6242

BOARD DIPLOMA EXAMINATION, (C-16)

MARCH /APRIL-2019

THIRD SEMESTER(COMMON) EXAMINATION

ENGINEERING MATHEMATICS-II

Time:3 Hours Max.Marks:80

PART-A

10x3=30M

Instruction : 1) Answer **all** questions.
2) Each question carries **three** marks.

1) Evaluate $\int(\sqrt{x}+\sin 2x-3^x)dx$

2) Evaluate $\int \frac{3x-5}{3x^2-10x+17}dx$

3) Evaluate $\int_0^2 (x^2+1).dx$

4) Find the mean value of $y^2 = 8x$ over (0,3).

5) Find the Laplace transform of $(t^2+1)^2$

6) Find $L^{-1}\{\frac{3}{(s+1)^4}\}$

7) Find the fourier sine series for f(x) = 1 in $0<x<\pi$.

8) Form the differential equation for the family of curves
y = a.cos 5x + b.sin 5x.

9) Solve, $x^2.dy+y^2.dx=0$

10) Solve, $(D^2-2D+10)y=0$

PART-B

10x5=50M

Instructions **:** 1) Answer any **Five** questions.

2) Each question carries **Ten** marks.

11) a) Evaluate, $\int \sin^5\theta.\cos^3\theta.d\theta$

b) Evaluate, $\int \frac{1}{3-2\cos x}.dx$

12) a) Evaluate, $\int e^x\left\{\frac{1+x\log x}{x}\right\}.dx$

b) Evaluate $\int_0^{\pi/4} \frac{\sec^2 x}{(1+\tan x)}dx$

13) a) Find the area bouded by the parabole $3y = x^2$, x-axis between the abscissa x=1 and x=2.

b) Find the volume of the solid obtained by revolving the ellipse $\frac{x^2}{25}+\frac{y^2}{9}=1$ about x axis.

14) a) Define convolution theorem and hence find $L^{-1}\left[\frac{1}{S(S+1)}\right]$ using con volution theorem

b) Evaluate, $\int_1^{11} x^3.dx$ using trapezoidal rule by taking n=10.

15) a) Find the Laplace tranform of $\frac{1-e^{-t}}{t}$

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

16) Explain $f(x) = x + x^2$ as a fourier series in $-1<x<1$.

17) a) Solve $\frac{dy}{dx} + xy = xy^3$

b) Solve $(D^3 - D^2 - D + 1)y = 0$

18) Solve $(D^2 - 6D + 9)y = x^2 + e^{3x} + \sin 3x$

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