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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