Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic : 12_Magnetism and the motor effect

Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Q1.

Two long, thin magnets are held with their N-poles facing each other.
The force, *F*, between the magnets can be calculated using the equation

$$F = \frac{K}{d^2}$$

where

K is a constant value
d is the distance between the magnets.

(i) The magnets are 4.0 cm apart.

The force between the magnets is 1.2 N.
Calculate the value of *K*.
State the unit.

(3)

K = ... unit .....

(ii) The magnets are held the same distance apart but with the N-pole of one magnet now facing the S-pole of the other magnet.

The value of *K* does not change.
State how the force would compare with the force in part (i).

(1)

.....

.....

(Total for question = 4 marks)

Q2.

Two long, thin magnets are held with their N-poles facing each other.
The force, *F*, between the magnets can be calculated using the equation

$$F = \frac{K}{d^2}$$

where

K is a constant value
d is the distance between the magnets.

(i) The magnets are 4.0 cm apart.

The force between the magnets is 1.2 N.
Calculate the value of *K*.
State the unit.

(3)

K = ...unit.....

(ii) The magnets are held the same distance apart but with the N-pole of one magnet now facing the S-pole of the other magnet.

The value of *K* does not change.
State how the force would compare with the force in part (i).

(1)

.....

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(Total for question = 4 marks)

Q3.

A straight piece of wire is 0.713 m long.

It is placed at right angles to a uniform magnetic field of 0.47 T.

The force on the wire is 0.089 N.

Calculate the current in the wire.

Use an equation from the formula sheet. Give your answer to an appropriate number of significant figures.

(2)

current = ... A

(Total for question = 2 marks)

Q4.

A student investigates moments of forces.

Figure 14 shows the apparatus used.

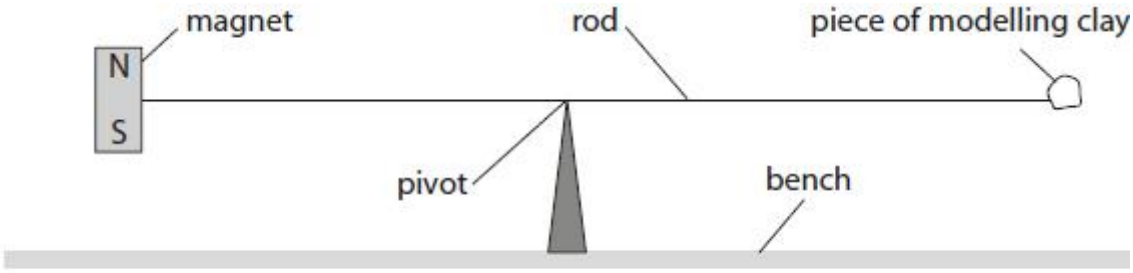

Figure 14

The pivot is under the centre of the rod.

A magnet is fixed to one end of the rod.

A piece of modelling clay is fixed to the other end of the rod.

The system is in equilibrium.

(a) The student fixes a coil to the bench under the magnet as shown in Figure 15.

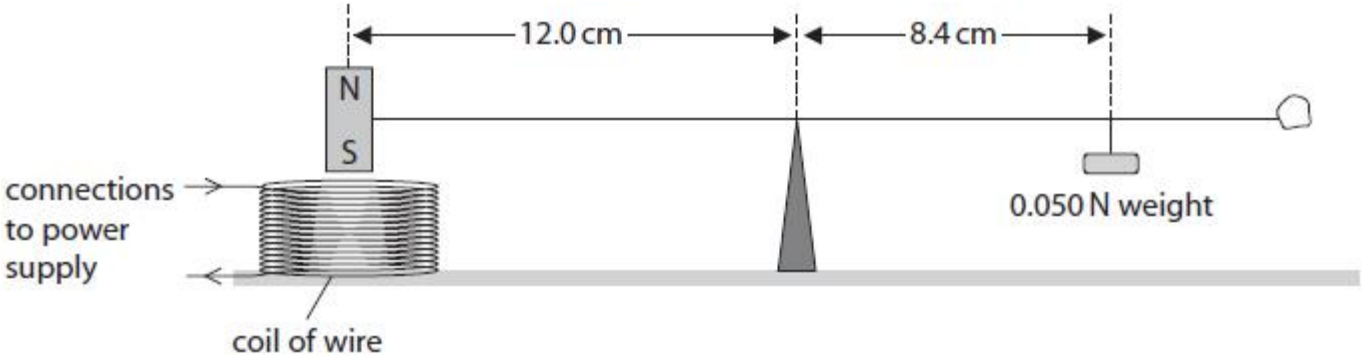

Figure 15

The coil of wire is connected to a d.c. power supply so that there is a current in the coil.
To bring the system back into equilibrium, the student hangs a 0.050 N weight on the rod, 8.4 cm away from the pivot, as shown in Figure 15.
Calculate the size of the force between the magnet and the coil.

(3)

force = ... N

(b) Describe how the student could develop the investigation to determine if the size of the force between the magnet and the coil is directly proportional to the size of the current in the coil.

(4)

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(Total for question = 7 marks)