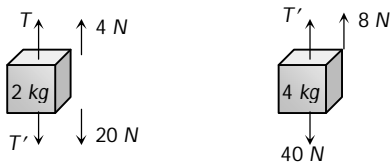


## WEEKLY TEST TYM SOLUTION 18 AUGUST 2019

### PHYSICS

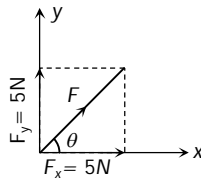
1. (d) Application of Bernoulli's theorem.
2. (c)
3. (b)  $F = \sqrt{(F)^2 + (F)^2 + 2F \cdot F \cos \theta} \Rightarrow \theta = 120^\circ$
4. (d) Range of resultant of  $F_1$  and  $F_2$  varies between  $(3+5)=8N$  and  $(5-3)=2N$ . It means for some value of angle ( $\theta$ ), resultant 6 can be obtained. So, the resultant of 3N, 5N and 6N may be zero and the forces may be in equilibrium
5. (a) FBD of mass 2 kg FBD of mass 4kg



$$T - T' - 20 = 4 \quad \dots(i) \quad T' - 40 = 8 \quad \dots(ii)$$

By solving (i) and (ii)  $T' = 47.23 N$  and  $T = 70.8 N$

6. (a)
7. (b)  $|\vec{F}| = \sqrt{5^2 + 5^2} = 5\sqrt{2} N$   
and  $\tan \theta = \frac{5}{5} = 1$   
 $\Rightarrow \theta = \pi/4$ .



8. (c) 

$$\text{Acceleration of the system} = \frac{P}{m+M}$$

$$\text{The force exerted by rope on the mass} = \frac{MP}{m+M}$$

9. (c) Acceleration =  $\frac{(m_2 - m_1)}{(m_2 + m_1)} g$   
 $= \frac{4-3}{4+3} \times 9.8 = \frac{9.8}{7} = 1.4 m/sec^2$

10. (a)  $\text{Acceleration} = \frac{m_2}{m_1 + m_2} \times g = \frac{1}{2+1} \times 9.8 = 3.27 \text{ m/s}^2$

and  $T = m_1 a = 2 \times 3.27 = 6.54 \text{ N}$

11. (d)  $T = \frac{2m_1 m_2}{m_1 + m_2} g = \frac{2 \times 10 \times 6}{10 + 6} \times 9.8 = 73.5 \text{ N}$

12. (b)  $a = \frac{m_2}{m_1 + m_2} g = \frac{3}{7+3} \times 10 = 3 \text{ m/s}^2$

13. (c)  $T_1 = \left( \frac{m_2 + m_3}{m_1 + m_2 + m_3} \right) g = \frac{3+5}{2+3+5} \times 10 = 8 \text{ N}$

14. (c)  $T \sin 30 = 2kg \text{ wt}$

$\Rightarrow T = 4 \text{ kg wt}$

$T_1 = T \cos 30^\circ$

$= 4 \cos 30^\circ$

$= 2\sqrt{3}$

15. (b)  $a = \left( \frac{m_1 - m_2}{m_1 + m_2} \right) g \Rightarrow \frac{g}{8} = \left( \frac{m_1 - m_2}{m_1 + m_2} \right) g \Rightarrow \frac{m_1}{m_2} = \frac{9}{7}$