

Marks

Family Name.....First Name..... ID.....[3]

Find the Laplace Transform of the function $f(t)$

$$f(t) = (1 - e^t + 3e^{-4t}) \cos 5t \quad [7] \text{ Marks}$$

Solution

$$\mathcal{L}\{(1 - e^t + 3e^{-4t}) \cos 5t\} =$$

$$\mathcal{L}\{\cos 5t - e^t \cos 5t + 3e^{-4t} \cos 5t\}$$

$$= \frac{s}{s^2 + 25} - \frac{s - 1}{(s - 1)^2 + 25} + \frac{3(s + 4)}{(s + 4)^2 + 25}$$

Marks [2]

[2.5]

[2.5]