MI June 07

1)

RF=0 TSin 20 = 12 R+1=0 T(05 20 = W => T = 12 = 35NW=35(0s20

Impulse on A = change in momq A. Mam A before = 0.3x8=2.41 MomA after = 0.3x-2=-0

b) Total Man before = 0.3×8+Mx4 Impulse = 3Ns

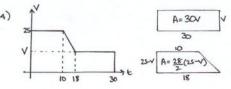
Total morn after = 0.3x-2+ mx2 = -0.6+2m

8.4-4m=-0.6+2m => 6m=3 => m=0.5kg

3)

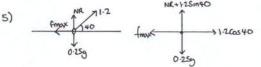
2 mgx0.6 = 8gx0.15

Rf 1=0 => NR = 15g AD NRXX=89x075+29x15 15g x = 9g x=0.6m



b) 14(25-V)+30V = 526 => 350+16V = 526 => V=11ms

gradient = -14 => acc = -1.75 ms-2 => dec=1.75



a) Rf 1=0 => NR+1.25 m40 = 0.25g => NR = 1.68 N

b) frax = MXNR => frax = MX1.68 RF=0 => MX1-68 = 1-2(as 40 => M=0.55

P) 0.5g-T=0.5a Q) T-mg= ma A) U=0 E=1.5 S=3.15

find a, S=ut+zat2 = 3.15= \(\frac{1}{2}\)ax1.52 a= 2.8 ms.2 find v, V=u+at => V= 2.8×1.5 V= 4.2ms-1

- P) 0.5g-T=1.4 = T=3.5N
- a) T-mg=ma \$ 3.5-mg=2.8m \$ 3.5=12.6n
- d) Inextensible -> acceleration of Panda mat be equal
- e) Vel P when it strikes the ground is 4-21 => vel @=42 When P hits the ground, string is slade = no tension => acc =-9. u1=4.2 af=-9.8 v1=0

V=U+at => 0=4.2-9.8t => t=0.428 sec to reach max height

- =) time to become taut again = 0.428x2 = 0.86sec
- 7) 12:00 (3;-4;) -> 14:30 (8;+11;) change in Por = 5;+15;
- a) Vel = charge in fos =  $\frac{\text{Si+IS}}{2.5}$  = 2i+6j ms<sup>-1</sup>
- b starting + t(Ve1) = (31-4;)+(2:+6j) b = (3+2t) i + (-4+6t);
- c) C = (9+6k)i+(20+xt); at interception, i and j most be equal 3+2t=-9+6t => 4t=12=> t=3h/s -4+6t=20+2t => 14=20+2t => 2t=-6 => 2t=-6
- d) Vel B = 2i+6; => Speed B = \(\frac{12^2+6^2}{} = \tau{40} = 2\tau{10} Vel C = 6-2; => Speed C = 62+22 = 540 = 2510