



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, $\int \sqrt{1 - \cos 2x} dx$

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

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

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

5. Find $L = \int_1^2 t^2 dt$

*

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 .

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

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

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

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, $\int \sin^3 x \cos^6 x dx$

(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.

A.A.N.M & V.V.R.P.R POLYTECHNIC, GUDLAVALLERU, KRISHNA...AP

*

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 $L^{-1} te^{2t} \cos 5t$.

15. (a) Find $L^{-1} \frac{1}{s^2 - 5s + 6}$

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

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, $D^2 - 5D - 4 y = x^2$.
