Code No: R161110 **R16** SET - 1

I B. Tech I Semester Supplementary Examinations, May - 2018
MATHEMATICS-II (NM&CV)
(Com to ECE, EIE, ECom E)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the questions in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

~~~~~~

PART –A

1. a) Find the $\sqrt{15}$ using Bisection method. (2M)

b) Construct the difference table for the following data. (2M)

x	0	5	10	15
y	2	10	23	29

c) Evaluate $\int_0^1 x^2 dx$ using Trapezoidal Rule (taking n = 5). (2M)

d) Show that the function f(z)=z is continuous. (2M)

e) If C is a simple closed curve then evaluate $\int_C (sin\ 3z + z^4 + e^z)dz$ (2M)

f) Determine the poles of f(z) = $\frac{z^2}{z^4+1}$ (2M)

g) Find the singularity of f(z) = $\frac{Sin\,(z-2)}{z-2}$ at z = 2. (2M)

PART -B

2. a) Find the root of the equation $x^3 - x - 4 = 0$ using False position method. (7M)

b) Find the root of the equation $e^x sinx = 1$ using Newton Raphson method. (7M)

3. a) Given that $Sin45^0$ =0.7077, $Sin50^0$= 0.766, $Sin55^0$ =0.8192, $Sin60^0$=0.866 find $Sin48^0$ using Newton's forward difference formula. (7M)

b) Using Gauss Forward difference formula find y(8) from the following table. (7M)

X	0	5	10	15	20	25
Y	7	11	14	18	24	32

4. a) Evaluate $\int_0^{\frac{1}{2}} \frac{dx}{\sqrt{1-x^2}}$ by (i) simpson's 1/3rd rule (iii) Simpson's 3/8th Rule. (7M)

b) Solve $\frac{dy}{dx} = xy$ using Modified Euler's method for x=1.1 given y (1)=1 (7M)
~~~~~~

Code No: R161110 **R16** SET - 1

5. a) Prove that $f^{l}(z)$ does not exist at z= 0 if (7M)

$$f(z)=\begin{cases}\dfrac{x^3y(y-ix)}{x^6+y^2} & if\ \ z\neq 0\\ 0 & if\ \ z=0\end{cases}$$

b) Determine analytic function whose real part is $u=\dfrac{Sin2x}{Cosh2y-Cos2x}$ (7M)

6. a) Evaluate $\int_C \frac{e^2}{(z^2+\pi^2)^2}$ dz where C: $|z|=4$ using Cauchy's integral formula. (7M)

b) Expand $f(z)=\frac{1}{z(z^2-3z+2)}$ $in\ 0<|z|<1$ using Laurent's expansion. (7M)

7. a) Evaluate $\oint_C \frac{tan\ z}{z^2-1}\,dz$ Where c : |z| =1.5 by Cauchy's Residue theorem. (7M)

b) Evaluate $\int_0^{2\pi} \frac{\cos n\theta}{1+a^2+2a\cos\theta}d\theta$ where n is a positive integer , $0<a<1$ (7M)