Roll No. | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(3DAnimation & Graphics)(CSE/IT) (2012 Onwards)
(Sem.–3)

MATHEMATICS – III

Subject Code : BTAM-302
Paper ID : [A2143]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. **Write briefly :**

(a) Find the Laplace transform of, $e^t 5^t$

(b) State Dirichlet's conditions for the Fourier expansion of $f(x)$ in $(0,2\pi)$

(c) Form a partial differential equation from, $z = axy + b$ where a and b are arbitrary constants.

(d) Define an analytic function and give an example.

(e) Define the term "an eigen vector" as applied to a square matrix.

(f) State Runga-Kutta method of order 4.

(g) State any two assumptions for the Poisson distribution.

(h) What is type-I error?

(i) Write a short note on "*confidence interval estimation*".

(j) State and prove the first shifting property of Laplace transforms.

SECTION-B

2 Find a Fourier series to represent the function defined by,

$$f(x) = x + x^2 \text{ for } -\pi < x < \pi.$$

3 Find, $L\left[\frac{e^{5t} - \sin 2t}{t}\right]$

4 Solve the partial differential equation,

$$p \cos(x + y) + q \sin(x + y) = z$$

5 Solve $\frac{dy}{dx} = x + y$, $y(0) = 1$ in the range $0 \le x \le 0.2$ using Modified Euler's method.

6 Assuming that the height distribution of a group of men is normal, find the mean and standard deviation, if 84% of men have heights less than 65.2 inches 68% have height lying between 65.2 and 62.8 inches.

SECTION-C

7 Prove that the function $z\bar{z}$ is continuous everywhere but nowhere differentiable except at origin.

8 Suppose that 100 tyres made by a certain manufacturer lasted on the average 21,819 miles with a certain standard deviation of 1295 miles. Test the null hypothesis $\mu = 2{,}000$ miles against the alternative hypothesis $\mu < 22{,}000$ miles at the 0.05 level of significance.

9 Apply Gauss - Jordan method to solve the equations,

$$x + y + z = 9,\ 2x - 3y + 4z = 13,\ 3x + 4y + 5z = 40.$$