Code No: R13207 **R13** **SET-1**

I B. Tech II Semester Supplementary Examinations, Nov/Dec - 2018
MATHEMATICS-II (MM)
(Com. to CE, ME, CSE, PCE, IT, Chem E, Aero E, Auto E, Min E, Pet E, Metal E & Textile Engg)
Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is Compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1. a) Find $\frac{1}{\sqrt{12}}$ using Newton Raphson method. (4M)

b) Show that $\sum_{i=0}^{n-1}\Delta^2 f_i = f_n - f_0$ (4M)

c) Find y (0.1) given that $y^{!} = y + \frac{2x}{y}, y(0)=1$ by Taylor's series method. (4M)

d) Find the Fourier series of f(x) = 2x in (-1,1) (4M)

e) Find the Fourier sine transform of $e^{-ax}, a>0$ (3M)

f) Find $Z\left(\frac{1}{n+1}\right)$. (3M)

PART -B

2. a) Find the Real root of the equation $x^3+2x^2+10x-20=0$ using False position method. (8M)

b) Find the Real root of the equation $x=\cos x$ using Bisection method. (8M)

3. a) Fit the cubic polynomial for the data (0,-5) , (1,1),(2,9), (3,25),(4,55),(5,105) (8M)

b) Find y(8) from the following data. (8M)

x	4	5	7	10
y	8	10	24	30

4. a) Find y(0.2) given that $y^{!} = x + 2\sqrt{y}, y(0)=1$ by modified Euler's method. (8M)

b) Find y(0.1) given that $y^{!} = 2xy + x^2, y(0)=1$ by RK method of fourth order. (8M)

5. a) Find the half range cosine series for $f(x)=\begin{cases}-\pi, & 0<x<1\\ x, & 1<x<2\end{cases}$ (8M)

b) Find the Half range sine series of $f(x)=\begin{cases}x & 0<x<\frac{\pi}{2}\\ -x & \frac{\pi}{2}<x<\pi\end{cases}$ (8M)
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6. a) Find the Finite Fourier Cosine transform of $f(x)$ defined by $f(x) = \frac{x}{\pi}$ in $(0,\pi)$ (8M)

   b) Find inverse Fourier cosine transform of $\frac{1}{p}e^{-ap}$ (8M)

7. a) State and prove final value theorem in z-transforms (8M)

   b) Find the inverse Z – transform of $\left[\frac{z^2+z}{(z-1)^2}\right]$ (8M)