6237

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.
3) Answers should be breif and straight to the point and shall not exceed five simple sentences.

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

2) Evaluate $\int\frac{\sin(\log x)}{x}dx$

3) Evaluate $\int_{-1}^{1}(x^2-3x+2)dx$

4) Find the area bounded by the parabola $y=x^2$, x-axis between the lines $x=1$ and $x=2$.

5) Find $L\{e^{2t}-4t^3+2Sin3t\}$

6) Find $L^{-1}\{\frac{2}{s-4}+\frac{3}{s^2-9}\}$

7) Write the fourier series for the function f(x) defined in the intervel (c, c+2π)

8) Find the different equation of family of curves $y=Ae^{x}+Be^{-x}$ where A,B are arbitrary constants.

9) Solve $\frac{dy}{dx}+\frac{\sqrt{1-y^2}}{\sqrt{1-x^2}}=0$.

10) Solve $\frac{d^2y}{dx^2}+5\frac{dy}{dx}-12y=0$

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 $\int\frac{x}{(x+1)(x+3)}dx$

12) a) Evaluate $\int x\tan^{-1}x dx$

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

13) a) Find the R.M.S value of $\sqrt{8-4x^2}$ between x=0 and x=2

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

14) a) Obtain the value of $\int_0^1\frac{1}{1+x^2}$ dx using Sympson's rule by dividing the interval [0,1] into four equal parts.

b) Find $L\left\{\frac{1-\cos t}{t}\right\}$

15) a) Find $L^{-1}\left\{\frac{S^2}{(S-2)^3}\right\}$

b) Using canvolution therom, find $L^{-1}\left(\frac{s}{(s^2+1)(s^2+2)}\right)$

16) Find the fourier Series for f(x)= x-x² in the interval $(-\pi, \pi)$. Hence show that $\frac{1}{1^2}-\frac{1}{2^2}+\frac{1}{3^2}-\frac{1}{4^2}+\ldots\ldots=\frac{\pi^2}{12}$

17) a) Solve $\frac{dy}{dx}+y=e^{-3x}$

b) Solve $\left(x^{12}+y\right)dx+\left(y^8+x\right)dy=0$

18) a) Solve $(D^2+4)y=\sin 2x$

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

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