Ex/ME/5/MATH/T/111/2017(S)

B.Mechanical(Evening). Examination, 2017
(1ST YR, 1ST SEM, SUPPLY)
MATHEMATICS
PAPER - III

Full Marks : 100   Time: Three hours

Part - I
Answer any four questions $12.5 \times 4 = 50$

1. Find the Z-Transformations of the following functions:

(i) $f(n) = \cos nx$ (ii) $f(n) = a^n$

2. Solve the equation using Z-Transformation

$f(n+2) - 3f(n+1) + 2f(n) = 0$, given : $f(0) = 1,\ f(1) = 2.$

3. Find the Laplace Transformations of the following functions:

(i) $f(t) = t^2$ (ii) $f(t) = \sin \sqrt{t}$

4. Solve the equation using Laplace Transformation

$$\frac{d^2x}{dt^2} - 2\frac{dx}{dt} + 2x = 0 \ \ given : \ x(0) = x'(0) = 1$$

5. Find the Fourier Transformations of the following functions

(i) $e^{-|t|}$ (ii) $f(t) = Ne^{-\alpha t^2}$

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