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C14–M–401/C14–CHOT–401/C14–RAC–401

4477

BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2016

DME—FOURTH SEMESTER EXAMINATION

ENGINEERING MATHEMATICS—III

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. Solve $(D^2 \quad 4D \quad 4)y \quad 0$.

2. Solve $y \quad 2y \quad 3y \quad 0$.

3. Find the particular integral of $(D^2 \quad 4D \quad 4)y \quad e^{\ 2x}$.

4. Find $L\{e^{2t} \quad 4t^3 \quad 2\sin 3t \quad 3\cos 3t\}$.

5. Find $L\ \dfrac{\sin t}{t}$.

6. Evaluate $_0\ te^{\ 3t}dt$ by using Laplace transform method.

7. Find the inverse Laplace transform of $\dfrac{5s \quad 10}{9s^2 \quad 16}$.

8. Find the value of a_0 in $f(x)$ x in the interval (0, 2) by Fourier's series.

9. Find the value of b_n in $f(x)$ $\cos x$ in (,) in Fourier's series expansion.

10. Write down the mathematical definition of probability.

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. Solve $(D^2 \quad 5D \quad 6)y \quad \sin x \quad e^{\ 2x}$.

12. *(a)* Solve $(D^2 \quad 9)y \quad \cos^2 x$.

(b) Solve $(D^2 \quad D \quad 2)y \quad x$.

13. Find *(a)* $L\{e^{\ t} t \sin 2t\}$, and *(b)* $L^{\ 1}\left\{\dfrac{s}{(s \quad 2)^2 \quad 4}\right\}$.

14. *(a)* Find $L^{\ 1}\left\{\dfrac{1}{(s \quad 1)(s \quad 2)}\right\}$.

(b) Solve $y \quad y \quad \sin 3t$ with $y(0) \quad y\,(0) \quad 0$, by using Laplace transform method.

15. Find the Fourier's series for $f(x) \quad x \quad x^2$ in the interval (,).

16. Find the half-range Cosine series for the function $f(x) \quad x \sin x$ in the interval (0,).

17. *(a)* A committee of two persons is selected from two men and two women. Find the chance that the committee will have *(i)* no man, *(ii)* one man, and *(iii)* two men.

(b) What is the probability that a leap year, selected at random, will have 53 Sundays?

18. *(a)* Two dice are tossed once. Find the probability of getting 'an even number on the first die or a total of 8'.

(b) A problem in statistics is given to three students *A*, *B*, *C* whose chances of solving it are $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$ respectively. If they try it independently, what is the probability, that the problem will be solved?

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