500/1
GENERAL
SCIENCE
Paper 1
2024

UGANDA NATIONAL EXAMINATIONS BOARD

Uganda Certificate of Education

GENERAL SCIENCE

Paper 1
physics

SCORING GUIDE

GENERAL SCIENCE PHYSICS, 500/ 1

ITEM	EXPECTED RESPONSES/ ANSWERS
1	• Requirement, charging a battery: D.C source of greater emf than the battery to be charge • Positive supply is joined to the positive of the battery to be charged, and negative to negative • Engine of the battery to be charged is started while the connections are in place • When vehicle starts, its left on and connections removed • Chairpersons battery will be charged • Level of acid should be inspected and topped up • Acid never be added except in rare cases where spillage occurs. • Battery shld be charged regularly using recommended charging current • A battery should be charged once a month when not in use.
2(a)(i)	• Sound waves require a material medium for propagation, from one place to another. So air offers that medium. • Air particles that receive sound energy from the source transfer this energy to the sound energy from the source transfer this enegy to the neighbouring molecules • Process results into rarefactions and compressions as the source vibrates/ produces sound
(ii)	• Sound waves from machines through the holes need to be stopped to minimize the noise that goes to the neighbouhood. • Using locally produced materials like sponges, matresses, plywoods and other soft material are used to fix /cover hole and create soundproof on the walls inside.
(b)	• V = ʎf • 330 = 0.4 x f • F = 330/0.4 • F = 825 Hz • Since frequency of the sound waves from the work shop is in the range of harmless frequencies, the noise / sound they hear is not harmful to the ears
3(a)(i)	Design of the tank • Tank must be of thick walls at the base • Build the tank with materials that do not dissolve in water • Thick walls increase the area that supports the water and this reduces the pressure • Hence minimizing the effect of the weight of the water
(ii)	Supply of the water • A pump house to contain the pump at the underground tank should be put to pump water to the supply tank situated some level higher than all the buildings in the school. • Supply tank, supplies to other tanks situated in different locations/points of interest • Outlets on tanks should be at the bottom so that water comes out with high pressure

(b)	Volume of the tank = length x width x height 2 x 4 x 6 = 48 m^3 48 x 1000 = 48000litres Capacity of the tank is 48000 litres . Since the school requires 45000 litres, then the tank will be able to keep the required amount.
4.(a)	$\frac{80}{100} = \frac{MA}{VR}$, M.A $= \frac{L}{E} = \frac{16}{5}$ 0.8 $= \frac{3.2}{VR}$, VR = 4 4 $= \frac{No\ of\ teeth\ on\ X}{No.of\ teeth\ on\ Y}$ Ny = 28/4 = 7 teeth Gear Y will have 7 teeth
(b)	Reduction in out: • Machine doing work on its own parts other than in the load, this reduces the output • Friction reduces efficiency Increase in temperature: • Temperature increase is due to friction on the moving parts of the machine