4201

BOARD DIPLOMA EXAMINATION, (C-14)
OCTOBER/NOVEMBER-2018
THIRD SEMESTER EXAMINATION

ENGINEERING MATHEMATICS-II

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. Evaluate $\int (sec^2 x - e^x + sinx)dx$.

2. Evaluate $\int x\, e^{x^2} dx$.

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

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

5. Find the Mean Value of $y = x+x^2$ in the interval (2,6).

6. Form the differential equation by eliminating the arbitrary constants A and B from the
equation y= A $e^{3x} + B\, e^{-3x}$.

7. Solve $\frac{dy}{dx} = \sqrt{\frac{1-y^2}{1-x^2}}$.

8. Solve $\frac{dy}{dx} + y = e^{-x}$.

9. Find the median of the following observations.

110,90,40,50,125,65,100.

10. Calculate the Standard Deviation for the data 8,1,4,10,12

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PART-B

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) Evaluate $\int Cos4x \, Cos2x \, dx$.

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

12. (a) Evaluate $\int \frac{1}{5+4cosx} dx$

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

13. (a) Evaluate $\int x^3 \, e^{2x} \, dx$ by using Bernoulli's rule

(b) Evaluate $\int_0^{\frac{\pi}{2}} \frac{sin^4x}{sin^4x+cos^4x} dx$

14. (a) Find the area enclosed between the parabolas $y^2 = 4x \, and \, x^2 = 4y$.

(b) Find the Volume of the solid generated by revolving the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$. about x=axis (or it major axis) where a > b.

15. (a) Find the R.MS. value of $\sqrt{27 - x^2}$ over the range x=0 and x=3.

(b) Calculate the approximate value of $\int_0^6 \frac{1}{1+x} dx$ using Trapezoidal rule by taking n= 6.

16. (a) Solve $\frac{dy}{dx} = Sin(x + y)$.

(b) Solve $(x^2 + y) \, dx + y^2 + x) \, dy = 0$

17. (a) Solve $\frac{dy}{dx} + \frac{y}{x} = x \, y^2$ sinx.

(b) Solve $\frac{dy}{dx} + y \, cotx = cosecx$.

18. The scores of 8 students in an examination in Mathematics and Statistics are given below. Find the rank correlation coefficient.

Student No	1	2	3	4	5	6	7	8
Marks in Mathematics	70	48	58	55	54	50	60	52
Marks in Physics	62	47	53	60	55	68	51	48

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