R18

Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Regular Examinations Nov/Dec 2019
MATHEMATICS-III
(ECE)

Time: 3 hours

Max. Marks: 60

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	**a**	Write Simpson's 1/3 rd rule formula.	**2M**
	b	Write the Taylor's series.	**2M**
	c	Find $L\{t^2 + 3t + 10\}$.	**2M**
	d	Find the finite Fourier sine transform of $f(x) = 2x, 0 < x < 4.$	**2M**
	e	Solve $p(1+q) = qz.$.	**2M**

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2   Find a real root of the equation $xe^x - \cos x = 0$ using Newton-Raphson method.   **10M**

OR

3   A solid of revolution is formed by rotating about the *x*-axis, the area between the *x*-axis, the lines $x = 0$ and $x = 1$ and a curve through the points with the following co-ordinates: **10M**

x : 0.00   0.25   0.50   0.75   1.00

y : 1.0000   0.9896   0.9589   0.9089   0.8415

Estimate the volume of the solid formed using Simpson's rule.

UNIT-II

4   Using R-K method of 4th order, solve $y'' = y + xy', y(0) = 1, y'(0) = 0$ to find $y(0.2)$ and $y'(0.2)$.   **10M**

OR

5   Evaluate the function u(x,y) satisfying $\nabla^2 u = 0$ at the pivotal points given the boundary values as follows: **10M**
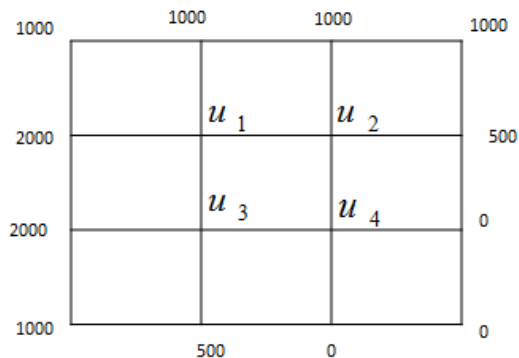
UNIT-III

6   a   Find $L^{-1}\left\{\dfrac{3s-2}{s^2-4s+20}\right\}$.   **5M**

  b   Find $L^{-1}\left\{\dfrac{1}{2}\log\left(\dfrac{s^2+a^2}{s^2+b^2}\right)\right\}$.   **5M**

OR

7   Solve $y''+5y'+5y=e^{-t}\sin t, y(0)=0, y'(0)=1$ by using transform method.   **10M**

UNIT-IV

8   Using the Fourier sine integral, show that $\displaystyle\int_0^\infty \dfrac{1-\cos\pi\lambda}{\lambda}\sin x\lambda\, d\lambda = \begin{cases} \dfrac{1}{2}\pi, 0 < x < \pi \\ 0, x > \pi \end{cases}$.   **10M**

OR

9   Find the inverse Fourier sine transform of f(x) of $F_s(p) = \dfrac{p}{1+p^2}$.   **10M**

UNIT-V

10   a   Solve $D(D-2D'-3)z = e^{x+2y}$.   **5M**

   b   Solve $(D^2-D')z = 2y-x^2$.   **5M**

OR

11   A tightly stretched string with fixed end points $x=0$ and $x=l$ is initially at rest in its equilibrium position. It is set vibrating by giving each point a velocity $kx(l-x)$. Find the displacement of the string at any distance x from one end at any time t.   **10M**

END