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C16–C–301/C16–CM–301/C16–IT–**301**

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BOARD DIPLOMA EXAMINATION, (C–16)

OCT/NOV—2018

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

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

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

3. Evaluate $\int_0^{\frac{}{2}} \sin^2 x.dx.$

4. Find the RMS value of $\sqrt{27 \quad x^2}$ over the interval (0, 3).

5. Find $L \ (t^2 \quad 1)^2$.

6. Find $L^{1}\left\{\frac{2s \quad 5}{(s \quad 2)^2 \quad 4}\right\}$.

7. Find a_0 in the Fourier series expansion of $F(x) = e^x$ in the interval (,).

8. Solve $(e^x \quad 1)\sin y\, dy + e^x \cos y dx = 0$.

9. Solve $(D^2 \quad 3D \quad 5)y \quad 0$.

10. Form differential equation for the family of curves $y \quad Ae^{2x} \quad Be^{\ 2x}$.

PART—B

10×5=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 $\int \sin 5x.\cos 7x.dx$.

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

12. *(a)* Evaluate $\int x^3 e^{5x} dx$.

(b) Evaluate $\int_0^{\frac{}{2}} \frac{\sin^{12} x}{\sin^{12} x \quad \cos^{12} x} dx$.

13. *(a)* Find the area bounded between the parabolas $y^2 \quad 16x$ and $x^2 \quad 16y$.

(b) Find the volume of the solid generated when the region of the circle $x^2 \quad y^2 \quad 16$ is revolved about a diameter.

14. *(a)* A curve is drawn to pass through the points given by the following table :

x	1	1.5	2	2.5	3	3.5	4
y	3	3.4	3.7	2.8	2.7	2.6	2.1

Calculate the area bounded by the curve, x-axis and the lines $x = 1$ $x = 4$ using trapezoidal rule.

(b) Find $L\{t.e^{2t} \sin 3t\}$.

15. *(a)* Find $L \dfrac{e^{2t} \quad e^{3t}}{t}$.

(b) Find $L^{1} \dfrac{s}{s \quad 2^{2}}$.

16. Obtain the Fourier half range Cosine series and Sine series for $f\ x \quad x$ in the interval (0,).

17. *(a)* Solve $x\dfrac{dy}{dx} \quad 2y \quad x^2 \log x.$

(b) Solve $(x^2 \quad y^2 \quad a^2)x\,dx \quad (x^2 \quad y^2 \quad b^2)y.dy \quad 0.$

18. *(a)* Solve $(D^2 \quad 3D \quad 2)y \quad \cos 3x, where\ D \quad \dfrac{d}{dx}.$

(b) Solve $(D^2 \quad 3D \quad 2)y \quad x^2$, where $D \quad \dfrac{d}{dx}.$

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