



C14-EE-301/C14-CHPP-301/C14-PET-301

4243

BOARD DIPLOMA EXAMINATION, (C-14)

MARCH/APRIL—2017

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.

1. Evaluate :

$$(\operatorname{cosec}^2 x \ a^x \ \cos x) dx$$

2. Evaluate :

$$\frac{\cos(\log x)}{x} dx$$

3. Evaluate :

$$e^x \frac{1}{x} \frac{x \log x}{x} dx$$

4. Evaluate :

$$\frac{1}{\sqrt{1-x^2}} dx$$

/4243

1

[ Contd...

WWW.MANARESULTS.CO.IN

5. Evaluate : \*

$$\int_0^{\pi/3} \frac{\cos x}{1 + \sin x} dx$$

6. Solve :

$$\frac{dy}{dx} = \frac{y}{x}$$

7. Find the differentiate equation corresponding to  $y = A + Be^x$ , where  $A$  and  $B$  are arbitrary constants.

8. Solve :

$$\frac{dy}{dx} = y + 2x$$

9. Find the median of the following data :

50, 60, 100, 75, 90, 80, 95, 85, 45, 70, 55

10. Find the range and coefficient of range from the following table :

Size	0-10	10-20	20-30	30-40
Frequency	5	8	12	15

\*

### PART—B

10×5=50

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

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

11. (a) Evaluate :

$$\int \frac{1}{\sqrt{x^2 + 2x + 3}} dx$$

/4243

2

[ Contd...

(b) Evaluate <sup>\*</sup> :

$$x^3 \log x \, dx$$

12. (a) Evaluate :

$$\sin 3x \cos x \, dx$$

(b) Evaluate :

$$\frac{1}{5 - 4 \cos x} \, dx$$

13. (a) Evaluate :

$$\cos^{10} \sin^3 \, d$$

(b) 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
$y$	2	2.4	2.7	2.8	3	2.6	2.1

Using Simpson's rule, find the approximate area bounded by the curve, the  $x$ -axis and the lines  $x = 1$  and  $x = 4$ .

14. (a) Find the area between curves  $y^2 = 4x$  and  $x^2 = 4y$ .

(b) Find the RMS value of  $\sqrt{\log x}$  over the range  $x = 1$  to  $x = e$ .

15. (a) Evaluate :

$$\int_0^1 \frac{x}{\sin x} \, dx$$

(b) Find the volume of the solid generated, when the area bounded by the curve  $y = x^2 - 1$  and  $x$ -axis is rotated about  $x$ -axis.

16. Solve :

$$(y^2 - 2xy)dx + (2xy - x^2)dy = 0$$

17. (a) Solve :

$$x \frac{dy}{dx} - \frac{2y}{x} = \frac{1}{x^3}$$

(b) Solve :

$$(ax + hy + g)dx + (hx + by + f)dy = 0$$

18. Calculate the correlation coefficient for the following heights in inches of fathers (X) and their sons (Y) :

X	65	67	66	71	70
Y	58	60	70	69	61

\*\*\*