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B.C.A. (PART-I) 2nd Semester Examination-2022

B.C.A.

(Introduction to Object Oriented Programming & C++)

Paper : BCA-204

Time : Three Hours] [Maximum Marks : 70

Note: (i) Answer **five** questions in all.

(ii) Question **No. 1** is compulsory.

(iii) Answer two questions from section **A** and **B** each.

(iv) All question carry equal marks.

1. Answer all parts of the following:

(a) What do you mean by oops?

(b) Define class and object.

(c) Define and explain Function with default parameters.

(d) What do you mean by static member function?

Section-A

2. What do you mean by Inheritance in object oriented programming? Explain types of inheritance supported by C^{++}.

3. Explain Function overloading with proper example.

4. Write a program in C^{++} to check whether a given number is prime or not using the below mentioned class definition.

```
Class Prime
{
int num;
public:
void input (int x);
void check PRIME ();
};
```

5. What do you mean by inline function in C^{++}. Explain with example.

Section-B

6. (a) Explain constructors. Explain the order of constructor call in multilevel inheritance with example.

   (b) What do you mean by Friend function?

7. (a) Write a C^{++} program to print all the factors of a given input number.

   (b) What do you mean by type conversion? Explain all the types of conversion supported by C^{++}.

8. (a) Explain the various access specifier. Give clear differentiation between private and protected access specifier.

   (b) Explain operator overloading with proper example.

9. Write notes on any two of the following:

   (a) Destructors in C^{++}

   (b) Boolean data type

   (c) Scope Resolution Operator

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B.C.A. (PART-I) 2nd Semester Examination-2022

B.C.A.

(Digital Circuit and Logic Design)

Paper : BCA-203

Time : Three Hours] [Maximum Marks : 70

Note: (i) Answer **five** questions in all.

(ii) Question **No. 1** is compulsory.

(iii) Answer two questions from section **A** and **B** each.

(iv) All question carry equal marks.

1. Answer any **four** parts of the following:

(a) $(324)_{10} = (?)_2$

(b) State De Morgan's theorem

(c) Briefly explain Universal logic gates

(d) Using K-Map, solve the following expression:

$F - \sum_m(2,5,7,8)$

Section-A

2. What is full adder? Give its logic realization and truth table.

3. Using Boolean Algebra simplify the following:

$$F = ABCD + ABC + AB + A\bar{B}$$

Implement the simplified function using NAND/ NOR gates.

4. What its J K flip-flop? Draw its logic circuit, truth table and timing diagram. Explain the operation of J K flip-flop with all input combinations.

5. Using K-map find the simplified SOP from of:

$F = \sum_m(0,3,12,15) + d(7,11)$

Section-B

6. (a) Using Boolean Algebra prove the following:

$$A'BC + AB'C + ABC = AB + BC + CA$$

(b) Define a Microprocessor system. Explain its function.

7. (a) What is multiplexer? Draw 8×1 Mux using suitable logic gates.

(b) Draw the diagram of 4-bit parallel adder and explain its working.

8. (a) Convert the following binary number in to equivalent decimal and hexadecimal numbers:

(i) (101101.111)

(ii) $(11011011.011)_2$

(b) What is four variable K-map? Give different simplification rules for it.

9. Write notes on any **two** of the following:

(a) Encoder and Decoder

(b) Architecture of Micro computer

(c) Counter

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1475/II

B.C.A. (PART-I) 2nd Semester Examination, 2022

B.C.A.

(Discrete Mathematics)

BCA-201

Time : Three Hours] [Maximum Marks : 70

Note: (i) Answer **five** questions in all.

(ii) Question **No. 1** is compulsory.

(iii) Answer two questions from section **A** and **B** each.

(iv) All questions carry equal marks.

1. Answer any four parts of the following:

(a) If set $A = \{1, 2, 3, 4\}$ and $B = \{3, 4, 5, 6\}$ then find the value of A-B and B-A.

(b) Prove that the fourth root of unity $1, -1, i, -i$ form the abelian multiplicative group.

(c) If the preposition "x^2 is divided by 4" is given, then prove that x is even.

(d) Find recurrence relation of the Fibonacci series $s = \{1, 1, 2, 3, 5, 8, - - - -\}$.

(e) What is complete graph and regular graph?

SECTION–A

2. What is an equivalence relation? Show that if a relation on a set $A = \{1, 2, 3\}$ is satisfying an identify relation then the relation is also equivalence

3. Four girls and five boys are to be arrange in straight line. Find how many ways this can be done with following conditions:

   (i) Without any restriction

   (ii) If all the boys sit together

   (iii) If all girls and boys sit together

   (iv) If no girls sit together

4. Obtain the principal disjunctive normal form and principal of conjunctive normal form of the following: $((Q \vee \sim R) \Rightarrow P) \wedge (Q \Leftrightarrow R)$

5. Solve the recurrence relation $a_{n+2} - 5a_{n+1} + 6a_n = 2$ with initial condition $a_0 = 1$, and $a_1 = -1$

SECTION–B

6. (a) Given function $f(x) = \frac{1}{1+x^2}$, $g(x) = 2x + 3$ find :

(i) $f^{-1}(x)$

(ii) $g^{-1}(x)$

(iii) $fog\,(x)$

(iv) $gof\,(x)$

(b) State and prove "De Morgan Law".

7. (a) Construct truth table for $(p \Leftrightarrow q) \Leftrightarrow (p \wedge \sim q)$

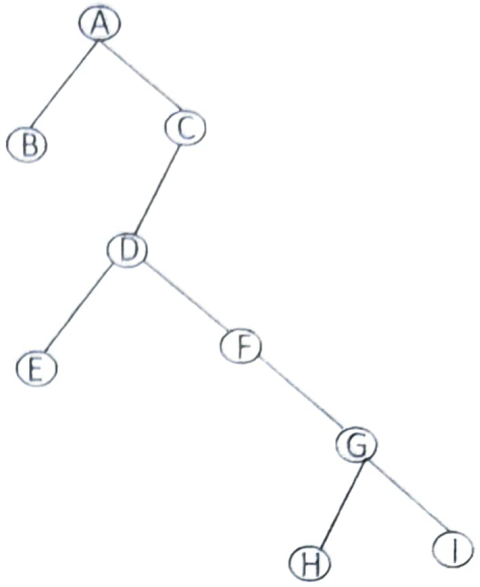
(b) What do you mean by Tautology? Prove that the formula $(x \Rightarrow y) \vee (y \Rightarrow x)$ is a tautology.

8. (a) Find the tree traversal of the given tree in the following order :

(i) Pre order

(ii) In order

(iii) Post order



(b) Explain elementary properties of a Graph. Describe any two of them.

9. Attempt **any two** of the following:

(a) Find n and x if $nc_x = 56$ and $nP_x = 336$.

(b) Explain Bijective function.

(c) Write notes on types of graph.

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BCA (Part-1) Second Semester Examination, 2022

(ACCOUTING AND FINANCIAL MANAGEMENT)

BCA-202

Paper : II

Time : Three Hours] [Maximum Marks : 70

Note: (i) Attempt **five** questions in all.

(ii) Question **No.1** is compulsory.

(iii) Answer **two** questions from each section **'A'** and **'B'**.

(iv) All questions carry equal marks.

1. Answer the following questions in maximum 200 words each:

(a) What do you mean by Book Keeping and Accounting?

(b) Is a business separate entity from its owners?

(c) Discuss the 'Going Concern Concept'.

(d) Explain the double entry system.

SECTION–A

Note: Answer any two of the following questions. Answer of each question should not be in more than 1000 words:

2. "Accounting is the art of recording, classifying and summarising the financial transactions". Explain.

3. Describe some of the basic terms like- 'Capital and Drawing', 'Wages and Salaries', 'Opening Stock and Closing Stock', 'Gross Profit and Net Profit', 'Debtors and Creditors', 'Outstanding Expenses and Prepaid Expenses' used in Accounting.

4. Make necessary Journal entries in the books of Mr. Madan & Co. for following transactions:

2021

July 1	Stated business with Rs. 70,000.
July 3	Deposited in bank Rs. 40,000.
July 4	Purchased goods from Rajat Rs .12,000.
July 9	Bought Furniture for Rs. 6,000.

July 13 Sold goods for cash Rs. 8,000.

July 16 Paid Rent Rs. 2,000 through cheque.

July 19 Paid to Rajat Rs. 11,900 in full settlement.

July 21 Purchased goods for cash from Narendra Rs.5,000.

July 23 Sold goods to Mudit for Rs. 4,500.

July 26 Paid Wages Rs. 1,000 to Minal.

July 28 Received Rs. 4,400 from Mudit.

July 30 Paid Telephone expenses Rs. 500.

5. What are the advantages and limitations of management accounting? Differentiate management accounting from financial accounting?

SECTION–B

Note: Answer any two of the following questions. Answer of each question should not be in more than 500 words:

6. (a) What are the purposes and limitations of accounting?

(b) Who are the end users of Accounting Information? Discuss their purposes.

7. (a) What are the advantages of Generally Accepted Accounting Principles?

(b) Discuss different types of accounts and respective rules of Debit and Credit.

8. (a) Describe the components of Final Accounts. What is the need and importance of preparing Final Accounts?

(b) Describe different types of shares. What do you understand by forfeiture of shares?

9. (a) In which ways are computers useful for accounting? Discuss.

(b) Which types of software are popular for accounting? Describe some of such common available software-packages.

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