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**Presidency University**

**Bengaluru**

**SCHOOL OF ENGINEERING**

**SUMMER TERM END TERM EXAMINATION – AUGUST 2024**

**Date**: 05August 2024

**Time**: 1:00PM-4:00PM

**Max Marks**: 100

**Weightage**: 50%

**Semester**: Summer Term 2024

**Course Code**: MAT 2001

**Course Name**: Transform Techniques and Partial Differential Equations

**Program & Sem.**: B. Tech. (**2020 BATCH ONLY**)

**Instructions:**

1. *Read all the questions carefully and answer accordingly.*
2. *Question paper consists of 3 parts.*
3. *Scientific and Non-programmable calculators are permitted.*
4. *Do not write any information on the question paper other than Roll Number.*

**Part A**

**Answer any FOUR questions. (4Q x 5M = 20M)**

1. Find the Laplace transform of . (CO1) [Knowledge]

2. Find the inverse Laplace transform of . (CO1) [Knowledge]

3. Write Fourier sine and cosine transform of . (CO2) [Knowledge]

4. Find the Z transform of . (CO3) [Knowledge]

5. Form the PDE by eliminating the arbitrary function from . (CO4) [Knowledge]

**PART B**

**Answer any FIVE questions. (5Q x 10M = 50M)**

6. Express in terms of unit step function and hence find its

Laplace transform. (CO1) [Comprehension]

7. Use convolution theorem to find . (CO1) [Comprehension]

8. Find the Fourier sine transform of . (CO2) [Comprehension]

9. Form the PDE by eliminating the arbitrary functions from .

(CO4) [Comprehension]

10. Solve , given that when . (CO4) [Comprehension]

11. Solve (CO4) [Comprehension]

**Part C**

**Answer any TWO questions. (2Q x 15M = 30M)**

12. Apply Laplace transform technique to solve with

. (CO1) [Application]

13. Apply Z transform method to solve with . (CO3) [Application]

14. Obtain a solution of the equation where by method of

separation of variables. (CO4) [Application]