4201

C14–A/AA/AEI/BM/C/CH/CHOT/
CHPC/CHPP/CHSI/CM/EC/EE/IT/M/
MET/MNG/PCT/PET/RAC/TT–301

4201

BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2018

THIRD SEMESTER (COMMON) EXAMINATION

ENGINEERING MATHEMATICS–II

Time : 3 hours] [*Total Marks* : 80

PART—A 3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

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

1. Evaluate : $x^7 \quad 7e^x \quad \frac{1}{x^7}\, dx.$

2. Evaluate : $x \sin x\, dx.$

3. Evaluate : $\frac{\sin^2 x}{1 \quad \cos x}\, dx.$

4. Evaluate : $\int_0^{/4} \frac{\tan^{\ 1} x}{1 \quad x^2}\, dx.$

5. Evaluate : $\int_0^2 \frac{dx}{4 \quad x^2}.$

6. Form the differential equation for the family of curves $y \quad A\sin x \quad B\cos x$.

7. Solve : $\frac{dy}{dx} \quad e^{x \quad y}$.

8. Solve : $\sqrt{1 \quad y^2}\,dx \quad \sqrt{1 \quad x^2}\,dy \quad 0$

9. If the mean of 4, 7, x, 15, 20 is 11, find x.

10. If the mean and mode of a data are calculated to be 20 and 20.3. find its median.

PART—B

5×10=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) The answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. *(a)* Evaluate : $x \quad 2^{\,2} \quad \sqrt[3]{x} \quad 2^x \quad \frac{1}{1 \quad x} \quad \frac{1}{\sqrt{1 \quad x^2}}\,dx$.

(b) Evaluate : $x^2 e^{3x}\,dx$.

12. *(a)* Evaluate : $\frac{x \quad 3}{x^2 \quad 3x \quad 2}\,dx$.

(b) Evaluate : $\frac{1}{4 \quad 5\cos x}\,dx$.

13. *(a)* Evaluate : $\log x\,dx$

(b) Find the area bounded by the parabola $y^2 \quad 8x$ and the lines $x \quad 1$ and $x \quad 3$ in the first quadrant.

14. *(a)* Evaluate : $\int_0^{/2} \sin 5x.\cos 3x\, dx.$

(b) Find the volume of a solid generated by revolving the cllipse $\frac{x^2}{a^2}$ $\frac{y^2}{b^2}$ 1, about x-axis.

15. *(a)* Find the RMS value of $\sqrt{9 \quad x^2}$ between x 0, x 3.

(b) Find $\int_1^5 \frac{1}{1 \quad x}\, dx$ using Simpson's rule by taking 4 equal parts.

16. *(a)* Solve $x^2 \frac{dy}{dx}$ xy y^2.

(b) Solve $\frac{dy}{dx}$ $2y$ e^x.

17. *(a)* Solve the homogeneous differential equation $\frac{dy}{dx}$ $\frac{x^2 \quad y^2}{xy}$.

(b) Solve $(x \quad y \quad 1)dx$ $(y \quad x \quad 1)dy$ 0

18. *(a)* Find the quartile deviation from the following data :

Value	20	30	40	50	60	70	80
Frequency	3	61	132	153	140	51	3

(b) Calculate the Pearson's correlation coefficient from the following data :

x	2	4	6	8	10
y	10	13	8	9	10

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