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BC-401

Numerical Methodology

BCA 4th Sem. (Session-2016-19)

Time : 3 Hrs

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. Calculate the value of $\sqrt{102} - \sqrt{101}$. Correct to four significant figure and find its E_A (Absolute error), E_R (Relative error), E_p (Percentage error).
2. Find the root of equation $X \cdot \tan X = 1.28$, that lies between 0 and 1. Correct to two places of decimals using Bisection Method.
3. Find the root of the equation $3X - \cos X - 1 = 0$, that lies between 0 and 1. Correct to four decimal places using Bisection method.
4. Solve the following system of equation by Jacobi's iteration method:

$$10x_1 + 2x_2 + x_3 = 9$$

$$x_1 + 10x_2 - x_3 = -22$$

$$-2x_1 + 3x_2 + 10x_3 = 22$$

P.T.O.

5. Obtain the Lagrange's interpolation Polynomials of Y from the following data:

X :	0	1	3	4
Y :	5	6	50	105

6. Prove the following relations:

$$(i) \mu = \frac{2 + \Delta}{2\sqrt{1 + \Delta}} = \sqrt{1 + \frac{1}{4} \cdot \delta^2}$$

$$(ii) \Delta = \frac{\delta^2}{2} + \delta \sqrt{1 + \frac{1}{4} \cdot \delta^2}$$

7. Using Trapezoidal Rule to evaluate $\int_0^1 \frac{dx}{1+x^2}$, Taking

$$h = \frac{1}{4}$$

8. Evaluate:

$$\int_3^7 X^2 \cdot \log X \cdot dX \text{ by using Simpson's}$$

$\frac{1}{3}$ rd rule with equal Sub-interval.

9. Find the value of Y(1.1) using Range-Kutta Method of 2nd order given that:

$$\frac{dY}{dX} = Y^2 + XY, Y(1) = 1, h=0.1$$

10. Evaluate:

$$(a) \nabla = \delta \cdot E^{-1/2}$$

$$(b) \delta = \Delta(1 + \Delta)^{-\frac{1}{2}} = \nabla(1 - \nabla)^{-\frac{1}{2}}$$

$$(c) \nabla \cdot \Delta = \Delta - \nabla = \delta^2$$

$$(d) \Delta + \nabla = \frac{\Delta}{\nabla} - \frac{\nabla}{\Delta}$$

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BC-402

Computer Graphics & Multimedia

BCA 4th Sem. (Session-2016-19)

Time : 3 Hrs

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. Discuss the different types of Video Display Device (VDU) in details.
2. What is seed Fill Algorithm ? Create a program to fill the closed area using the seed fill Algorithm.
3. What is polygon Filling? Discuss the types of Polygon Filling.
4. Write down the steps for circle generating algorithm.
5. Explain the transformation between coordinate systems.
6. What is non-impact printer? Discuss the different types of non-impact printer.
7. What is DUST? Write down the advantages and disadvantages of direct view storage Tube.
8. What are the major application areas of computer graphics?
9. Write down the steps required to fill the polygon using Flood fill algorithm for eight connected Regions.

P.T.O.

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

- (a) Reflection
- (b) CRT Monitor
- (c) Image processing
- (d) Application of Computer Graphics

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BC-403

OS & UNIX

BCA 4th Sem. (Session-2016-19)

Time : 3 Hrs

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 are the System Components of an operating system and explain them?
- 3 2. Define paging and swapping. Explain it in details.
- 2 3. What is Fragmentation? Differentiate between external and Internal Fragmentation.
- 1 4. What is are operating System? Explain all types of operating system in details with example.
- 5 5. What is Unix Operating System? Explain the characteristics of Unix Operating System.
- 6 6. Discuss CUT & PASTE commands with suitable examples.
7. Explain about the looping statements in Unix.
8. Write a shell script to generate Fibonacci Series.
9. Write a shell Script to final the whether the given number is even or odd.

P.T.O.

10. Explain the following commands with suitable syntax and examples:

- (a) Is
- (b) rmdir
- (c) Chmod
- (d) Cal
- (e) date

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BC-404

Software Eng. Principles

BCA 4th Sem. (Session-2016-19)

Time : 3 Hrs

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. (a) What is Software Development life Cycle?
(b) Explain the various phases of waterfall Model.
2. What do you mean by Software Maintenance? Explain the various types of software maintenance.
3. (a) Differentiate between Program and Software.
(b) Explain the role of a system Analyst.
4. What do you mean by testing? Explain the various types of Testing.
5. What are the categories of case tools? Explain five benefits of using CASE tools.
6. What is quality assurance? Explain ISO9000 Quality standard.
7. What is SRS? List and explain components of an SRS.
8. What is software Design? Explain the conceptual design and technical design.

P.T.O.

9. (a) Discuss Incremental Process model and RAD Model.
(b) What is data Dictionary?
10. Explain the concept of software Re-Engineering in details.
