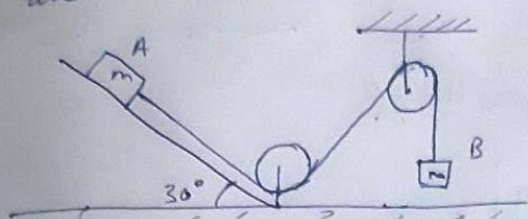


Problems :-

① (Medium) Two blocks A and B of same mass are connected through a string, and arranged as shown in the figure. When the system is released from rest and there is no friction, then



- (A) Acceleration of A is g
- (B) Acceleration of A is $g/2$
- (C) Tension in the string is zero
- (D) Tension in the string is $\frac{mg}{4}$

Now :-

<u>Concepts Used</u>	
①	Constraint Relations
②	FBD
③	Pulley Systems
<u>Formulae Used</u>	
①	$\vec{F}_{net} = m\vec{a}$

By the tricks mentioned before we get accelerations of A and B to be same. Let that be 'a'.

Then $mg - T = ma$ — (i)

$T + mg \sin \theta = ma$ — (ii)

$\Rightarrow a = \frac{g(1 + \sin \theta)}{2} = \frac{3g}{4}$

$\Rightarrow T = mg - ma = \frac{mg}{2}(1 - \sin \theta) = \frac{mg}{4}$