

**A10**

**Sreenidhi Institute of Science & Technology**

(An Autonomous Institution)

**Code No: 101MA05/111MA05**

**B. TECH. II – Year I – Semester Examinations, MAY/JUNE, 2014 (Supplementary)**

**MATHEMATICAL TOOLS FOR ECM (ECM)**

**Time: 3 Hours Max. Marks: 70**

**Note: No additional answer sheets will be provided.**

**Part - A (Objective Type)**

**Max.Marks:20**

**Answer all QUESTIONS.**

1. Show that 
2. Evaluate 
3. Derive a PDE by eliminating the arbitrary function from the relation .
4. Find the solution of 
5. Write the Newton’s forward and backward difference interpolation formula.
6. Find the cubic polynomial which takes the following values ; ; ; .
7. Find a real root of the equation by using bisection method.
8. Solve the differential equation with the condition by using Euler’s method.
9. Three coins are tossed simultaneously. What is the probability that at least two tails occur?
10. Define distribution function and write its properties.

**Part – B**

**Max. Marks: 50**

**ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS.**

1. a) Prove that 

b. Prove that 

1. a) Find the solution of the Legendre differential equation

b) Express in terms of Legendre polynomials.

1. a) Find the general equation of the PDE

b) Find the singular solution of the partial differential equation

1. a) Apply Lagrange’s formula to find the cubic polynomial which includes the following values of and .

b) Find the cubic polynomial which takes the following values y(0)=1, y(1)=0, y(2)=1, y(3)=10 by using the Newton’s backward difference interpolation formula, also obtain the value of y(4).

1. a) Find a real root of the equation by using the Iteration method.

b) Find a real root of the equation by using the Newton Raphson method.

1. a) Givenwhere , use Picard’s method to obtain for 1.4.

b) Solve the initial value problem ; y(0)=1 with h=0.2 on the interval [0,1] using the

Runge-Kutta method

1. a) A die is thrown twice and the sum of the number appearing is noticed to be 8. What is the conditionally probability that the number 5 has appeared at least once?

b) State and prove Baye’s theorem.

1. a) Compute the probability of obtaining at least two “six” in rolling a fair die four times.

b) In the monthly machine repair and maintenance cost X in a certain factory is known to be normal with mean Rs.12,000 and standard deviation Rs.2,000, what is the probability that the repair cost for the next month will exceed the budget amount of Rs.15,000.

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