

Name of the Student: _____

Max. Marks : 18 Marks

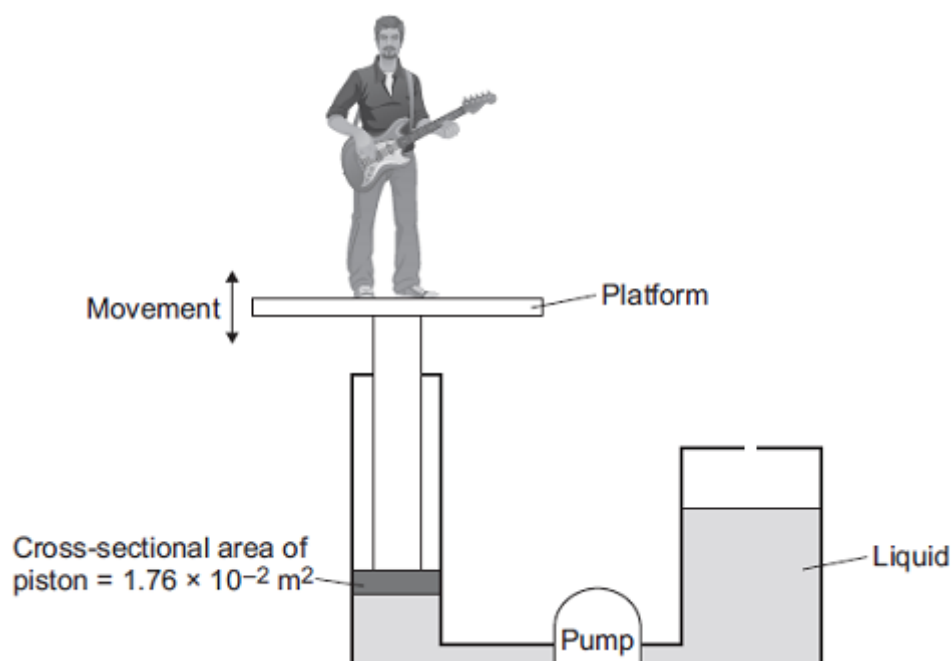
Time : 18 Minutes

Q1.

Musicians sometimes perform on a moving platform.

Figure 1 shows the parts of the lifting machine used to move the platform up and down.

Figure 1



- (a) What type of system uses a liquid to transmit a force?

(1)

- (b) The pump creates a pressure in the liquid of $8.75 \times 10^4 \text{ Pa}$ to move the platform upwards.
Calculate the force that the liquid applies to the piston.

Force = _____ N

(2)

- (c) The liquid usually used in the machine is made by processing oil from underground wells. A

new development is to use plant oil as the liquid.

Extracting plant oil requires less energy than extracting oil from underground wells.

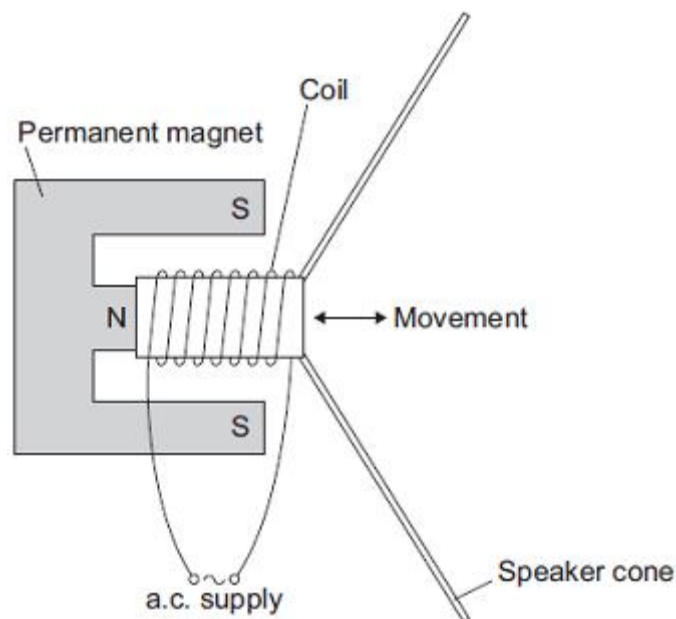
Suggest an environmental advantage of using plant oil.

(1)

- (d) Musicians often use loudspeakers.

Figure 2 shows how a loudspeaker is constructed.

Figure 2



The loudspeaker cone vibrates when an alternating current flows through the coil.

Explain why.

Q2.

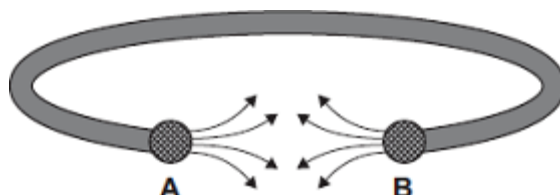
- (a) Some people wear magnetic bracelets to relieve pain.

Figure 1 shows a magnetic bracelet.

There are magnetic poles at both **A** and **B**.

Part of the magnetic field pattern between **A** and **B** is shown.

Figure 1



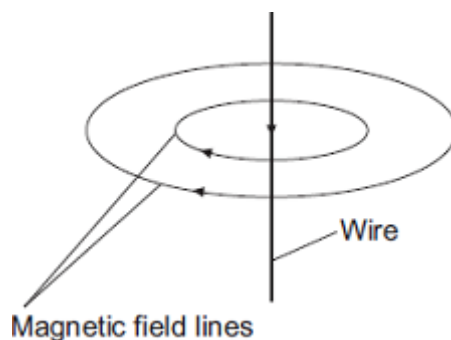
What is the pole at **A**? _____

What is the pole at **B**? _____

(1)

- (b) **Figure 2** shows two of the lines of the magnetic field pattern of a current-carrying wire.

Figure 2



The direction of the current is reversed.

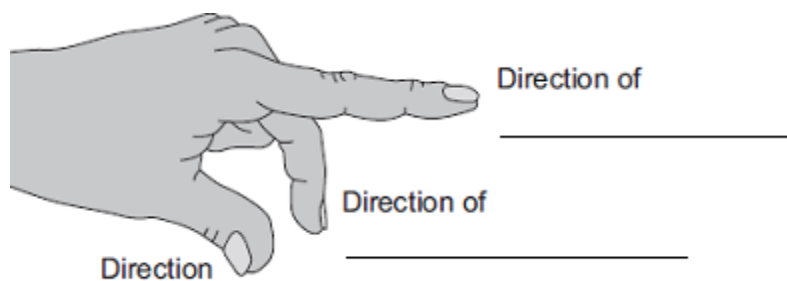
What happens to the direction of the lines in the magnetic field pattern?

(1)

- (c) Fleming's left-hand rule can be used to identify the direction of a force acting on a current-carrying wire in a magnetic field.

- (i) Complete the labels in **Figure 3**.

Figure 3

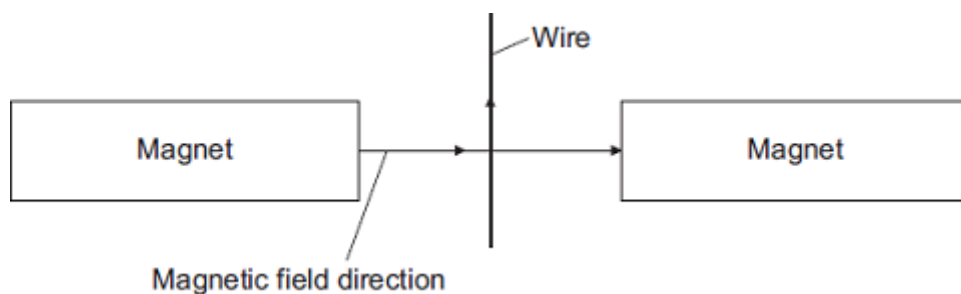


(2)

(ii) **Figure 4** shows:

- the direction of the magnetic field between a pair of magnets
- the direction of the current in a wire in the magnetic field.

Figure 4



In which direction does the force on the wire act?

(1)

(iii) Suggest **three** changes that would **decrease** the force acting on the wire.

1. _____
2. _____
3. _____

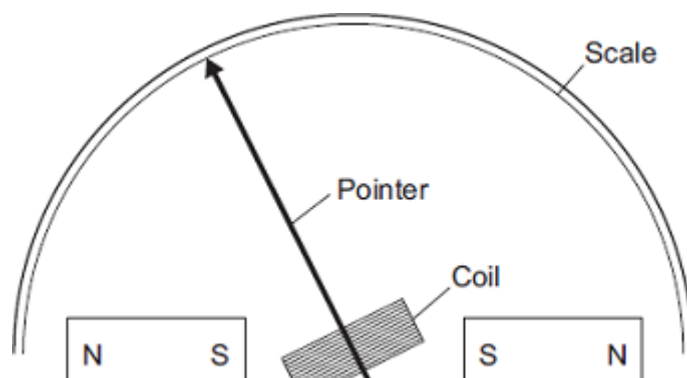
(3)

(d) **Figure 5** shows part of a moving-coil ammeter as drawn by a student.

The ammeter consists of a coil placed in a uniform magnetic field.

When there is a current in the coil, the force acting on the coil causes the coil to rotate and the pointer moves across the scale.

Figure 5



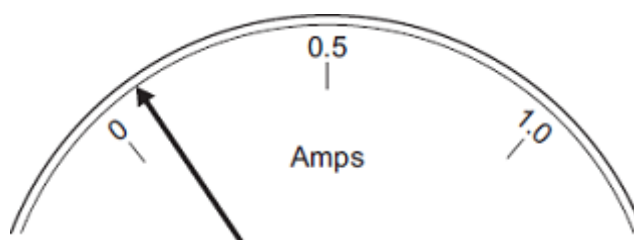
- (i) The equipment has **not** been set up correctly.

What change would make it work?

(1)

- (ii) **Figure 6** shows the pointer in an ammeter when there is no current.

Figure 6



What type of error does the ammeter have?

(1)

(Total 10 marks)