C14-C-401/C14-CM-401/C14-IT-**401**

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BOARD DIPLOMA EXAMINATION, (C-14)

MARCH /APRIL-2019

DCME - FOURTH SEMESTER EXAMINATION

ENGINEERING MATHEMATICS-III

Time:3 Hours Max.Marks:80

PART-A

10x3=30M

Instruction : 1) Answer **all** questions. Each question carries **three** marks.
2) Answers should be brief and stright to the point and shall not exceed five simple sentences.

1) Solve $(D^2+ 6D+4)y=0$

2) Solve $(D^3 -5D^2+ 8D-4)y=0$

3) Find the particular integral for $(D^2+9)y = e^{3x}$

4) State the first shifting and second shifting theorems of Laplace transforms.

5) Find $L\{\sin^2 t\}$

6) Find $L\{te^{-t}\}$

7) Find the inverse laplace transform of $\frac{6}{s^2+4}+\frac{1}{s-6}+\frac{1}{s^2}$.

8) Write the formulae for fouries seris of a function f(x) in the interval [c,c+ 2l].

9) If f(x)=x in $(-\pi,\pi)$ what is the values of "a_1 " in fourier series of f(x).

10) Two dice are thrown. Find the probability that none of the dice shows number 2 given that their sum is 7.

PART-B

10x5=50M

Instructions : 1) Answer any **Five** questions.
2) Each question carries **Ten** marks.
3) Answers should be comprehensive and criteria for valuation is the content but not the length of the answer.

11) (a) Solve $(D^2+2D-8)y = e^{-3x} + e^{-4x}$

(b) Solve $(D^2+2D+4)y = \sin 2x$

12) (a) solve $(D^2-1)y = 1+\cos 2x$.

(b) Find the particular integral of $(D^2+1)y = x$

13) (a) Find L $\{te^{-2t}\sin 3t\}$

(b) Find L $\{\frac{e^t+\cos t}{t}\}$

14) (a)Find $L^{-1}\{\frac{s+2}{s^2+4s+8}\}$

(b) Using convolution theorem find $L^{-1}\{\frac{1}{(x-a)(x-b)}\}$

15) Obtain the fourier series for the functilon $f(x)=x^2$ for the interval $(-\pi,\pi)$.

16) Obtain the fourier sine series for the function $f(x) = e^x$ for the interval $(0,\pi)$

17) Find $p(A\cup B)$ if

(a) $p(A) = \frac{1}{2}, P(B)=\frac{1}{4}, P(A\cap B)=\frac{1}{8}$

(b) p(A) 0.25, P(B)= 0.5, $P(A\cap B)$ = 0.16

(c) p(a) $\frac{2}{7}, P(B)=\frac{3}{5}$; A and B are disjoint

18) (a) A book containing 100 pages is opened at random. Find the probability that on the page a doublet is found

(b) If a page is randomly selected from a book of 100 pages, then find the probability that the sum of the digits of the pages is 10.

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