MACHINES AND INCLINED PLANES

KCSE QUICK REVISION

Compilation of Possible Questions in Physics Likely to be examined in KCSE.

A Special Analysis of Prediction Questions that may be Tested in KCSE from this Topic in Form 3.

PHYSICS

SERIES 1

For Marking Schemes

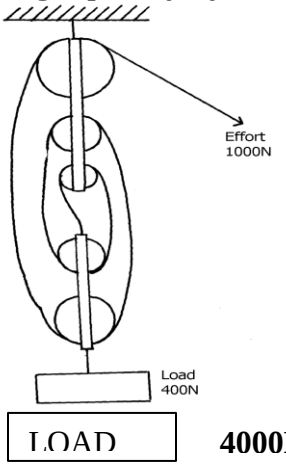
Mr Isaboke 0746 222 000 / 0742 999 000

MWALIMU CONSULTANCY

MACHINES & INCLINED PLANES

1. An inclined plane of length 5m is used to raise a body of mass 60kg to the back of a lorry. If the plane is inclined at an angle 25° from the horizontal, calculate the efficiency of the system given that a constant force of 650 N is used to push the body up the plane
2. **Vicky** performed an experiment using a pulley system as shown in the figure.

Figure 13



Effort
1000N

4000N

(a) What is the V.R. of the system?

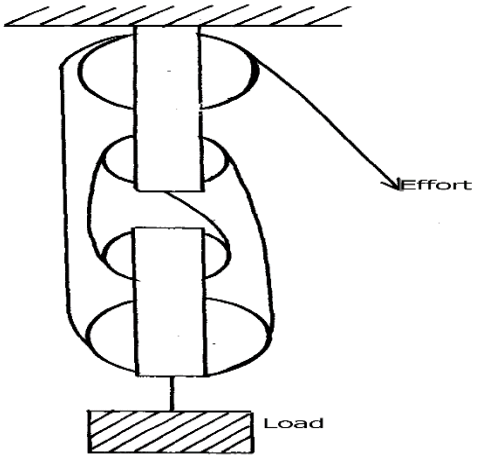
(b) Determine the M.A. of the system. *

(c) Calculate the efficiency of the system.

(d) Explain why efficiency of a practical machine is always less than 100%

(e) If the load moves a distance of 5 cm. Find the work done on the load.

3. The figure below shows a pulley system being used to raise a load. Use the information given in the figure to answer questions (**a**) and **(b**)

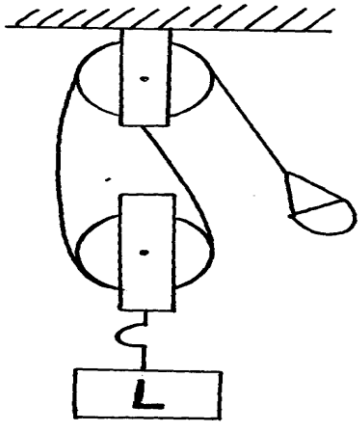


(ii) If a load of 100N is raised by applying an effort of 48N, determine the efficiency of the system.

4. **(a)** (i) Define the term **velocity ratio (V.R)**

(ii) Name **one** machine that has a velocity ratio of less than one (V.R < 1)

(b) The figure below shows a set-up used to find the mechanical advantage of a pulley system



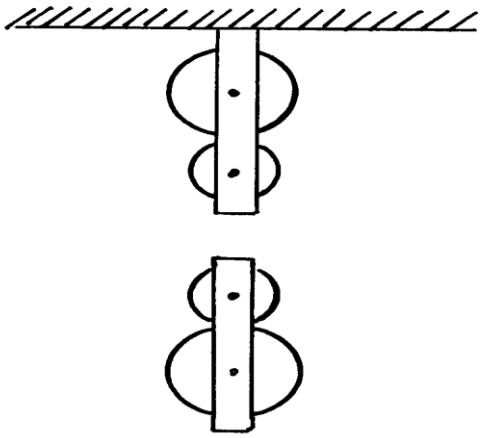
On the axes provided sketch a graph of mechanical advantage (M.A) against load (L)

(c) A hydraulic machine is used to raise a load of 100kg at a constant velocity through a height of 2.5m. The radius of the effort piston is 1.4cm while that of the load piston is 7.0cm. Given that the machine is 80% efficient, calculate:-

(i) The effort needed

(ii) The energy wasted in using the machine

5. **(i) complete** the diagram below to show how the pulley can be used to raise a load **L** by applying an effort **E**



(ii) The pulley system above has a mechanical advantage of 3. Calculate the total work done when a load of 60N is raised through a height of 9M

For Marking Schemes/Answers

Contact Mr Isaboke

0746-222-000

OR

0742-999-000

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0746 222 000 / 0742 999 000

mwalimuconsultancy@gmail.com

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MR ISABOKE