



University of Central Punjab – FOIT&CS

Assignment 4 - DE

Marks: 20

Due Date: Feb 03, 2024

Q.1. [Marks: 5]

Find the following Laplace Transform

$$(i) \mathcal{L}\{(3 + e^{-2t})^2\} \quad (ii) \mathcal{L}\{e^{-3t} \cos ht\}$$

Q.2. [Marks: 5]

Find the Inverse Laplace

$$(i) \mathcal{L}^{-1}\left\{\frac{(s+1)^3}{s^4}\right\} \quad (ii) \mathcal{L}^{-1}\left\{\frac{3s-7}{s^2+21}\right\}$$

Q.2. [Marks: 10]

Use the Laplace transform to solve the following initial-value problem

$$y'' + y = \sqrt{2} \sin(\sqrt{2} t) ; y(0) = 10 ; y'(0) = 0$$