have (Name, Roll No, Age, Gender). Enter the data of 50 students and then display it on the output screen. **15**

Unit IV

8. Explain in detail the storage classes of variables in C, giving the lifetime and scope of the variables. **15**

9. Write a program in C language for implementation of selection sort. **15**

B-212

B.C.A. EXAMINATION, May 2018

(Second Semester)

(B. Scheme) (Main & Re-appear)

BCA104B

PROGRAMMING IN C

Time : 3 Hours]　　　　[*Maximum Marks : 75*

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Q. No. **1** is compulsory. Attempt *four* questions from rest of the Units in all, selecting at least *one* question from each Unit. All questions carry equal marks.

1. Define the following : **15**

   (i) Programming Language

   (ii) Flow Chart

   (iii) Macro

   (iv) Pre-processor Directive

   (v) Type Casting

   (vi) Identifier

   (vii) Recursion

   (viii) Array

   (ix) Union

   (x) Sorting.

Unit I

2. (a) Write *five* advantages of using high level programming languages. **10**

   (b) Differentiate between getch(), getche and getchar(). **5**

3. (a) Briefly describe the different data types supported by C language. **9**

   (b) Differentiate between formatted and unformatted input giving suitable example. **6**

Unit II

4. What are different types of operators supported by C language. Draw and explain the operator hierarchy followed in mixed mode expressions. **15**

5. (a) Write a program in C to print the multiplication table of *n*, where *n* is entered by user. Use the comments to explain the logic of program. **10**

   (b) Write a recursive function in C to compute the factorial of given number. **5**

Unit III

6. Write a program in C language using arrays to enter and store the height of all male and female students of your class. Then compute and display the average height of male and female students in the class. **15**

B-213

B.C.A. EXAMINATION, May 2018

(Second Semester)

(B. Scheme) (Main & Re-appear)

BCA106B

MATHEMATICS-II

Time : 3 Hours]　　　　　　[*Maximum Marks* : 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

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

1. (a) Which of the following are examples of the null set ? **2**

(i) set of odd natural numbers divided by 2.

(ii) set of even prime numbers

(iii) $\{x : x \in N \text{ and } x < 5 \text{ and } x > 7\}$

(iv) $\{y : y \text{ is a point common to any two parallel lines}\}$

(b) Find domain of the function $f(x) = \dfrac{x+1}{x^2 - 4}$, where $f(x)$ is defined in the set of Real numbers. **1**

(c) If $\begin{vmatrix} x & 2 \\ 18 & x \end{vmatrix} = \begin{vmatrix} 6 & 2 \\ 18 & 6 \end{vmatrix}$, then find the value of x. **2**

(d) The value of X = ?, if $Y = \begin{bmatrix} 3 & 2 \\ 1 & 4 \end{bmatrix}$ and $2X + Y = \begin{bmatrix} 2 & -2 \\ -1 & 5 \end{bmatrix}$. **2**

(e) Simplify : **2**
$$\left(\frac{1}{1-2i} + \frac{3}{1+i} \right)\left(\frac{3+4i}{2-i} \right)$$

(f) The mean deviation from mean to the following : **2**

x	:	3	9	17	23
f	:	8	10	12	9

is ?

(g) Evaluate : **2**
$$\lim_{x \to 3} \frac{x^4 - 81}{x^2 - 9}$$

(h) Evaluate : **2**
$$\int_{-\pi/2}^{\pi/2} x \cos x \, dx$$

Unit I

2. (a) In a committee, 50 people speak French, 20 speak Spanish, 10 people speak with French and Spanish. How many speak at least one of the two languages ? **7½**

(b) If U = {1, 2, 3, 4, 5, 6, 7, 8, 9}, A = {2, 4, 6, 8} and B = {2, 3, 5, 7}, verify that (A ∩ B)' = A' ∪ B'. Also draw the Venn diagram to this.   7½

3. (a) Define a function in a set of real numbers. Represent it by an arrow diagram. If

$f(x) = x + \dfrac{1}{x}$, then show that :   7½

$$[f(x)]^3 = f(x^3) + 3f\left(\dfrac{1}{x}\right)$$

(b) Let A = {1, 2, 3, ..., 14}. Define a relation on the set A by R = {(x, y) : 3x − y = 0, where x, y ∈ A}. Depict this relation using an arrow diagram. Write down its domain and range also.   7½

Unit II

4. (a) Solve by using the Cramer's rule :   7½

$$x + y + z = 1$$
$$x + 2y + 3z = 4$$
$$x + 3y + 5z = 7$$

M-B-213   4

(b) Using properties of the determinant show that :   7½

$$\begin{vmatrix} 1 & b+c & b^2+c^2 \\ 1 & c+a & c^2+a^2 \\ 1 & a+b & a^2+b^2 \end{vmatrix} = (a-b)(b-c)(c-a)$$

5. (a) Find A^{-1} if the matrix $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$

satisfies $A^2 − 4A − 5I = 0$.   7½

(b) If $A = \begin{bmatrix} 2 & 2 \\ -3 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$, then show that :   7½

$$(AB)^{-1} = B^{-1}A^{-1}$$

Unit III

6. (a) If the function $f(x) = \begin{cases} kx^2 & x \leq 2 \\ 3 & x > 2 \end{cases}$ is continuous at $x = 2$, then find the value of K.   7½

(b) Find $\dfrac{dy}{dx}$, given that :   7½

$$x = \dfrac{1-t^2}{1+t^2}, \ y = \dfrac{2t}{1+t^2}$$

7. (a) Evaluate :   7½

$$\int \dfrac{(2x-1)}{(x-1)(x+2)(x-3)} dx$$

(b) Evaluate :   7½

$$\int_0^1 \dfrac{1-x}{1+x} dx$$

Unit IV

8. (a) Find mean deviation of the following distribution :   7½

x :	10	20	30	40	50	60
f :	15	32	51	78	97	109

(b) Find the variance of the following data :   7½

Expenditure in Rs.	Frequency
0–10	14
10-20	13
20-30	27
30-40	21
40-50	15

9. (a) Determine $\sqrt{7-24i}$. Write argument and magnitude of the square root, so obtained.   7½

(b) Find the real values of x and y if : 7½

$$\dfrac{x-1}{3+i} + \dfrac{y-1}{3-i} = i$$

B-214

B.C.A. EXAMINATION, May 2018

(Second Semester)

(B. Scheme) (Main & Re-appear)

BCA108B

DESKTOP PUBLISHING

Time : 3 Hours]   *[Maximum Marks : 75*

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Note : Q. No. **1** is compulsory. Attempt any *four* questions from Unit by selecting at least *one* question.

1. (a) Define Printing.

(b) Discuss the following design elements of visual communication in brief :

    (i)   Line

    (ii)   Shape

    (iii) Texture

    (iv) Color.

(c) What is a bitmap image ?

(d) What is a stroke ?

(e) What is the purpose of CoralDraw ?

(f) Define Image.

(g) What is Canvas ?   **15**

Unit I

2. Write brief history of printing processes. **15**

3. List and explain types of printing process. **15**

Unit II

4. Write detailed note on the emergency of graphics design as visual communication. **15**

5. Explain design principles for Visual communication in detail.   **15**

Unit III

6. Discuss the concept of the following Photoshop tools :   **5+5+5**

(a) Layers

(b) Channels

(c) Image Modes.

7. (a) What are Palettes ? Also write steps for displaying and arranging palettes. **5**

   (b) What is vector graphics ? Explain. **5**

   (c) What is relation between resolution and file size ? Explain. **5**

Unit IV

8. List and explain various Corel Draw tools. **15**

9. (a) Explain shaping menu in Coral Draw. **10**

   (b) What is intersection of objects ? Explain. **5**