NAME: AGOMOH CHUKWUEMEKA EMMANUEL

DEPT: COMPUTER ENGINEERING

MATRIC NO: 18/ENG02/013

COURSE: ENGINEERING MECHANICS

1. V= (4t-3t^2) m/s t=0, s=0, t=4

V= ds/dt= (4t-3t^2)

Therefore ds/dt=(4t-3t^2)

Sds=S^4(4t-3t^2)dt

S=[4t^2/2-3t/3^3]4<>0

S=[2t^2-t^3]4<>0

Therefore S= [2t^2-t^3]4-[2t^2t^3]0

S=2(4)^2-(4)^3-[0]

S=-32m therefore S=32m

That means the position of the particle is to the left of the organ.

2. V= (0.5t^3-8t)m/s, t=2s , a=?

a= dv/dt

a=d/dt (0.5t^38t)

at t=2s

=1.5(2) ^2-8

=(1.5x4)-8=-2m/s^2

Therefore the implies that the particles is decelerating

3. a=(4t^2-2)

a=dv/dt=(4t^2-2))

dv/dt=(4t^2-2)

Sdv=S(4t^2-2)dt

V=(4t^3/3-2t+C1)m/s

Therefore V=ds/dt=(4t^3/3-2t+C1)m/s

Ds/dt=(4/3t^3-2t+C1)

Sds=S(4/3t^3-2t+C1)dt

S=(4t^4/3x4-2t^2/2+c1t +c2)m

S=1/3t^4-t^2+c1t +c2

At =t=0s S=-2m

=S=1/3t^4-t^2+c1t+c2

-2=1/3(0)^4-(0)^2+(1(0)+c2

Therefore c2=-2

At t=2, S=-20m

S=1/3t^4-t^2+c1-2

-20=1/3t(2)^4-(2)^2+cc1(2)-2

-20=16/3-4+2c1-2

-20=-2/3+2c1

2c1=-20+2/3

2c1=-19.33

C1=-19.33/2=-9.67

Therefore c1=-9.67

C2=-2

Therefore S=1t^4-t^2+c1t +c2

S=1/3t^4-t^2-9.67t-2

At t=4s S=?

S=1/3(4)^4-(4)^2-9.67(4)-2

S=256/3-16-38.6668-2

S=0.56/3-56668

S=28.667m Therefore the position of the particles is 28.67m

4. V= (20-0.055^2)

a= dv/dt=dv/ds x ds/dt

=dv/ds x v

Therefore

a=Vdv/ds

dv/ds=-0.15

Therefore

a=(20-0.055^2) (-0.15)

at S=15m

a=(20-0.05(15)^2) (-0.1(15))

a=(20-11.25) (-1.5)

a= (8.75) (-1.5)

a= 13.125m/s^2

a=-13.1m/s^2

Therefore the acceleration of the particle at S=18m is due -13.125m/s^2 which implies that the particles is decelerating.