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C09–A–302/C09–AA–302/C09–AEI–302/C09–CH–302/
C09–CHST–302/C09–IT–302/C09–MET–302/
C09–MNG–302/C09–PKG–302/C09–TT–302

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BOARD DIPLOMA EXAMINATION, (C–09)
MARCH/APRIL—2014
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) Answer should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Evaluate $(2x \quad 3)^4 \, dx$.

2. Evaluate $\dfrac{\cos(\log x)}{x} dx$.

3. Evaluate $\dfrac{dx}{\sqrt{9 \quad x^2}}$.

4. Evaluate $x^7 \quad \dfrac{3}{x} \quad \sin x \; dx$.

5. Evaluate $xe^{2x} dx$.

6. Evaluate $_0{}^{/2} \log \tan x \, dx$.

7. Find the area bounded by the parabola $y \quad x^2$, x-axis and the lines $x \quad 1$, $x \quad 2$.

8. Solve $\dfrac{d^2y}{dx^2} \quad 4y \quad 0$.

9. Solve $(1 \quad y^2)\,dx \quad (1 \quad x^2)\,dy \quad 0$.

10. Form the differential equation of the family of curves, $y \quad Ae^x \quad Be^{\ x}$ where A, B are arbitrary constants.

PART—B

10×5=50

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

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

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

11. *(a)* Evaluate $\dfrac{1}{x^2 \quad 6x \quad 25}\,dx$.

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

12. *(a)* Evaluate $\sin 6x \cos 2x\,dx$.

(b) Evaluate $\sin^3 x \cos^6 x\,dx$.

13. Find the area enclosed by the ellipse $4x^2 \quad 9y^2 \quad 36$.

14. *(a)* Find the volume of the solid generated by revolving the area enclosed between the circle $x^2 \quad y^2 \quad 9$ about x-axis.

(b) Find the RMS value of $\sqrt{\log x}$ between $x \quad 1$ and $x \quad e$.

15. Solve $(D^2 \quad 3D \quad 2)y \quad x$.

16. *(a)* Solve $\dfrac{dy}{dx} \quad y\cot x \quad \text{cosec}x$.

(b) Solve $(D^2 \quad 4D \quad 8)\,y \quad e^{2x}$.

17. Solve $(3x^2 \quad y^2)dy \quad (x^2 \quad 3y^2)dx \quad 0$.

18. The velocity of a train which starts from rest is given by the following table. The time is recorded in minutes from the starts and speed in miles per hour :

Minute	2	4	6	8	10	12	14	16	18	20
Miles/hour	10	18	25	29	32	20	11	5	2	0

Estimate approximately the total distance run in 20 minutes using Simpson's rule.

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