

C16-C-301/C16-CM-301/C16-IT-301

6222

BOARD DIPLOMA EXAMINATION, (C-16) OCT/NOV-2018

DCE—THIRD SEMESTER EXAMINATION

ENGINEERING MATHEMATICS II

Time: 3 hours]

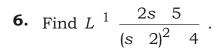
[Total Marks : 80

PART—A

 $3 \times 10 = 30$

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 $\sqrt{1 \sin 2x \cdot dx}$
- 2. Evaluate $\frac{\cos \log x}{x} dx$
- 3. Evaluate $\int_{0}^{2} \sin^2 x \, dx$.
- **4.** Find the RMS value of $\sqrt{27}$ x^2 over the interval (0, 3).
- **5.** Find $L(t^2)^2$.



- 7. Find a_0 in the Fourier series expansion of $F(x) = e^x$ in the interval (,).
- **8.** Solve $(e^x \ 1) \sin y \ dy + e^x \cos y dx = 0$.
- **9.** Solve $(D^2 \ 3D \ 5)y \ 0$.
- PART—B

 five questions.

 n carries to **10.** Form differential equation $y Ae^{2x} Be^{2x}$.

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

- (2) Each question carries ten marks.
- (3) The answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.
- 11. (a) Evaluate $\sin 5x \cdot \cos 7x \cdot dx$. (b) Evaluate $\frac{1}{5 + 4\cos x} dx$.

12. (a) Evaluate
$$x^3e^{5x}dx$$
.
(b) Evaluate
$$\frac{1}{2}\frac{\sin^{12}x}{\sin^{12}x\cos^{12}x}dx$$
.

- **13.** (a) Find the area bounded between the parabolas y^2 16x and x^2 16*y*.
 - (b) Find the volume of the solid generated when the region of the circle x^2 y^2 16 is revolved about a diameter.

14. (a) A curve is drawn to pass through the points given by the following table:

λ	С	1	1.5	2	2.5	3	3.5	4
į	J	3	3.4	3.7	2.8	2.7	2.6	2.1

- Calculate the area bounded by the curve, x-axis and the lines x = 1 x = 4 using trapezoidal rule.

 (b) Find $L\{t.e^{-2t}\sin 3t\}$.

 15. (a) Find $L = \frac{e^{2t} e^{3t}}{t}$.

 (b) Find $L^{1} = \frac{s}{s-2}$.

 16. Obtain the Fourier half range Cosine series and Sine series for f(x) = x in the interval (0, 0). 16. Obtain the Fourier half range Cosine series and f x x in the interval (0,).
 17. (a) Solve x dy/dx 2y x² log x.
 (b) Solve (x² y² a²)x dx (x² y² b²)y.dy 0.
- **18.** (a) Solve $(D^2 3D 2)y \cos 3x$, where $D \frac{d}{dx}$.
 - (b) Solve $(D^2 \ 3D \ 2)y \ x^2$, where $D \ \frac{d}{dx}$.