CLASS11 MID TERM XAM

PHYSICS MARKING SCHEME

1 marks

[1][b][2] d [3]a [4]b [5] a [6] c [7] b [8]c [9] b [10] c

2 marks

[11]

T = $\frac{2m1m2g}{m1+m2}$

Yes[1/2] , m1, m2 , g [11/2marks]

[12].

Graph both positive and negative

Graph only positive side

[13] definition of v ins

Slope of the tangent

[14] S1 = 2 t + ½ gt^2

S2 = ½ gt^2

S1 - S2 = 20 [1/2]= 2t or t = 10 s

OR

S = ut + ½ gt^2 = - 4.5 x 5 + ½ x 9.8 x $[5]^2$ = 100m

[15]

$\cos\Theta = \frac{a \cdot b}{ab} = \frac{3\sqrt{2}}{3 \times 2}$ or $\Theta = 45^0$

[16] unit vector

difference between scalar and vector product of 2 vectors

[17] diagram labelled

derivation the maximum height reached by a projectile

final answer

3 marks

[18] dimension of P = $ML^{-1}T^{-2}$

dimension of a = $ML^{5}T^{-2}$

Dimension of b = L^{3}

[19]V = u + at

0 = 20-9.8 t1 or t1 = 2.04s

$S = ut + ½ gt^2$

Height reached S = 20 x 2.04 - ½ x9.8 x [2.04 x 2.04] = 40.8 -20.39 = 20.41m

Time to reach ground = 45.41 = ½ g x $t2^2$

t2 = 3.1s

total time = 2.04 + 3.1 = 6.05 s

[20]

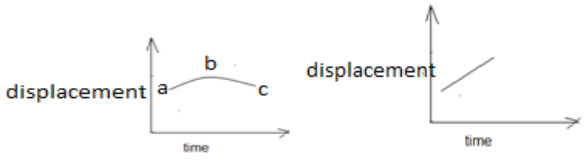
Distance covered by the man in t sec = 10t

Distance covered by bus in t s = ½ 1 x t^2

Ie 48+ t^2 = 10t

Solve to find t as 8 sec

[21]



graph downwards

[22]

'a' and angular acceleration $'\alpha'$

[23] triangle law of vector addition. R' of 2 vectors 'P' & 'Q' makes angle $'\theta'$ between them.

[24]

horizontal range = $u^2 \sin 2\Theta / g = \frac{[40]^2 \sin 2x45}{10} = 160m$

BC = 340 –AB = 340- 160 = 180 & V = BC/t =180/t –[1]

$2u \sin\frac{\theta}{g} = t$

80 sin45 = t or t = 56.5 s

And v = 180/56.5 = 3.18m/s

OR

200t = 400 sinθ xt or $\theta = 30$

[25][a] any 2 uses of dimensions.

[b]

$T = k r^x m^y G^z$

$T = L^x M^y [M^{-1} T^{-2} L^3]^z$

Z = -1/2,x = 3/2 , y =-1/2

OR

[a] limitations of dimensions [any 2]

[b]

$V = K [ML^{-1} T^{-2}]^x ML^{-3}]^y$

X = ½ and y = -1/2

X = -y

[26][a]velocity- time graph,

,[i] V = U + at [ii] $S = ut + \frac{1}{2} at^2$

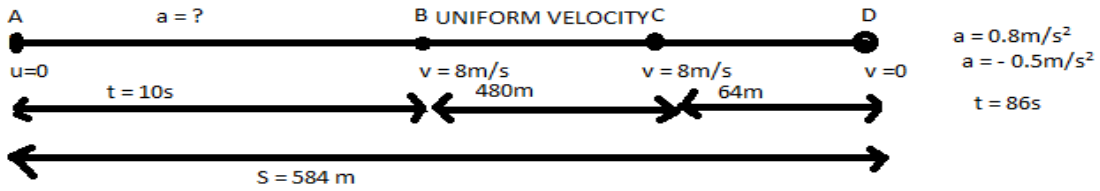
[b]No, [i] in circular motion-after one complete rotation .[ii] in vertical motion- a stone is thrown vertically upwards and received by the thrower

OR

[a]the equation $V^2 = U^2 + 2as$

[b] A car starts from rest and accelerates uniformly for 10s to a velocity of 8m/s. It then returns at a constant velocity and is finally brought to rest in 64m with constant retardation. The total distance travelled by the car is 584m.Find the acceleration, retardation, and the total time taken?

[20]



[27][a trajectory of a projectile? a projectile is a parabola.

[b]

4m/s

OR

[a] uniform circular motion always accelerated.

[b]the centripetal acceleration acting

[28]Case study

[b][ii]d [iii]a [iv]c [v]b

[29]

[i]c[ii]d [iii]b [iv]d [v]b