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CI6–EE–301/C16–CHPP–301/C16–PET–301

6237

BOARD DIPLOMA EXAMINATION, (C–16)

OCT/NOV—2017

DECE—THIRD SEMESTER EXAMINATION

ENGINEERING MATHEMATICS-II

Time : 3 hours] [*Total Marks* : 80

PART—A 3×10=40

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, $\sqrt{1 \quad \cos 2x}dx$

2. Evaluate, $\frac{1}{\sqrt{25 \quad x^2}}dx$

3. Evaluate, $\int_0^{/2} \frac{\cos x}{2 \quad \sin x}dx$

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

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

6. Find $L^{-1}\left\{\frac{1}{S^2 - 4} - \frac{3S}{S^2 - 9}\right\}$

7. Write the formulae for finding Fourier coefficients in Fourier series expansion of f(x) in the interval $(0, 2\pi)$.

8. Form the differential Equation by Eliminating the asbitrary constants from $y = A\cos 4x + B\sin 4x$.

9. Solve $\frac{dy}{dx} = \frac{1 + y^2}{1 + x^2}$

10. Solve $D^2 + 16D + 64y = 0$

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, $\int \sin^3 \cos^6 \, d$

(b) Evaluate, $\int \frac{1}{x^2 + 8x + 25} dx$

12. *(a)* Evaluate, $\int x^2 e^{-3x} dx$

(b) Evaluate, $\int_0^{\pi/2} \frac{\sqrt{\cot x}}{\sqrt{\cot x} + \sqrt{\tan x}} dx$

13. *(a)* Find the R.M.S value of $y = \sqrt{8 + 2x^2}$ between x=0, x=2.

(b) Find the volume of the solid generated by revolving the Ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ about x-axis.

14. *(a)* Calculate the approximate value of $\int_{-3}^{3} x^4\,dx$ using Trapezoidal rule by dividing [–3,3] into 6 equal parts.

(b) Find $L\{te^{2t}\cos 5t\}$.

15. *(a)* Find $L^{-1}\left\{\frac{1}{S^2 - 5S - 6}\right\}$

(b) Using convolution theorem find $L^{-1}\left\{\frac{1}{s - a}\,\frac{1}{S - b}\right\}$

16. Find the half-range cosine series for the function $f(x) = x - x^2, 0 < x < 1$.

17. *(a)* Solve, $(ax + hy + g)\,dx + (hx + by + f)\,dy = 0$.

(b) Solve, $\frac{dy}{dx} - \frac{2y}{x} = 3x$

18. *(a)* Solve, $(D^2 - 2D - 1)\,y = 4e^{3x}$

(b) Solve, $(D^2 - 5D + 4)\,y = x^2$.

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