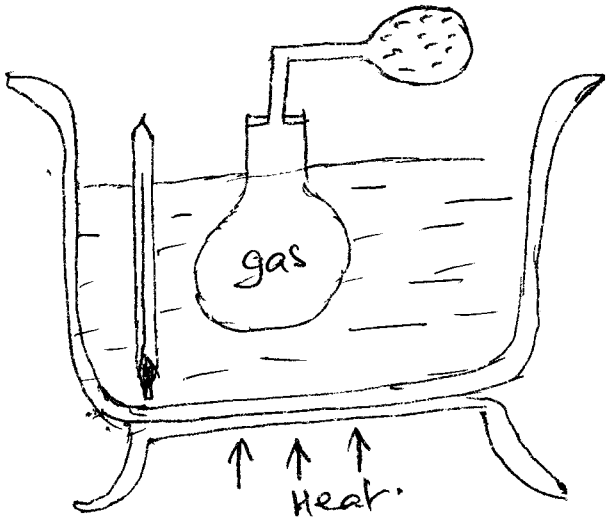
GATITU SECONDARY SCHOOL, P.O. BOX 327 – 01030, GATUNDU

FORM 4 PHYSICS MID TERM EXAMINATIONS. TERM 1 2016.

1. A basic laboratory rule states that Never heat a glass bottle with its stopper on!. Explain the purpose of this precaution. (2mks

2a) State the pressure law of gases. (2mks

b) To verify pressure law the following set up was used.



i) State the measurement that would be taken in the above experiment. (2mks

ii) Explain how the measurement taken above may be used to determine the absolute temperature. (4mks

c) A certain mass of a gas occupies $2.4m^3$ at a pressure of 1.6×10^5 pa and a temperature of 27°c. Determine the pressure of the gas when its volume is $3.0m^3$ at a temperature of 196°c. (4mks

3a) Distinguish between latent heat of fusion and specific latent heat of fusion of a substance. (2mks

b) A 2kg mass of ice at -10oc is converted into steam at 100oc under standard atmospheric pressure. Given that specific latent heat of fusion of 15 is 336kj/kg. Specific latent heat of vapourisation is 2260kj/kg, specific heat capacity of ice is 2100 j/kgk. And specific heat capacity of water = 4200 j/kg.k. Calculate the heat energy required to convert ice until all the mass turns into steam. (10mks

4. A turn table of a record player makes 45 revolutions per minute. Calculate

i) Its angular velocity in radians per second. (2mks

ii) The linear speed at a point 0.12m from the centre. (2mks

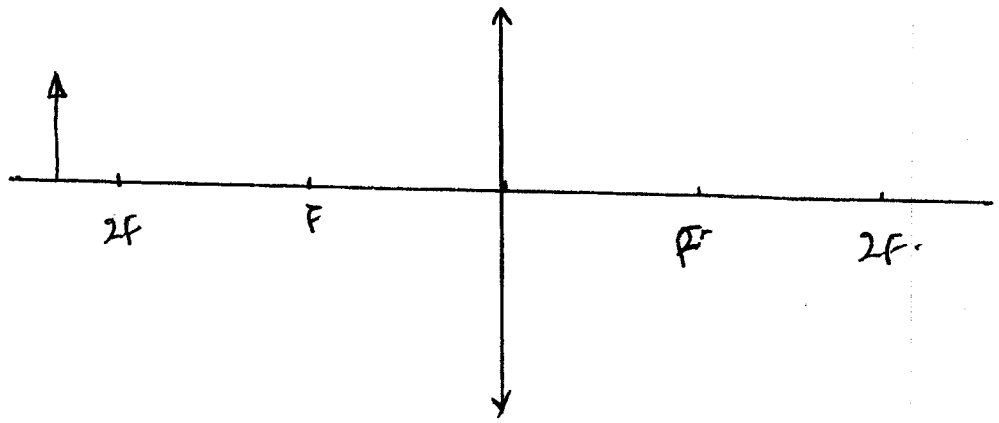
b(i) What is meant by centripetal force. (1mk

ii) An object of mass 0.5kg at the end of a light string is whirled round in a vertical circle of radius 2.0m with a constant speed of 10m/s. What are the maximum and minimum tensions in the string. (4mks

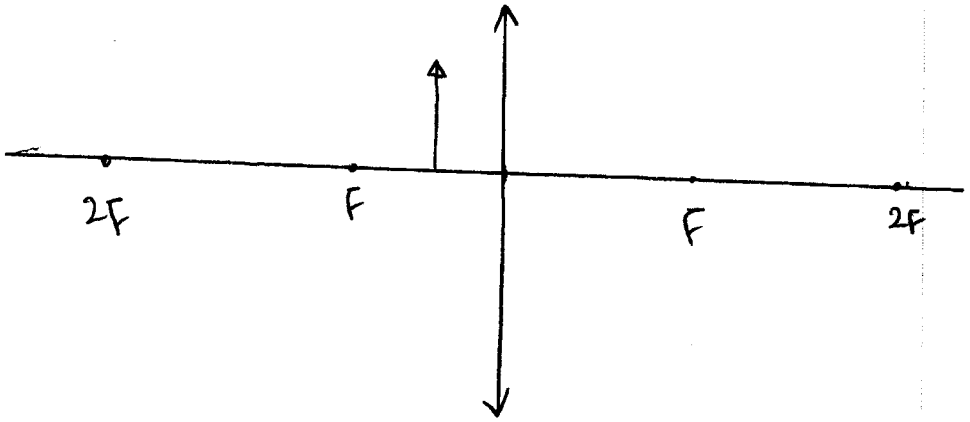
c) Explain why wet clothes put in a drum get dried faster when the drum of the drying machine is rotated at high speed. (3mks

5(i) Mention two uses of a convex lens. (2mks

ii) Complete the ray diagram below to show the position of the image. (4mks



iii) (4mks



iv) You are provided with the following apparatus. A convex lens, screen with cross wires, metre rule and a source of light.

Describe how you can use the above to determine the focal length of the lens. (5mks

v) The focal lengths of the objective and eye piece lenses of a compound microscope are 1.5cm and 4.0cm respectively. When the object is placed 2 cm from the objective lens, the final image formed is 28cm from the eye piece. Calculate the distance between the lenses. (4mks

6(i) Define upthrust. (2mks

ii) State Archimede's principle. (2mks

iii) A body of mass 5kg weighs 30N in a liquid. Find the upthrust on the body due to the liquid. (2mks

iv) A piece of solid Mass 800g and volume $30cm^3$ is fully immersed in a liquid of density $800kg/m^3$. Calculate the weight of the solid in the liquid. (4mks

v) A metal block of density $7800kg/m^3$ weighs 117N in air and 105N in a liquid when wholly immersed. Calculate the density of the liquid. (3mks

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