

* C14-A-301/C14-AA-301/C14-AEI-301/C14-BM-301/
C14-C-301/C14-CH-301/C14-CHOT-301/C14-CHPC-301/
C14-CHPP-301/C14-CHST-301/C14-CM-301/
C14-EC-301/C14-EE-301/C14-IT-301/C14-M-301/
C14-MET-301/C14-MNG-301/C14-PCT-301/C14-PET-301/

C14-RAC- 301/C14-TT-**301**

4201

BOARD DIPLOMA EXAMINATION, (C-14)

JUNE-2019

THIRD SEMESTER(COMMON) EXAMINATION

ENGINEERING MATHEMATICS-II

Time: 3 Hours

Max.Marks: 80

PART-A

10x3=30M

- Instructions:** 1) Answer all questions and each question carries three marks.
2) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1) Evaluate: $\int (2e^x + 3 \sin x + 4 \sec^2 x) dx$.

2) Evaluate: $\int e^x \sin(e^x) dx$.

* 3) Evaluate: $\int \frac{1}{6+2x^2} dx$

4) Evaluate: $\int_0^1 \frac{1}{1+x^2} dx$

- 5) Find the volume of the solid formed by revolving the area enclosed by the curve $y = x^3$ the Y-axis and the lines $y=8$, $y=0$ about the Y-axis.
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- *6) Find the differential equation of the family of curves , $y = A\cos 3x + B\sin 3x$ where A and B are constants.

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

8) Solve: $(x^2 + y)dx + (y^2 + x)dy = 0$

- 9) Find the median of the following items?

12, 15, 40, 23, 20, 17, 69, 75

- 10) What is standard deviation?

PART-B

5x10=50M

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

11) a) Evaluate : $\int \sin^3 x \cos^5 x \, dx$.

b) Evaluate: $\int \sin 7x \cos 3x \, dx$.

12) a) Evaluate: $\int \frac{1}{3+2\cos x} dx$

b) Evaluate: $\int \frac{x+7}{(x+3)(x+2)} dx$

13) a) Evaluate: $\int x^2 \cos 3x dx$.

b) Evaluate: $\int_0^{\pi/4} \tan^4 x \sec^2 x dx$.

- * 14) a) Find the area of the segment cut off from the parabola $y^2=8x$ by the line $2x-y-8=0$.

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

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- * 15) (a) Find the volume generated by revolving the ellipse $\frac{x^2}{9} + \frac{y^2}{4} = 1$ about its minor axis.

(b) Evaluate $\int_1^{11} x^2 dx$ using trapezoidal rule by taking $n=10$.

16) Solve: $\frac{dy}{dx} = \frac{y}{x} + \sin\left(\frac{y}{x}\right)$.

17) (a) Solve: $(x^3 + 3xy^2)dx + (3x^2y + y^3)dy = 0$.

(b) Solve: $\frac{dy}{dx} + 2y \tan x = \sin x$.

- 18) From the marks obtained by 8 students in mathematics and statistics, compute the rank correlation coefficient.

Student No:	1	2	3	4	5	6	7	8
Marks in mathematics	60	15	20	28	12	40	80	20
Marks in statistics:	10	40	30	50	30	20	60	30

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