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MATRIC NO: 18/ENG06/020

DEPARTMENT: MECHANICAL ENGINEERING

ANSWERS:

F12-3. Given: t= 4s

S= 0, when t= 0

X=?

V= (4t – 3t2) m/s

V= 4t – 3t2 (i) we integrate

S = 4t2/2 – 3t3/3 + S0 (ii)

Given that t = 0, S0 = 0

S = (4(0)2)/2 – (3(0)3)/3 + 0

S = 0m

Equ (ii) becomes

S = 2t2 – t3 + 0

At t= 4secs

S= 2(4)2 – (4)3 + 0

S= 2(16) – 64

S= 32 – 64

S = -32m

F12-4. Given: v= (0.5t3-8t) m/s

Find a =? When t= 2s

V= 0.5t3-8t, we differentiate to find the acceleration

a= 1.5t2-8

a= (1.5 x t x t) – 8

a= 6-8

a= -2m/s2

F12-8. Given: v= (20 - 0.05s2) m/s

Find a =? When s= 15m

V= (20 - 0.05s2)

A= dv/dt

dv/dt = dv/ds. ds/dt

dv/ds = -0.1s, ds/dt = (20 - 0.05s2)

A = (-0.1s) (20 - 0.05s2)

When s= 15m

A= (-0.1x15) (20 – (0.05x (52)))

A= 13.125m/s2