

Term II Examination-2019
S.3 PHYSICS PAPER TWO
Time: 2hrs

INSTRUCTIONS

Answer any four questions in this paper

Where necessary use

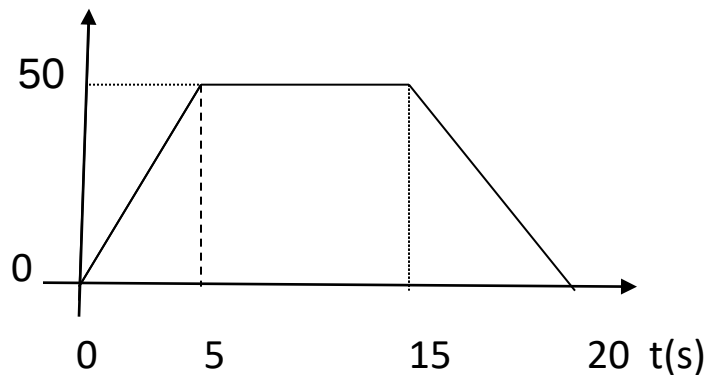
- Acceleration due to gravity = 10ms^{-2}
- Density of water = 1000kgm^{-3}

1a(i) Define the following

- i) Distance
- ii) Displacement
- iii) Acceleration (3mks)

ii) state the equations of motion of a body thrown vertically upwards (3mks)

b) The graph below shows motion of a body of mass 2kg accelerating from rest



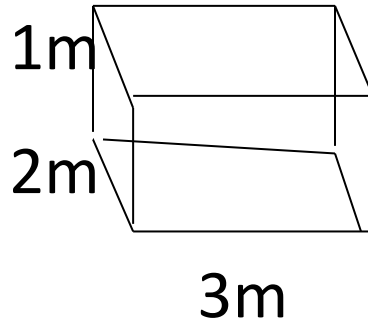
ii) use the graph to calculate the

- a) Total distance covered (4mks)
- b) Distance covered when moving with uniform velocity (1mk)
- c) Acceleration (2mks)
- d) Retardation (2mks)

c) A body starts from rest and accelerates uniformly at 2ms^{-2} or 3s . calculate the total distance travelled (2 mks)

2a(i) Define pressure and state its SI units (2mks)

ii) The box below weighs 60N . determine the minimum and maximum pressure it exerts on the ground (4mks)



bi)state Pascal's principle (1mk)

ii) state any three properties of pressure in liquids (3mks)

iv) Briely explain the crushing can experiment (3mks)

c) A hydraulic press machine is used to raise a load W placed on a piston o cross sectional area of 100cm^2 by using an effort o 20N at a piston of cross sectional area o 2cm^2 . Calculate the

i) pressure transmitted through out the liquid

ii) load W (5mks)

e) Calculate the pressure at the bottom of a swimming pool 100cm deep. (2mks)

3a) (i) Define the following

i) Machines

ii) Mechanical advantage

iii) Velocity ratio

iv) Efficiency (4mks)

ii) A pulley system of velocity ratio 3 is used to lift a load of 100N. the effort needed is found to be 60N.

- a) Draw the pulley system (3mks)
- b) Calculate the efficiency of the system (3mks)
- c) Give two reasons why the efficiency of the system is always less than 100% (2mks)
- d) Give two ways of increasing the efficiency of the pulley system (2mks)

b) A block of mass 3kg held at a height of 5m above the ground is allowed to fall freely to the ground. Calculate the work done (3mks)

c) An electric bulb is rated 100W. how much electrical energy does the bulb consume in 2 hours? (3mks)

4a) Define moment of a force and state its SI units (2mks)

bi) Give two factors affecting moments (2mks)

ii) state the principle of moments (2mks)

c) Briefly explain an experiment to verify the principle of moments (5 mks)

d) A uniform metre rule is pivoted at 30cm mark. It balances when a body of 20g is suspended at 25cm mark.

i) Draw a force diagram for the arrangement

ii) calculate the weight of the metre rule (4mks)

e(i) Define centre of gravity (1mk)

ii) state three types of stability (3mks)

f). Give two ways of increasing stability of a body (1 mk)

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