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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.

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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,

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

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

- Prove that the function $z\overline{z}$ is continuous everywhere but nowhere differentiable except at origin.
- 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 μ = 2,000 miles against the alternative hypothesis μ < 22,000 miles at the 0.05 level of significance.
- 9 Apply Gauss Jordan method to solve the equations,

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

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