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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/PKG-302/C09–TT–302/C09–RAC–302

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BOARD DIPLOMA EXAMINATION, (C–09)

APRIL/MAY—2015

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.

1. Evaluate : $\frac{e^{\sqrt{x}}}{2\sqrt{x}}\,dx$

2. Evaluate : $\frac{dx}{\sqrt{x^2 \quad 9}}$

3. Evaluate : $(\sec^2 x \quad e^x \quad \sin x)\,dx$

4. Evaluate : $\frac{\sin(\log x)}{x}\,dx$

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5. Evaluate : $\int e^x (x^2 \quad 2x)\,dx$

6. Evaluate : $\int_0^1 (x^{10} \quad 1)\,dx$

7. Find the area bounded by the curve $2y \quad x^2$, x-axis between $x \quad 1$ and $x \quad 3$.

8. Solve : $x^{12}dy \quad y^{12}dx \quad 0$

9. Find the particular integral of $(D^2 \quad 4D \quad 4)y \quad e^{3x}$

10. Form the differential equation of family of curves $y \quad Ae^{2x} \quad Be^{\ 2x}$, where A, B are arbitrary constants.

PART—B

10×5=50

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

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

11. *(a)* Evaluate : $\dfrac{x \quad 2}{(x \quad 1)(x \quad 3)}\,dx$

(b) Evaluate : $x^3 e^{4x}\,dx$

12. *(a)* Evaluate : $\sin 4x \cos 2x\,dx$

(b) Evaluate : $\cos^3 \ d \quad \sin^9 \ d$

13. *(a)* Find the volume of the solid obtained by revolving the region of parabola $y^2 \quad 4ax$ cut off by its latus rectum and revolved about x-axis.

(b) Find the RMS values of $\sqrt{\log x}$ over $x \quad 1$ to $x \quad e$.

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14. *(a)* Prove that $\int_0^{/2} \frac{\cos x}{\cos x \quad \sin x} dx \quad \frac{}{4}$.

(b) Find the area bounded by the circle $x^2 \quad y^2 \quad a^2$ using integration.

15. *(a)* Solve : $x\frac{dy}{dx} \quad 2y \quad \log x$

(b) Solve : $(D^2 \quad 3D \quad 2)y \quad e^{3x}$

16. *(a)* Solve : $(D^2 \quad 4)y \quad \cos 3x$

(b) Solve : $(D^2 \quad 4)y \quad x^2$

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

18. *(a)* Evaluate $\int_0^1 \frac{dx}{1 \quad x^2}$ using trapezoidal rule by taking 5 ordinates.

(b) Solve : $(y\cos x \quad \sin y \quad y)dx \quad (\sin x \quad x\cos y \quad x)dy \quad 0$

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