

Date: 25/11/2016.

Exam No: _____

GANPAT UNIVERSITY
B. TECH SEM-IIIrd CIVIL ENGINEERING
REGULAR EXAMINATION- NOV-DEC 2016
2CI- 306 Numerical Analysis & Computer programming

TIME: 3 HRS

TOTAL MARKS: 60

- Instructions: (1) This Question paper has two sections. Attempt each section in separate answer book.
(2) Figures on right indicate marks.
(3) Be precise and to the point in answering the descriptive questions.

SECTION: I

- Q.1 Solve the following systems of equation by gauss Jordan method (05)
(A)

$$2X_1 + 4X_2 + 2X_3 = 15$$

$$2X_1 + X_2 + 2X_3 = -6$$

$$4X_1 + X_2 - 2X_3 = 8$$

- Q.1 Given $Y' = 2Y - 2X$ where $y(0) = 2$. Find $y(0.1)$ and $y(0.2)$ by using runge kutta second (05)
(B) order.

OR

- Q.1 Solve the following systems of equation by gauss seidal iteration upto 4th iteration (05)
(A)

$$5x_1 + x_2 - 2x_3 = 11$$

$$x_1 + 10x_2 + x_3 = 26$$

$$-x_1 + x_2 + 12x_3 = 35$$

- Q.1 Apply Euler's method to find the value of $y(0.1)$, $y(0.2)$ (05)
(B)

$$Y' = XY^{1/3} \quad Y(1) = 1$$

- Q.2 Find the value of $\sin 19^\circ$ From the following table by using Newton first order (05)
(A) derivative.

X	0	10	20	30	40
COS(X)	1.000	0.9848	0.9397	0.8660	0.7660

- Q.2 Fit a straight line to the following data by the method of least squares. (05)
(B)

X	0	5	10	15	20	25	30
Y	10	14	19	25	31	36	39

OR

- Q.2 Evaluate $\int_0^2 dx/(2+2x)$ by using Simpson's 1/3rd and 3/8th rule take h=0.5 (05)
(A)

- Q.2 Find the Newton first order derivatives of f(x) at X=2.0 (05)
(B)

X	1.5	2.0	2.5	3.0	3.5	4.0
Y	3.375	7.000	13.625	24.000	38.875	59.000

- Q.3 Use Newton divided difference formula to find f(1), f(5) (05)
(A)

X	0	2	3	4	7	8
Y	4	26	58	112	466	668

- Q.3 Solve by using Newton-Raphson method (05)
(B)

$$F(X)=X^3-4X+1$$

SECTION: II

- Q.4 Write down application of C++ language (05)
(A)

- Q.4 Explain the function of following terms: (05)
(B)

- I. clrscr
- II. float
- III. getch
- IV. cin
- V. cout

OR

- Q.4 Write down syntax of the following program (05)
(A)
- a. Do-while loop
 - b. For Loop

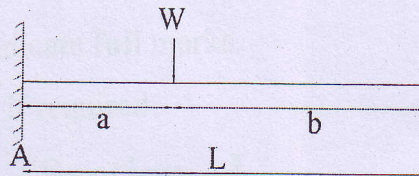
- Q.4 Explain the benefits of Object Oriented Programming (OOP). (05)
(B)

Q.5 Prepare a program for the following equation (05)

(A) $Y = \text{Area of Rectangle} + \text{Perimeter of Rectangle.}$

Where L & B are the sides of rectangle

Q.5 Prepare a program for finding out reaction at both support, Maximum bending moment (05)
(B) for a given beam.



OR

Q.5 Prepare a program for the following equation (05)

(A) $Y = e^x + \sin t + \log x + 3^x + 25$

Where, x is an integer and t is angle in degree

Q.5 Prepare a program for finding out where a given number is divisible by 2 or not. (05)
(B)

Q.6 Explain the following terms: (10)

- a) Objects
- b) Classes
- c) Data Encapsulation
- d) Dynamic binding
- e) Message passing

-----END OF PAPER-----