Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**Supplementary Examination – June – 2017**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| **Code :** | **14MA2012** | **Duration :** | **3hrs** |
| **Sub. Name :** | **NUMERICAL METHODS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | Fit a straight line to the data given below. Also estimate the value of y and x=2.5.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | X | 0 | 1 | 2 | 3 | 4 | | Y | 1 | 1.8 | 3.3 | 4.5 | 6.3 | | CO1 | 10 |
| b. | Fit a second degree parabola to the data.   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | X | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | Y | 2 | 6 | 7 | 8 | 10 | 11 | 11 | 10 | 9 | | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | From the table given below find the best value of a and b in the form y=aebx by the method of least squares.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | x | 0 | 5 | 8 | 12 | 20 | | y | 3.0 | 1.5 | 1.0 | 0.55 | 0.18 | | CO2 | 10 |
| b. | The variabkes x and y are related by y=axb. Find the curve from the following data.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | No petals x | 5 | 6 | 7 | 8 | 9 | 10 | | No of flowers having a specified y no of petals | 133 | 55 | 23 | 7 | 2 | 2 | | CO2 | 10 |
| 3. | a. | Using Newton Raphson method find the root between 0 and 1 of  x3= 6x - 4 correct to five decimal places. | CO2 | 10 |
|  | b. | Solve the system of equation by Gauess Jordan method.  2x+3y - z=5  4x+4y -3z=3  2x- 3 y+2z =2 | CO2 | 10 |
| (OR) | | | | |
| 4. |  | Solve the following system of equations by Gausee Seidal mthoed correct to three decimals  8x – 3y + 2z=20  4x+11y - z=33  6x+3y+12z=-35 | CO2 | 20 |
| 5. |  | Find the vaules of x=21 and x=28 from the following table .   |  |  |  |  |  | | --- | --- | --- | --- | --- | | x | 20 | 23 | 26 | 29 | | y | 0.3420 | 0.3907 | 0.4384 | 0.4848 | | CO3 | 20 |
| (OR) | | | | |
| 6. |  | Using Lagrange’s interpolation formula find Y(10).   |  |  |  |  |  | | --- | --- | --- | --- | --- | | x | 5 | 6 | 9 | 11 | | y | 12 | 13 | 14 | 16 | | CO3 | 20 |
| 7. |  | Evaluate  using Trepezoibal rule, Simpson’s 1/3 rd and 3/8th rule and verify it using actual integration. | CO2 | 20 |
| (OR) | | | | |
| 8. |  | Using all three Euler’s method sovle numerically y’ = y+ex for x=0.2 and 0.4 correct to three decimals. | CO2 | 20 |
|  | | **Compulsory**: |  |  |
| 9. |  | Apply the second, third and fourth order Runga Kutta method to find y(0.1) and y(0.2) given that dy/dx = - y and y(0)=1. | CO3 | 20 |

ALL THE BEST