



C16-EE-401

5654

**BOARD DIPLOMA EXAMINATION, (C-16)
OCTOBER/NOVEMBER-2018
DEEE - FOURTH SEMESTER EXAMINATION**

ENGINEERING MATHEMATICS - IV

Time : 3 Hours]

[Total Marks: 80

PART-A

3X10=30

- Instructions :**
1. Answer **All** questions.
 2. Each question carries **Three** marks.
 3. Answer should be brief and straight to the point and shall not exceed five simple sentences.

1. Solve $(D^2 - 8D + 12)y = 0$
2. Solve $(D^2 - 2D + 5)y = 0$
3. Solve $(D^3 - 6D^2 + 11D - 6)y = 0$
4. Find the particular integral of $(D^2 - 5D + 6)y = 5e^{5x}$
5. Find the particular integral of $(D^2 - 9)y = \sin 2x$
6. Find $L \{ e^{2t} + 4t^3 + \cot 3t \}$
7. Find $L \{ e^{-2t} \sin 4t \}$
8. Find $L^{-1} \left\{ \frac{s^2 - 3s + 4}{s^3} \right\}$
9. Define Fourier series of the function $f(x)$ in the interval $(c, c + 2\pi)$
10. Find the Fourier series coefficient a_0 for $f(x) = x^2$ in the interval $(0, 2\pi)$

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PART-B

10X5=50

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- Instructions :**
1. Answer any **Five** questions.
 2. Each question carries **ten** marks.
 3. Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer

11. (a) Solve $(D^2 + 5D + 6)y = e^{-2x} + e^{-3x}$

(b) Solve $(D^2 + 2D + 1)y = \sin 3x$

12. (a) Solve $(D^2 + 16)y = \cos 4x + e^{-4x}$

(b) Solve $(D^2 + 3D + 2)y = x^2$

13. (a) Find $L \{ e^{4t} \sin 2t \cos t \}$

(b) Evaluate $\int_0^{\infty} \frac{\sin 2t}{t} dt$ using Laplace transformers.

14. (a) Find $L \{ t \cos 3t \}$

(b) Find $L \left\{ \frac{e^{-3t} - e^{-4t}}{t} \right\}$

15. (a) Find $L^{-1} \left\{ \frac{3s-2}{s^2-2s+5} \right\}$

(b) Find $L^{-1} \left\{ \frac{1}{s(s^2+1)} \right\}$

16. Solve the differential equation $y^{11} + 3y^1 + 2y = e^{-t}$ with $y(0) = 0, y^1(0) = 1$ by using Laplace Transform Method.

17. Obtain the Fourier series for $f(x) = x^2$ in the interval $0 < x < 2\pi$

18. Find the Fourier series for $f(x) = |\cos x|$ in the interval $(-\pi, \pi)$

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