6232

BOARD DIPLOMA EXAMINATION, (C-16)

MARCH /APRIL-2019

THIRD SEMESTER(COMMON) EXAMINATION

ENGINEERING MATHEMATICS-II

Time:3 Hours Max.Marks:80

PART-A

10x3=30

Instruction : 1) Answer **all** questions.
2) Each question carries **three** marks.
3) Answer shoulb be brief and straight to the point and shall not exceed five simple sentences.

1) Evaluate $\int \tan^3 x \sec^2 x dx$.

2) Evaluate $\int \log x dx$.

3) Evaluate $\int_0^1 \frac{dx}{\sqrt{1-x^2}}$.

4) Find the area bounded by the curve $y = x^2 - 1$, the x-axis and the ordinates x=1 and x=3.

5) Find the laplace transform of $t^3 + 3\cos 2t + 5e^{-8t}$.

6) Find $L^{-1}\{\frac{1}{s^4} + \frac{3}{s^2 - 8}\}$

7) Find the value of a_{11} in the fourier series of f(x)=1 in the interval $(0, 2\pi)$.

8) Solve $\frac{dy}{dx} + \frac{y}{x} = 0$

9) Find the differential equation corresponding to y= a cos x + b sinx, where a and b are arbitrary constants.

10) Solve $(D^2 + 6D + 9)y = 0$

PART-B

10x5=50M

***Instructions*:** 1) Answer any **Five** questions.
2) Each question carries **Ten** marks.
3) Answer shoulb be comprehansive and the criterion for valuation is the content but not the length of the answer.

11) a) Integrate $\sin^2 x \cos^3 x$ w.r.t.x

b) Integrate $\sqrt{16+9x^2}$ w.r.t.x

12) a) Evaluate $\int x^2 \cos 3x dx$

b) Evaluate $\int_0^{\pi 12} (\log \tan x) dx$

13) a) Find the volume of the solid generated when the area bounded by the curve $y = x^2 - 9$ and the x-axis revolues about x-axis.

b) find the R.M.S value of $\sqrt{\log x}$ over the range x =1 and x=e

14) (a) Evalute $\int_0^6 \frac{dx}{l+x^2}$, using simpson's 1/3 rule by taking n=6.

b) Using convolution thorem, find $l^{-1}[\frac{1}{s^2(s+3)}]$.

15) (a) Find L $(t^2 \sin 2t)$

(b) If L^{-1} [F(s) = f(t) write the values of

(i) L^{-1} (s.F(s) (ii) $L^{-1}[\frac{F(s)}{s}](iii)L^{-1}[\frac{d}{ds}[F(s)](iv)L^{-1}[\int_s^\infty F(s)ds](v)L^{-1}[F(as)]$

16) Find the fourier series for the function f(x) = $\pi^2 + x^2$ in the interval $[-\pi, \pi]$

17) a) Solve $\frac{dy}{dx}+\frac{y}{x}=5x$

b) Solve $e^y dx+(xe^y+2y)dy=0$

18) a) Solve $(D^2-4D+8)y=e^{-2x}$

b) Solve $(D^2+D)Y=\cos 2x$

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