* 4201 *

C14–A–301/C14–AA–301/C14–AEI–301/
C14–CH–301/C14–CHST–301/C14–IT–301/
C14–MET–301/C14–MNG–301/C14–TT–301/
C14–BM–301

4201

BOARD DIPLOMA EXAMINATION, (C–14)

MARCH/APRIL—2017

THIRD SEMESTER (COMMON) 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 :

$$\frac{\sec x}{\sec x \quad \tan x}\,dx$$

2. Evaluate :

$$\frac{1}{x(\log x)^2}\,dx$$

3. Evaluate :

$$\frac{x^2}{x^2 \quad 1}\,dx$$

4. Evaluate :

$$\int_0^{\frac{\pi}{2}} \sin^2 x\,dx$$

5. Find the mean square value of $y \quad \sqrt{x}$ over the range $x \quad 0$ to $x \quad 1$.

6. Form the differential equation by eliminating the arbitrary constants A and B from $y \quad A e^{2x} \quad B e^{\ 2x}$.

7. Solve :

$$(1 \quad e^{x})\frac{dy}{dx} \quad e^{x} \quad y$$

8. Solve :

$$\frac{dy}{dx} \quad \frac{2x \quad y}{x \quad y}$$

9. Find the median of the items

12, 15, 40, 23, 20, 17, 69, 75

10. Write the merits and demerits of standard deviation.

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 :

$$\frac{1}{5 \quad 3\cos x}\,dx$$

(b) Evaluate :

$$\sin^{3} x \cos^{5} x\,dx$$

12. *(a)* Evaluate :

$$\frac{1 \quad \sin x}{1 \quad \sin x}\,dx$$

(b) Evaluate :

$$\frac{x \quad 7}{(x \quad 3)(x \quad 2)^{2}}\,dx$$

13. *(a)* Evaluate :

$$x^2 \sin(3x \quad 4)\, dx$$

(b) Evaluate :

$$\int_0^{\frac{}{2}} \frac{\sqrt{\cot x}}{\sqrt{\cot x} \quad \sqrt{\tan x}}\, dx$$

14. *(a)* Find the area bounded by the parabola $y^2 \quad 4x$ and the line $x \quad y \quad 3$.

(b) Find the R.M.S. value of $x^2.e^{2x}$ over the interval $0 \quad x \quad 1$.

15. *(a)* Find the volume of the solid obtained by revolving the area enclosed by the curve $x^2 \quad y \quad 3$, x-axis from $x \quad 1$ to $x \quad 3$, about x-axis.

(b) A river in 80 feet wide and the depth 'd' in feet at a distance x ft. from one bank is given by the following table :

x	0	10	20	30	40	50	60	70	80
d	0	4	7	9	12	15	14	8	3

Find the cross-section area of the river using Simpson's rule.

16. *(a)* Solve :

$$(y^2 \quad xy)dx \quad x^2 dy$$

(b) Solve :

$$\frac{dy}{dx} \quad \sin(x \quad y)$$

17. *(a)* Solve :

$$(x^2 \quad 2xy \quad 3y^2)dx \quad (4y^2 \quad 6xy \quad x^2)dy \quad 0$$

(b) Solve :

$$\frac{dy}{dx} \quad y\cos x \quad \frac{1}{2}\sin 2x$$

18. The following are the runs scored by two batsmen A and B in ten innings :

A	12	115	6	73	7	19	119	36	84	29
B	47	12	16	42	4	51	37	48	13	0

Who is the better score getter and who is more consistent?

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