**Bachelor of Computer Application**
**Third Semester Main Examination, Dec-2020**
**Mathematics-III [BCA301T]**

Time: 3:00 Hrs                                        Max Marks 40

**Note:** **(i) Attempt all questions.**
**(ii) All questions carry equal mark.**
**(iii) Attempt any two part of each question.**

Q.1    (a) Solve $\frac{xdx+ydy}{xdy-ydx} = \sqrt{\frac{a^2-x^2-y^2}{x^2+y^2}}$

(b) Solve $p^2 - 5p + 6 = 0$

(c) Solve $y^2 \log y = xyp + p^2$

Q.2    (a) Solve $\frac{d^2y}{dx^2}$ - 4y =$e^x$ + sin2 x

(b) Solve (D$^3$+3D$^2$+3D+1) y =$x^2e^{-x}$

(c) Solve $\frac{d^2y}{dx^2}$ + 64y = cos 8x

Q.3    (a) Solve $\frac{dx}{yz} = \frac{dy}{zx} = \frac{dz}{xy}$

(b) Solve the following simultaneous differential equation

$\frac{dx}{dt}$ = x-2y, $\frac{dx}{dt}$ = 5x+3y

(c) Solve x$^2$y$_2$ + xy$_1$ - 9y = 0 given that y = x$^3$ is a solution.

Q.4    (a) Write the statement of uniqueness theorem.

(b) Explain power series.

(c) Write the statement of existence theorem.

Q.5    (a) Solve  r-3as + 2a$^2$t=0

(b) Solve r+2s+t+2p+2q+z=0

(c) Solve ( D$^2$-2DD'+ D'$^2$) z=e $^{x+2y}$

**Bachelor of Computer Application**
**Third Semester Main Examination, Dec-2020**
**Object Oriented Programming Through C++ [BCA302T]**

Time: 3:00 Hrs                                        Max Marks 50

**Note : Attempt all questions. All questions carry equal marks.**

Q.1     Describe object oriented programing. Write its advantages and disadvantages.

                                    OR

        Write short note on following with example :
        (i)      Object
        (ii)     Class
        (iii)    Data abstraction


Q.2     What are static variable? Explain with example. Write a C++ program to find factorial of a given number.

                                    OR

        Explain following with syntax :
        (i)      For loop
        (ii)     While loop
        (iii)    Do- while loop


Q.3     What is array? Explain with suitable example. Define constructor and destructor.

                                    OR

        Write short notes on following :
        (i)      Function definition
        (ii)     Function call
        (iii)    Function prototype


Q.4     What do you mean by operator over loading and function overloading? Explain with example.

                                    OR

        Define following :
        (i)      Friend and inline function
        (ii)     String handling function
        (iii)    Polymorphism


Q.5     What is inheritance? Explain different types of inheritance with example.

                                    OR

        Explain following :
        (i)      Exception handling
        (ii)     Data templates
        (iii)    Abstract class

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## Bachelor of Computer Application
## Third Semester Main Examination, Dec-2020
## Digital Computer Electronics [BCA303T]

**Time: 3:00 Hrs**                                    **Max Marks 50**

**Note : Attempt all questions. All questions carry equal marks.**


Q.1     Explain with examples 1's and 2's complement method.

                                    OR

        Write short note on-
        (iv)     Binary number system
        (v)      Hexadecimal number system


Q.2     Explain De-Morgan's theorem.

                                    OR

        Define half adder and full adder.

Q.3     (i) What do you mean by K-map?
        (ii) Construct a truth table for OR gate.
                                    OR
        (i) Explain min-term and max-term.
        (ii) Write a Short note on "SOP"

Q.4     Explain with diagram- (any three)
            (i)  Multiplexer
            (ii) De multiplexer
            (iii) Encoder
            (iv) Decoder
            (v) Circuit

Q.5     What are counters? Explain synchronous counters.
                                    OR
        Explain flip- flop briefly explain J-K flip-flop.

**Note : Attempt all questions. All questions carry equal marks.**

Q.1     (a) Explain the meaning and process of accounting.
        (b) What do you mean by balancing accounts?
        (c) Journalise the following transaction and post them to ledger also balance the account:-
        April 1    - Shyam commenced business with Rs. 20000 in cash.
        April 3    - He buys merehenelise of Rs. 1,50,000 on account from Dhamesh.
        April 5    - He buys furniture for Rs. 3000 an account from Narain.
        April 8    - He  pays Narain Rs. 29000.
        April 10  - He pays Dhamesh Rs. 30000.
        April 15  - Cash sales Rs. 50000.
        April 18  - He sales goods to Rajesh on credit Rs.70000.

Q.2     (a) "The cash book always snows a debit balance" How far is this statement true.
        (b) Record the following transactions in purchases. Return books of Kamal stores for June 2018.
        June 6     - Returned goods to Ramesh brothers Rs. 500
        June 8     - Returned goods to Sohan Bros. Rs. 450
        June 15   - Returned goods to Prem & co. Rs. 700
        June 17   - Returned goods to Mahesh Bro. worth Rs.2000 which was purchased for cash.
        (c) What are subsidiary books?

Q.3     (a) Prepare final accounting from following trial balance-

|               | Dr. (Rs) | Cr. (Rs) |
|---------------|----------|----------|
| Opening stock | 10000    | -        |
| Purchases     | 50000    | -        |
| Sales         | -        | 1,10000  |
| Wages         | 40000    | -        |
| Rent          | 4000     | -        |
| Salaries      | 14000    | -        |
| Cash in hand  | 1000     | -        |
| Horses carts  | 2000     | -        |

| | | |
|---|---|---|
| Manager's commission | 3000 | - |
| Motor car | 8000 | - |
| Leasehold land | 15000 | - |
| Bank over draft | - | 10000 |
| Capital | - | 52000 |
| Patents | 2000 | - |
| | 1, 72,000 | 1, 72,000 |

Closing stock :-        Rs. 5000

(b) Discuss the methods of depreciation with suitable example.
(c) What is need of adjustment entries?

Q.4     (a) Explain cash flow statement in detail.
(b) What is principle of liquidity of funds?
(C) Prepare average collection period-

| | |
|---|---|
| Total sales | 200000 |
| Cash sales (include in total) | 40000 |
| Sales return | 14000 |
| Total debtors at the end | 22000 |
| Bills receivable | 8000 |
| Bad debts provision | 2000 |
| Creditors | 20000 |

Q.5     (a) Explain essentials of a good or ideal cost accounting system.
(b) What is replacement cost?
(c) From the following figures of Deepa ltd. Find out total cost and profit.

| | |
|---|---|
| Opening stock of raw materials | 40000 |
| Purchase of raw materials | 200000 |
| Carriage inward | 4000 |
| Closing stock of raw materials | 20000 |
| Defective materials returned | 2000 |
| Direct wages | 40000 |
| Direct expenses | 6000 |
| Factory ever heads | 16000 |
| Opening stock of work in progress | 6000 |
| Closing stock of work in progress | 10000 |
| Administrative over head | 20000 |
| Opening stock of finished goods | 10000 |
| Closing stock of finished goods | 6000 |
| Selling and distribution over head | 16000 |
| Sales | 400000 |

# Bachelor of Computer Application

## Third Semester Main Examination, Dec-2020

## Data Structure Using C++ [BCA305T]

**Time: 3:00 Hrs**                                                    **Max Marks 50**

**Note :  Attempt any five questions. All questions carry equal marks.**

Q.1     What is data structure? Write the types of data structures.

Q.2    Write a program to store records of 100 students using array.

Q.3    What are the applications of stacks?

Q.4    What do you mean by exchanging the value of two stack? Give an example.

Q.5    What is a queue? Give syntax.

Q.6    Differentiate between the linked list and circular linked list.

Q.7    Write a program to insertion and deletion of binary search tree.

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**Bachelor of Computer Application**
**Third Semester Main Examination, Dec-2020**
**Communicational Skills [BCA306T]**

**Time: 3:00 Hrs**                                                                 **Max Marks 20**

**Note :  Attempt all questions. All questions carry equal marks.**

Q.1    How can one make communication more effective?
                                    OR
         What are communication skills? Explain communication process.

Q.2    Write about good reading comprehension.
                                    OR
         What is non-verbal communication?

Q.3    What is the process of interview?
                                    OR
         Define report writing.

Q.4    Write an application for the post of software engineer.
                                    OR
         Discuss various styles of resume or formats of resume.

Q.5    Write different phases of seminar.
                                    OR

What is the profit of a good speaker?