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B.C.A. (Semester-IV) Examination, 2020

NUMERICAL METHODOLOGY

[Paper Code : BC-401]

Time : Three Hours] [Maximum Marks : 80

Note : Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks. The questions are of equal value. Answer **any five** questions.

1. Find the percentage error, if 625.483 is approximated to three significant digits.

2. Find the root of the equation $4 \sin x = e^x$ that lies between 0 and 0.5 correct to 4 places of decimals using regular Falsi method.

3. Solve the following system of equations by Gauss Elimination method :

$$5X_1 - X_2 + X_3 = 10$$
$$2X_1 + 4X_2 = 12$$
$$X_1 + X_2 + 5X_3 = -1$$

4. Solve the following system of equations by Jacobi's Iteration method :

$$10X_1 + 2X_2 + X_3 = 9$$
$$X_1 + 10X_2 - X_3 = -22$$
$$-2X_1 + 3X_2 + 10X_3 = 22$$

5. Prove the following relations :

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

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

6. Using the data of the following table compute the integrals $\int_{0.5}^{1.1} x^2 y\, dx$ by Trapezoidal rule :

x:	0.5	0.6	0.7	0.8	0.9	1.0	1.1
y:	0.4804	0.5669	0.6490	0.7260	0.7985	0.8658	0.9281

7. Find the value of y(0.2) and y(0.4) using Runga-Kutta method of the 4th order with h=0.2, given that

$$\frac{dy}{dx} = \sqrt{x^2 + y} \; ; \; y(0) = 0.8 .$$

8. Find the value of $\int_0^{\pi/2} \sqrt{1 - 0.162 \sin^2 x} \, dx$ using Simpson's one-third rule. Divide the interval of integration in 6 equal sub-intervals.

9. Evaluate :

(i) $\nabla = \delta . E^{-1/2}$

(ii) $\delta = \Delta(1+\Delta)^{-1/2} = \nabla(1-\nabla)^{-1/2}$

10. Evaluate f(15) given the following table of value :

$X =$	10	20	30	40	50
$Y = f(X) =$	46	66	81	93	101

Find the Newton forward difference interpolation formula.

----- x -----

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B.C.A. (Semester-IV) Examination, 2020

(2018-21)

COMPUTER GRAPHICS AND MULTIMEDIA

[Paper Code : BC-402]

Time : Three Hours] [Maximum Marks : 80

Note : Candidates are required to give their answers in their answer in their own words as far as practicable. The questions are of equal value. Answer **any five** questions

1. What do you mean by Computer Graphics ? Provide required examples. Discuss the applications and future scope of Computer Graphics.

2. Differentiating between Raster and Random Scan Display, provide architecture of Raster Scan Display.

3. What are the Input and Output devices ? Discuss them taking Computer Graphics into account.

4. Define Multimedia and its types. Explain scope and future of Multimedia in education sector.

5. What is Boundary Fill Algorithm ? Differentiate between Boundary Fill and Flood Fill Algorithm in Computer Graphics.

6. Explain Rotation, Reflection, and Scaling of straight lines of Polygon with suitable examples.

7. Discuss Midpoint Circle Algorithm. Provide steps to draw a circle using Midpoint Circle Algorithm.

8. Develop a Digital Differential Analyzer (DDA) algorithm for drawing a line with two ends on a Raster Pixel Screen.

9. What is two dimensional transformation in Computer Graphics ? Explain the types of Transformation in details.

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

(a) CRT Monitor

(b) Graphics Software

(c) Impact Printer

(d) Image Scanners

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B.C.A. (Semester-IV) Examination, 2020

OPERTING SYSTEM & UNIX

[Paper Code : BC-403]

Time : Three Hours] [Maximum Marks : 80

Note : Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks. The questions are of equal value. Answer **any five** questions.

1. What is a File ? Write the attributes and types of a file. Explain different types of file operations .

2. What is the Directory ? Write about the different schemes for defining the logical structure of a directory .

3. What are services of the Operating System ? Explain the different views of Operating System .

4. Define Thread. How is it different from process ?

5. What is an Operating System ? Give the view of os as a resource manager.

6. Explain different loop control structures available in Unix.

7. What is Vi Editor ? Explain different type of modes in vi editor.

8. What is Unix File System ? How does it work ? List important directories in Unix file system.

9. Write a shell script to reverse a given number and check whether it is palindrome or not.

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10. Explain the following commands with syntax and example :

(a) pwd

(b) cal

(c) cp

(d) rm

(e) touch

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B.C.A. (Semester-IV) Examination, 2020

(2018-21)

SOFTWARE ENGINEERING PRINCIPLES

[Paper Code : BC-404]

Time : Three Hours] [Maximum Marks : 80

Note : 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 emergence of software engineering ? Explain it.

   (b) Discuss the software and software characteristics

2. (a) Distinguish between 'process' and 'project' matrics with examples .

   (b) Exaplain the role of functional independence. coupling and cohesion with respect to modular design.

3. (a) What is software reliabiability ? Explain software reliability matrix.

(b) Differentiate Between hardware and software reliability.

4. Explain the various phases of SDLC .Briefly explain the prototype typing modal.

5. What are the categories of CASE TOOLS ? Explain, also five benefits of using CASE TOOLS .

6. (a) what is the difference between data flow diagram and enitity retationship diagram ?

(b) what do you understand by Debugging process.

7. (a) List the 10 important qualities of Software product and process.

(b) Explain the role of a system analyst.

8. Expalin the concept of software Re - Engineering in detail.

9. Who should do Quality Assurance ? Mention the goals of software Quality Group and also norms for forma technical review meeting.

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

(a) Regression Testing

(b) DFD

(c) Project planning

(d) Configuration Management

(e) Software Reliability

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