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BOARD DIPLOMA EXAMINATION, (C–09)

MARCH/APRIL—2014

DEEE—THIRD SEMESTER 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 $\frac{1}{x(\log x)^2}\,dx$.

2. Evaluate $2xe^{x^2}\,dx$.

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

4. Evaluate $xe^{x}dx$.

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

6. Find the area bounded by the parabola $y \quad x^2$, x-axis and the lines $x \quad 2$, $x \quad 3$.

7. Evaluate $\int_4^5 x^2 dx$.

8. Form the differential equation of family of curves $y \quad A\cos 2x \quad B\sin 2x$. Where A, B are arbitrary constants.

9. Find the particular integral of $(D^2 \quad 5D \quad 6)y \quad e^{4x}$.

10. Solve $\sqrt{(1 \quad y^2)}\,dx \quad \sqrt{(1 \quad x^2)}\,dy \quad 0$.

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 $\frac{2x \quad 3}{(x \quad 1)(2x \quad 3)}\,dx$.

(b) Evaluate $x^2 e^{5x}\,dx$.

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

(b) Evaluate $\cos^3 \quad \sin^6 \quad d$.

13. Find the area enclosed by the circle $x^2 \quad y^2 \quad 16$ 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 major axis.

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

15. Solve $(x^2 \quad y^2)\frac{dy}{dx} \quad xy$.

16. *(a)* Solve $(D^2 \quad D \quad 1)y \quad 2\sin 3x$.

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

17. *(a)* Solve $\frac{dy}{dx} \quad y\cot x \quad \text{cosec}\, x$.

(b) Solve $(D^2 \quad 5D \quad 6)y \quad 3e^{5x}$.

18. *(a)* Evaluate $\int_0^1 x^2 dx$ approximately by dividing the interval [0, 1] into 10 sub-intervals using trapezoidal rule.

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

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