

C14-C-301/C14-CM-301

4225

BOARD DIPLOMA EXAMINATION, (C-14) MARCH/APRIL—2017 DCE—THIRD SEMESTER EXAMINATION

ENGINEERING MATHEMATICS—II

PART-A

3×10=30

Total Marks: 80

Instructions: (1) Answer all questions.

- (2) Each question carries three marks.
- 1. Evaluate:

Time: 3 hours]

$$(e^{a\log x} e^{x\log a}) dx$$

2. Evaluate

$$\frac{e^{\tan^{-1}x}}{1 \quad x^2} \ dx$$

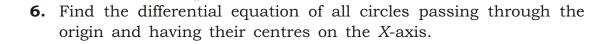
3. Evaluate:

$$\frac{1}{1} \frac{\tan}{\tan} d$$

4. Evaluate:

$$\int_{0}^{1} \frac{x^3}{1 + x^8} dx$$

5. Find the mean value of $\sin^3 x$ from x = 0 to x = 2.



$$\frac{dy}{dx}$$
 $\frac{y(2x - 5)}{2x^2}$

 $(\cos x \quad x \cos y)dy \quad (\sin y \quad y \sin x)dx \quad 0$

9. Find the mean and mode of the numbers:

10. State the merits and demerits of quartile deviation.

PART-B

 $10 \times 5 = 50$

Instructions: (1) Answer any five questions.

- (2) Each question carries ten marks.
- 11. (a) Evaluate

$$\frac{x}{x^2 + 8x + 12} dx$$

(b) Evaluate:

$$\sin^4 x \, dx$$

12. (a) Evaluate:

$$\frac{1}{5 + 4\cos x} dx$$

(b) Evaluate:

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

13. (a) Evaluate

$$x^2e^{-5x} dx$$

(b) Evaluate:

$$0^{\frac{1}{2}} \frac{1}{1 \cot x} dx$$

- **14.** (a) Find the area bounded by the curve $4x^2 9y^2 36$ using the method of integration.
 - (b) Find the RMS value of $\log x$ over the range x = 1 to x = e.
- **15.** (a) Find the volume of a right circular cone of height h and base radius r using integration.
 - (b) Obtain the value of $0 \frac{6}{1 x^2} dx$ using trapezoidal rule by taking n = 6.

16. Solve :

$$(3x^2 y^2)dy (x^2 3y^2)dx = 0$$

17. (a) Solve:

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

(b) Solve:

$$\frac{dy}{dx}$$
 $y \sec x \tan x$

18. (a) Find the standard deviation for the following data:

(b) In a contest, two judges ranked eight candidates A, B, C, D, E, F, G and H in order of their performance, as shown in the following table. Find the rank correlation coefficient:

Students	Α	В	C	D	E	F	G	Н
Judge—I	5	2	8	1	4	6	3	7
Judge—II	4	5	7	3	2	8	1	6