

C14-A-AA-AEI-CH-CHST-CHPC-CHPP-CHOT-PET-PCT-C-CM-EC
-EE-IT-M-RAC-301

4201

BOARD DIPLOMA EXAMINATION, (C-14) MARCH/APRIL—2021 THIRD SEMESTER (COMMON) EXAMINATION

ENGINEERING MATHEMATICS - II

Time: 3 hours [Total Marks: 80

PART-A

 $4 \times 5 = 20$

Instructions:

- (1) Answer any five questions.
- (2) Each question carries four marks.
- (3) Answers should be brief and straight to the point and shall not exceed five simple sentences.
- **1.** Evaluate $\int \left(\sqrt{x} + \frac{1}{\sqrt{x}}\right) dx$.
- 2. Evaluate $\int \frac{\cos^2 x}{1-\sin x} dx$.
 - 3. Evaluate $\int \frac{dx}{9-x^2}$.
- **4.** Evaluate $\int_{-2}^{2} (x^2 7x + 3) dx$.
- 5. Find the mean value of $y^2 = 4x$, from x = 0 to x = 5.

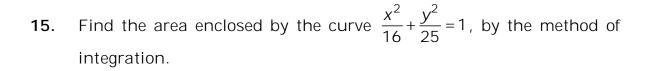
- **6.** Find the differential equation by eliminating the arbitrary constant 'c' from $\sin^{-1} x + \sin^{-1} y = c$.
- 7. Solve $\frac{dy}{dx} = e^{3x+2y} + x^2e^{2y}$.
- 8. Solve $\frac{dy}{dx} + \frac{2y}{x} = \frac{1}{x^3}$.
- **9.** Find the Median and Mode of the numbers 4, 10, 7, 15, 7, 3, 5, 3, 7.
- **10.** Find the standard deviation of 5, 10, 30, 40, 65.

Instructions: (1) Answer any four questions.

- (2) Each question carries fifteen marks.
- (3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. Evaluate
$$\int \frac{dx}{(1+x^2)(\tan^{-1}x)^3}$$
.

- **12.** Evaluate $\int \sin^3 x \cos^7 x \, dx$.
- 13. Evaluate $\int \frac{x}{x^2 3x + 2} dx$.
- **14.** Evaluate $\int_{-1}^{1} \log \left(\frac{7-x}{7+x} \right) dx$.



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

17. Solve
$$\frac{dy}{dx} - y \cot x = \sin x$$
.

18. Find the Spearman's Rank Correlation coefficient of ten participants in a contest are ranked by two judges as follows:

Α	1	6	5	10	3	2	4	9	7	8
В	6	4	9	8	1	2	3	10	5	7

