5601

C16-A/CH/EI/MET/MNG/IT/PKG -**401**

5601

BOARD DIPLOMA EXAMINATION, (C-16)
OCTOBER/NOVEMBER-2018
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 $\frac{d^2y}{dx^2} + 4\frac{dy}{dx} + 3y = 0$
2. Solve $(D^2 + 6D + 9)y = 0$
3. Solve $(D^3 + D^2 + 4D + 4)y = 0$
4. Find the P.I of $(D^2 - 5D + 6)y = e^{4x}$
5. Find the P.I of $(D^2+4)\ y = sin2x$
6. Find L (3sin4t-2cos5t)
7. Find L$(e^{-3t}cos4t)$
8. Find $L^{-1}\left\{\frac{5s+10}{9s^2+16}\right\}$
9. Define Fourier series of the function f(x) over the interval (c,c+2π)
10. Find α_0 for $f(x) = x^3$ in (0,2π).

PART-B

10X5=50

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 $(D^2 - 4D+3)y = e^x + e^{3x}$

    (b) Solve $(D^2 +4)y = sin2x + cos2x + 2.$

12. (a) Solve $(D^2 +D-6)y = cosx$

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

13. (a) Find $L\{e^{4t}sin2tcost\}$

    (b) Find L $\{te^{-t} + sin4t\}$

14. (a) Find $L\left\{\frac{e^{-t}-e^{-2t}}{t}\right\}$.

    (b) Evaluate $\int_0^\infty t\, e^{-2t}\, Sin\ 3t\ dt$. using laplace transform.

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

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

16. Using laplace transform method solve.

$$y^{||} + 2y^{|} - 3y = t, when\ y(0) = y^{|}(0) = 0$$

17. Obtain Fourier series of f(x) = $\frac{\pi-x}{2}$ in the interval [0,2π]

18. Expression the function f(x) = $|x^3|$ as a Fourier series in (-π, π)

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