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# B.Tech.(3D Animation Engineering/CSE/IT) (Sem.–3) MATHEMATICS – III Subject Code : BTAM-302 M.Code : 70808 Date of Examination : 21-01-2023

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. Answer briefly :
  - a) What do you mean by periodic functions? Also write period of cos100x.
  - b) Explain Euler's formula.
  - c) Define derivatives of the function of complex variables.
  - d) Write down Runge-kutta Method
  - e) Explain Binomial distributions
  - f) Evaluate L  $[t^2 e^{-3t}]$
  - g) Find the differential equation of all spheres of fixed radius having their centres in the *xy*-plane.
  - h) Discuss the difference between Euler's method & Euler's modified methods.
  - i) Explain *f* distribution.
  - j) Define mean & variance.

#### **SECTION-B**

- 2. If f(x) = |x|, expand f(x) as a fourier series in the interval  $(-\pi, \pi)$
- 3. Evaluate the integral by using Laplace transform  $\int_0^\infty t e^{-3t} \sin t \, dt$
- 4. Solve the following partial differential equations
  - a)  $p-q = \log(x+y)$
  - b)  $xp yp = y^2 x^2$
- 5. Solve  $4r + 12s + 9t = e^{3x-2y}$  where symbol's have their usual meaning.
- 6. Determine the analytic function whose real part is  $e^{3x} (x \cos 2y y \sin 2y)$

#### **SECTION-C**

7. Apply Gauss-Seidel iteration method to solve the equations :

20x + y - 2z = 17, 3x + 20y - z = -18, 2x - 3y + 20z = 25

- Out of 800 families with 4 children each, how many families would be expected to have :
  a) 2 boys & 2 girls
  b) at least one boy c) no girl d) at most two girls Assume equal probabilities for boy's & girl's.
- 9. Two random samples are drawn from two normal populations are shown below:

Α	17	27	18	25	27	29	13	17
В	16	16	20	27	26	25	21	

Test whether the samples are drawn from the same normal population.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.