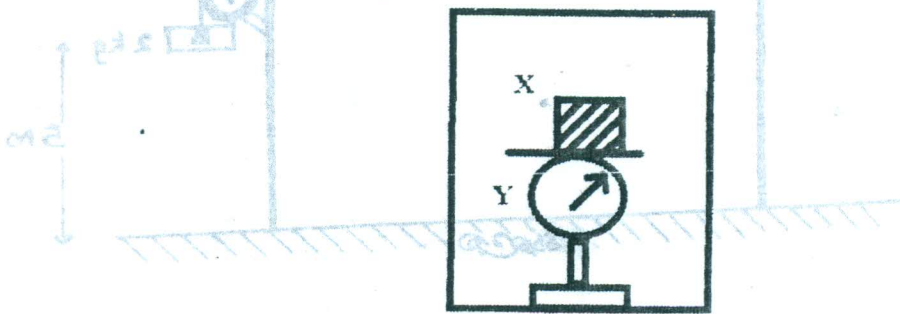
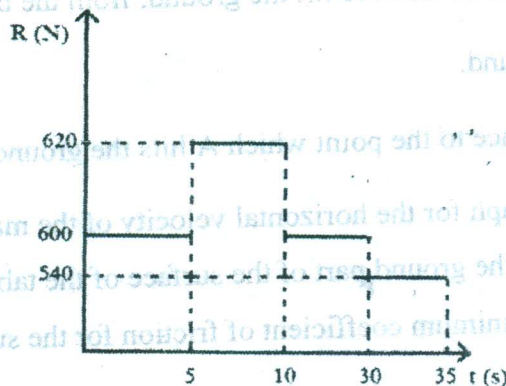


Physics - Grade 12

- (01) A mass M is placed in a scale of mass m , which is placed in a lift as shown in the figure.

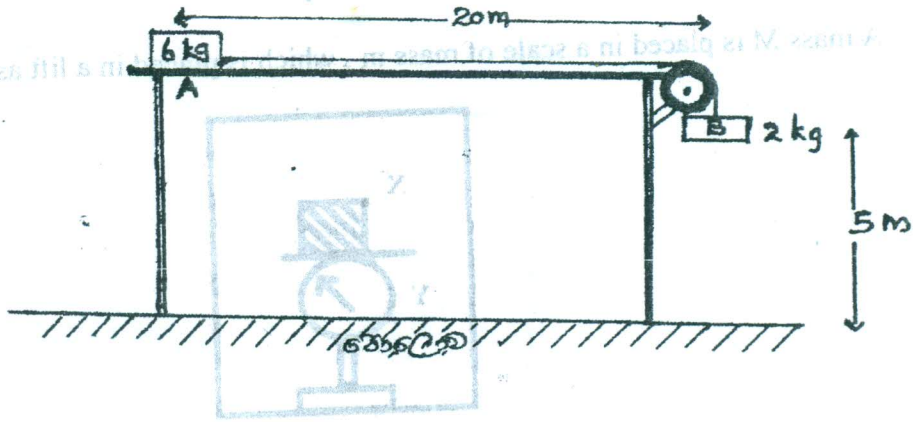


- a) If the lift is moving upward with an acceleration a ,
- (i) Give an expression for the reading of the scale using M , a & g .
 - (ii) Give the reason for the difference between the real weight Mg of the object and the reading of the scale.
- b) A person entered the lift & after 5s, it began to move. The variation of the reaction force R on the person exerted by the floor of the lift with time t , is shown by the graph given below. It is taken $t = 0$ at the instant he entered the lift.



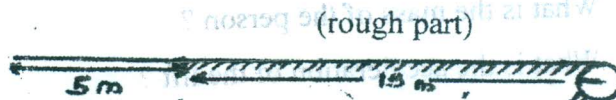
- i) What is the moving direction of the lift. Upward or downward?
 - ii) What is the mass of the person?
 - iii) What is the acceleration of the lift?
 - iv) What is the deceleration of the lift?
 - v) Draw the velocity - time graph for the whole motion
 - vi) Find the maximum velocity of the lift.
 - vii) Find the total distance moved by the lift.
- c) Consider that the walls of the lift are transparent. When the lift is moving up with a constant velocity, person on the ground projected an object vertically upward with an initial velocity which is lower than the velocity of the lift. Explain the motion of the object as seen by a person in the lift.

(1)



Two masses A (6kg) and B (2kg) are connected to the ends of a light inextensible string, which passes over a frictionless pulley, which is fixed to the edge of a smooth table as shown in the figure. At the beginning B is at rest then it is released slowly.

- i) Find the time taken for B to hit the ground and the velocity which it hits the ground.
- ii) What is the time taken for A to reach the edge of the table and its velocity at the edge?
- iii) Calculate the total time taken for A to hit the ground, from the beginning and the resultant velocity of A when it hits the ground.
- iv) Find the horizontal distance to the point which A hits the ground, from the edge of the table.
- v) Draw a velocity time graph for the horizontal velocity of the mass 'A'. during the whole motion
- vi) To avoid 'A' by hitting the ground, part of the surface of the table is made rough as shown in the diagram. Calculate the minimum coefficient of friction for the surface for 'A' not to move away from the table.



surface of the table

P.L.L.
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