

COPYRIGHT RESERVED

BCA(III) — Num.
Meth. (BC – 304)

2023
(Session : 2021 – 24)

Time : 3 hours

Full Marks : 80

*Candidates are required to give their answers in
their own words as far as practicable.*

The questions are of equal value.

Answer any five questions.

1. *Describe Bisection Method. Find a real root of the equation $x^3 - 2x - 5 = 0$ using Bisection method up to three places of decimal.*
2. (a) *Find the roots of the equation $x^3 - 5x - 7 = 0$ correct to 3 places of decimals, using the Regula-Falsi method.*
- (b) *Find the Newton-Rapshon iterative formula to find the pth root of a positive number N and hence find the cube root of 17.*

OA – 9/2

vivo T1 · The khiladi

Jul 7, 2023, 05:39

(Turn over)

3. (a) Solve the following system of equations by

Gauss elimination method :

$$5x_1 - x_2 + x_3 = 10$$

$$2x_1 + 4x_2 = 12$$

$$x_1 + x_2 + x_3 = -1$$

- (b) Solve the following system of equations by

Cout's reduction method :

$$2x_1 + 4x_2 + 2x_3 = 15$$

$$2x_1 + x_2 + 2x_3 = -5$$

$$4x_1 + x_2 - 2x_3 = 0$$

4. Use the Jacobi's method to find the solution of the following system of equations :

$$83x + 11y - 4z = 95$$

$$7x + 52y + 13z = 104$$

$$3x + 8y + 29z = 71$$

5. (a) Define forward difference, backward difference and central difference.

- (b) Given $y_0 = 4, y_1 = 3, y_2 = 4, y_3 = 10$ and $y_4 = 24$, find the value of $\Delta^4 y_0$.

OA - 9/2

(2)

Contd

6. (a) Using the Trapezoidal rule, compute the

integral $\int_{0.5}^{1.1} x^2 y \, dx$ from the given data in the table :

X	Y
0.5	0.48
0.6	0.57
0.7	0.65
0.8	0.72
0.9	0.8
1.0	0.86
1.1	0.92

- (b) Compute $\int_0^1 \frac{1}{1+x^2} \, dx$ using Simpson's one-third rule.

7. Using Runge-Kutta method of the fourth order to

find $y(0.2)$ and $y(0.4)$, gives that $y \cdot \frac{dy}{dx} = y^2 - x$, $y(0) = 2$ by taking $h = 0.2$.

8. Prove the following :

$$(a) e^x = (\Delta^2 / E) e^x \cdot E e^x / \Delta^2 \cdot e^x$$

OA - 9/2

(3)

(Turn over)

$$(b) \left(E \frac{1}{2} + E - \frac{1}{2} \right) (1 + \Delta) \frac{1}{2} = 2 + \Delta$$

$$(c) \Delta = \frac{1}{2} \delta_2 + \delta v_1 + \frac{\delta_2}{4}$$

$$(d) \Delta + \nabla = \Delta / \nabla - \nabla / \Delta$$

9. (a) Use Trapezoidal rule to evaluate considering five sub-intervals.

(b) Evaluate using Simpson's $\frac{3}{8}$ rule taking

$$h = \frac{1}{6}.$$

10. Using Runge-Kutta method of second order

solve : $\frac{dy}{dx} = y - x$, $y(0) = 2$, find $y(0.1)$ and

$y(0.2)$ correct to four decimal places. Carry out first five iteration, taking initial starting of solution vector as $(0, 0, 0)$.



COPYRIGHT RESERVED

BCA(III) — DBMS
(BC – 302)

2023
(Session : 2021 – 24)

Time : 3 hours

Full Marks : 80

*Candidates are required to give their answers in
their own words as far as practicable.*

The questions are of equal value.

*Answer any **five** questions.*

1. What is DBMS ? What are the basic components of DBMS ?
2. Define Normalization. Why it is done ? Explain.
3. What is E-R Model ? Describe it's basic concept in detail.
4. How Generalisation and specialisation are reverse to each other ? Also describe Aggregation.

OA - 7/2

(Turn over)

5. What do you mean by functional dependency ?
Describe the use of functional dependency in normalization of database.
6. What is DDL and DML commands with syntax and examples ?
7. What is Translation ? Write about commit, rollback and savepoint.
8. Differentiate among Candidate key, Primary key, Super key and Foreign key in detail.
9. What is View ? How do you create, update and delete a view ?
10. Write short notes on any **two** of the following :
 - (a) Cardinality and Modality
 - (b) Cartesian Product
 - (c) 3 NF
 - (d) Aggregate functions

Form

**COPYRIGHT RESERVED BCA(III) — Fund. of
Mgt. & Bus. A/c
(BC – 301)**

**2023
(Session : 2021-24)**

Time : 3 hours

Full Marks : 80

*Candidates are required to give their answers in
their own words as far as practicable.*

The figures in the margin indicate full marks.

Answer any five questions.

1. "Management is considered as an art consisting of basic principles of science." Explain.
2. What are the functions of a Good Manager ? Explain.
3. Define Accounting. Discuss the conventions of Accounting.
4. What are the ways to improve interpersonal effectiveness in an organisation ? Explain.

OA- 6/2

(Turn over)

5. What is Trial Balance ? Discuss the objectives of preparing trial balance.

6. Differentiate between Balance Sheet and profit and Loss Account.

7. Define Cash Book.Discuss various types of Cash Book.

8. What do you mean by Communication ? Elaborate the importance of Communication in our professional life.

9. Define Liabilities.Discuss various types of liabilities.

10. Write short notes on any two of the following :

(a) Nature of Management

(b) Golden Rules of Accounting

(c) Double Entry System

(d) Steps involved in Control Process

OA - 6/2 (1,200)

(2)

BCA(III) — Fund. of
Mgt. & Bus. A/c
(BC - 301)

Axur

COPYRIGHT RESERVED BCA(III) — OOP using
C++(BC – 303)

2023

(Session : 2021-24)

Time : 3 hours

Full Marks : 80

*Candidates are required to give their answers in
their own words as far as practicable.*

The questions are equal value.

Answer any five questions.

1. What is Object Oriented Programming ? Write down the features of object oriented programming language.
2. What is inline function in C++ ? Discuss the limitation of inline function. Write a C++ program to find maximum of given three number using class and object and inline function.

OA – 8/2

(Turn over)

3. What is Constructor ? Explain the types of constructors. Write a C++ program to find area of a circle using constructor.
4. Explain friend function. Write a C++ program to demonstrate the concept of friend function using suitable examples.
5. What is Polymorphism ? Explain the types of polymorphism. Distinguish between Late binding vs Early binding.
6. What is operator overloading ? Write a C++ program to overload binary operator(+).
7. What is hybrid inheritance in C++ ? Write a C++ program to demonstrate the concept of hybrid inheritance.
8. Explain dynamic memory allocation in C++. Write a C++ program to short n given number using dynamic memory allocation.
9. What is copy constructor ? Write a C++ program to show the concept of copy constructor using suitable example.

OA-8/2

(2)

Contd.

10. Write short notes on any two of the following
- Command line arguments
 - Virtual functions
 - Destructors
 - Abstract class
-
-

OA-8/2 (1,200)

(3) BCA(III)—OOP using
C++(BC - 303)

JUL 7, 2023, 05:41
VIVO T1 · The Kinnairdi