6222

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

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

1) Evaluate, $\int (e^x + 2\sin x + \frac{6}{\sqrt{1-x^2}}).dx$

2) Evaluate, $\int \frac{1}{\sqrt{25-x^2}}.dx$

3) Evaluate, $\int_1^{\sqrt{3}} \frac{1}{1+x^2}.dx$

4) Find the mean value of $x+x^2$ over [2,6]

5) Find the Laplace Transform of $\cos^2 2t$.

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

7) Write Euler's formulae to find coefficient of the Fourier series of f(x) in the interval $(0,2\pi)$

8) Find the differential equation to the family of curves $y=ae^{2x}+be^{-2x}$ where a,b are arbitrary constants.

9) Solve, $(9x+5y-9).dx+(5x+7y-4).dy=0$.

10) Solve, $\frac{d^2y}{dx^2}-8\frac{dy}{dx}+12y=0$.

PART-B

10x5=50M

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

11) a) Evaluate, $\int \sin^3 x.\cos^6 x.dx$

b) Evaluate, $\int \frac{1}{5+4\cos x}.dx$

12) a) Evaluate, $\int x^2.Tan^{-1}x.dx$

b) Evaluate, $\int_0^{\pi/2} \log(\tan x).dx$

13) a) USing the method of integration, find the area bounded by a circle of radius 'r'

b) Find the volume of the solid of revolution generated by revoving the area between $y=x^2-4$ and x-axis about x-axis.

14) a) Find $L\left[\frac{e^{2t}-e^{3t}}{t}\right]$.

b) Evaluate, $\int_0^1 \frac{1}{1+x^2}$.dx using Trapezoidal ruleby takeing 5 ordinates.

15) a) Find $L\left[e^{-t}(2.\cos 3t-3.\sin 2t)\right]$

b) Find $L^{-1}\left\{\frac{2s-3}{s^2+4s+20}\right\}$

[Contd...

16) a) Find the half range sine sires for f(x)=x in $(0,\pi)$.

b) Find the half range cosine series for f(x)=x(2-x) in 0<x<2.

17) a) solve, $\frac{dy}{dx}=\frac{y}{x}+\tan\frac{y}{x}$.

b) Solve $\frac{dy}{dx}+y\cot x=\operatorname{cosec} x$

18) a) solve, $(D^2+2D-8)y=e^{-3x}+e^{-4x}$.

b) solve, $(D^2+4)y=x^2-\cos 2x$.

* * *