

Enroll No

K.E.Society's  
**Rajarambapu Institute of Technology, Rajaramnagar**  
 (An Empowered Autonomous Institute, affiliated to SUK)  
**Unit Test -I ( 2025-26)**  
**S.Y. B.Tech.- Electrical Engineering**

Q.P.Code
UT 3018

**Course Code-** EE211      **Course Name:** Mathematics for Electrical Engineering  
 Day & Date: Wednesday 13.08.2025  
 Time: 11.45.a.m.to 12.45.p.m.      Max Marks- 25

- Instructions:**
- 1) All questions are compulsory.
  - 2) Figures in rounded( ) brackets within the question, indicate the scheme of marking for respective part of the question, whereas, figures in the first right column indicate total marks for that whole question.
  - 3) CO is the index number of the Course Outcome statement.
  - 4) The Bloom's taxonomy level (BL) for 1,2,3,4,5 and 6 is remember, understand, apply, analyze, evaluate and create respectively.
  - 5) Assume suitable data if necessary.
  - 6) Use of non-programmable calculators is allowed

<b>Q.1</b>	Attempt the following	15M	<b>COs</b>	<b>BL</b>
a)	Solve $\frac{d^2y}{dx^2} + 5\frac{dy}{dx} + 6y = e^x + \cos x$	5M	CO-1	3
b)	Solve $\frac{d^2y}{dx^2} + 9y = x^2$	5M	CO-1	3
c)	Solve $(D^2 - 3D + 2)y = x^2 e^x$	5 M	CO-1	3
OR				
c)	Solve $(D^2 - 4D + 3)y = e^x \cos 2x$		CO-1	3
<b>Q.2</b>	Attempt the following	10M	<b>COs</b>	<b>BL</b>
a)	Find the Fourier series expansion of $f(x) = x^3, \text{interval } (-\pi, \pi)$	5M	CO-2	1
OR				
a)	Find the Fourier series expansion of $f(x) = x - x^2, \text{interval } (-\pi, \pi)$	5M	CO-2	1
b)	Find the Fourier series expansion of $f(x) = \frac{(\pi-x)^2}{4}, \text{interval } (0, 2\pi)$	5M	CO-2	1

