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C09–A–302/C09–AA–302/C09–AEI–302/
C09–C–302/C09–CM–302/C09–EC–302/
C09–EE–302/C09–CH–302/C09–CHPP–302/
C09–CHPC–302/C09–CHOT–302/C09–CHST–302/
C09–IT–302/C09–M–302/C09–MET–302/
C09–MNG–302/C09–PET–302/C09–TT–302/
C09–RAC–302

3202

BOARD DIPLOMA EXAMINATION, (C–09)

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 $(3x \quad 5)^7 dx$.

2. Evaluate $x e^{3x} dx$.

3. Evaluate $\frac{\sin^{\ 1} x}{\sqrt{1 \quad x^2}} dx$.

4. Evaluate $\int (\sec^2 x \quad e^x \quad \sin x)dx$.

5. Evaluate $\dfrac{dx}{4 \quad 8x^2}$

6. Evaluate $\displaystyle\int_{1/\sqrt{2}}^{\sqrt{3}/2} \frac{1}{\sqrt{1 \quad x^2}}\,dx$.

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

8. Find the particular integral of $(D^2 \quad 5D \quad 6)y \quad e^{3x}$.

9. Form the differential equation of family of curves $y \quad A\cos 5x \quad B\sin 5x$, where A and B are arbitrary constants.

10. Solve $(e^x \quad 1)\sin y dy \quad e^x \cos y dx \quad 0$.

PART—B

10×5=50

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

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

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

11. *(a)* Evaluate $\dfrac{x \quad 2}{x^2 \quad 2x \quad 3}dx$.

(b) Evaluate $(\log x)^2 dx$.

12. *(a)* Evaluate $\cos 3x.\sin 2x\,dx$.

(b) Evaluate $\cos^{10} .\sin^3 d$.

13. Find the area bounded by the curve $4x^2 \quad 9y^2 \quad 36$ using the method of integration.

14. *(a)* Find the volume of the solid obtained by revolving the ellipse $25x^2 \quad 16y^2 \quad 400$ about its minor axis.

(b) Find the RMS value of xe^x between $x \quad 1$ to $x \quad 3$.

15. *(a)* Solve $\frac{dy}{dx} \quad \frac{y}{x} \quad x$.

(b) Solve $(D^2 \quad D \quad 6)y \quad 2 \quad e^{2x}$.

16. Solve $x^3 \quad 3xy^2 \; dx \quad 3x^2y \quad y^3 \; dy \quad 0$.

17. *(a)* Solve $(D^2 \quad 9)y \quad \cos 2x$.

(b) Solve $(D^2 \quad D \quad 1)y \quad 1 \quad x$.

18. *(a)* Evaluate $\int_4^8 \frac{1}{x} dx$ approximately by dividing the interval [4, 8] into 4 equal parts using trapezoidal rule.

(b) Solve $\frac{dy}{dx} \quad \frac{x \quad y}{x \quad y}$.

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