Civil

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Mid Semester Examination – March 2019

Course: B. Tech in : S.Y. B.Tech. (Civil) **Sem: IV**

Subject Name: Numerical Methods in Engineering **Subject Code: CVE 2401**

Max Marks: 20 **Date:-** 14·3·19 **Duration:- 1 Hr.**

Instructions to the Students:

1. Solve all questions
2. Use non programmable calculator

		(Level/CO)	Marks
Q. 1	Multiple choice questions	Remember	6

1. Using Gauss elimination method,the solution of equations $3x-5y= 43$, $x+2y= -4$ is
   A. $x= 6$, $y = -5$
   B. $x= -6$, $y = -5$
   C. $x= 6$, $y = 5$
   D. $x= -6$, $y = 5$
2. The root of the equation $x^4 - 3x^2 + x - 10 = 0$ lies between
   A. (- 3 , - 2)
   B. (- 1 , 0)
   C. (1 , 2)
   D. (2 , 3)
3. $\delta = - - -$.
   A. $E^{1/2} - E^{-1/2}$
   B. $E^{1/2} + E^{-1/2}$
   C. $E^{-1/2} - E^{1/2}$
   D. None of these
4. $\Delta^2 y_0 = - - -$.
   A. $y_2 - 2y_1 + y_0$
   B. $y_2 + 2y_1 + y_0$
   C. $y_2 + 2y_1 - y_0$
   D. $y_2 - 2y_1 - y_0$
5. By Euler's method to solve differential equation $y_2 = - - -$
   A. $y_1 + hf(x_1, y_1)$
   B. $y_1 - hf(x_1, y_1)$
   C. $y_1 + \frac{h}{2} f(x_1, y_1)$
   D. $y_1 - \frac{h}{2} f(x_1, y_1)$
6. Lagrange's formula is _____.

Q.2 Solve Any Two of the following. Evaluate 3 X 2

(A) Solve the equations using Guass –Seidel method

$x+2y+3z=14$

$2x+5y+2z=18$

$3x+y+2z=11$

(B) Fit a straight line passing through the points

x	0	1	2	3	4
y	1	1.8	3.3	4.5	6.3

(C) Find the missing terms, if the fifth order differences are zero

Year	1961	1962	1963	1964	1965	1966	1967
Production	200	220	260	---	350	---	430

Q. 3 Solve Any One of the following. Evaluate 8

(A) Use Runge –Kutta fourth order method to find y(0.2)

Given $\frac{dy}{dx} = xy + y^2, y(0) = 1, h = 0.1.$

(B) Find f(x) using Newton's divided difference method

x	4	5	7	10	11	13
f(x)	48	100	294	900	1210	2028