**GATITU MIXED SECONDARY SCHOOL**

**FORM 4 PHYSICS**

**PAPER 1**

 **SECTION I 25MKS**

1. State three types of equilibrium (3 marks)
2. State two ways of increasing the strength of an electromagnet (2 marks)
3. Distinguish between a real and a virtual image (2 marks)
4. Complete the table below

|  |  |  |
| --- | --- | --- |
| Type of cell | Electrodes | Electrolyte |
| Simple cell |  |  |
| Dry cell |  |  |
| Acid accumulator |  |  |

1. State two properties that make a liquid suitable as a thermometric substance. (2 marks)
2. Give two external factors that affect the rate of evaporation of a liquid. (2 marks)
3. State the major difference between mechanical and electromagnetic waves. (2 marks)
4. An object is projected vertically upwards at a speed of 15ms-1. How long will it take to return to the same level of projection? (3 marks)
5. Explain why a glass container with thick wall is more likely to crack than the one with a thin wall when a very hot liquid is poured into them. (2 marks)
6. The pressure of atmosphere is about 1×105pa. What force does it exert on a desktop of sides 0.8m by 0.6m? How long can the desktop support this force? (2 marks)
7. A bicycle has wheels 66cm in diameter. Its crank wheel has 44 teeth and the rear has 16 teeth. If crank has radius 16.5cm, calculate the velocity ratio. (2 marks)

 **SECTION II 45MKS**

1. a) Define force (1 mark)

b) Give an example of a contact force and non-contact force. (1 mark)

c) State the three effects of force (3 marks)

d) Why do people float higher in salty water than in fresh water? (1 mark)

e) An object weighs 980N on the earth’s surface.

i) What is its mass? (1 mark)

ii) If the same object weighs 360N on another planet. Calculate the gravitational field of that planet. (2 marks)

1. a) Define heat. (1 mark)

b) Define temperature. (1 mark)

c) State two advantages of a liquid-in-glass thermometer (2 marks)

d) Name three features of the liquid to be used in the thermometer. (3 marks)

e) Give two effects of anomalous expansion of water. (2 marks)

1. a) Define pressure (1 mark)

 b) State two factors affecting pressure in fluids. (2 marks)

 c) State the principle of transmission of pressure in fluids (1 mark)

 d) A manometer containing water shows a difference in level of 10cm when connected to a laboratory gas supply. Calculate the pressure exerted by the gas supply. (Atmospheric pressure= 100 000N/m2 (2 marks)

 e) In a hydraulic press, the surface areas of the pistons are 6.0×10-4 m2 and 2.0×10-4 m2. If a force of 30N is applied downwards on the smaller piston, with what force does the larger piston move upwards? (3 marks)

1. a) Name two sources of sound. (2 marks)

 b) State the three factors that affect the speed of sound. (3 marks)

 c) A person standing 150m from the foot of a cliff hears and echo after 0.9sec, what is the speed of sound in air? (2 marks)

 d) An echo sounder sends sound signals to the bottom of the lake and receives the feedback after 012seconds. Calculate the depth of the lake. (Speed of sound= 340ms-1) (2 marks)

1. a) Define cell capacity. (1 mark)

b) Name three advantages of secondary cell (3 marks)

 c) Give two disadvantages of the simple cell. (2 marks)

 d) Differentiate between a primary and a secondary cell. (1 mark)

 e) Calculate the amount of current if 144C of charge flow through a point in 30 minutes. (2 marks)