

Name of the Student: _____

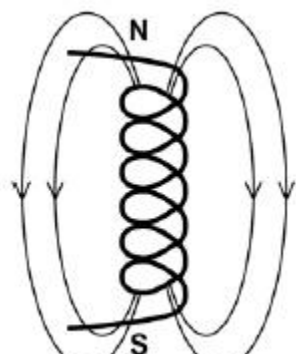
Max. Marks : 24 Marks

Time : 24 Minutes

Mark Schemes

Q1.

- | | | |
|-----|---|---|
| (a) | the direction of the magnetic field | 1 |
| (b) | decreases | 1 |
| (c) | the distance between the field lines
<i>allow the <u>closer</u> the lines the <u>stronger</u> the field for 2 marks</i> | 1 |
| | is <u>smaller</u> where the field is <u>stronger</u>
<i>allow where the lines are close the field is strong for 1 mark</i> | 1 |
| (d) | straight line drawn within 1 mm of all points on the graph | 1 |
| (e) | 1.3 – 0.9 | 1 |
| | 0.4 arbitrary units | 1 |
| (f) | increase the current through the solenoid
<i>if more than 2 boxes are ticked deduct 1 mark for each extra box ticked</i> | 1 |
| | increase the potential difference across the solenoid | 1 |
| (g) | at least one field line on each side of the solenoid | 1 |
| | an arrow to indicate the field going from North to South pole | |



1

- (h) add an iron core

*allow a description of this, eg wrap the wire around an iron nail
adding a core is insufficient*

1

[12]

Q2.

- (a) field

correct order only

1

current

1

force

*accept motion
accept thrust*

1

- (b) (i) arrow pointing vertically downwards

1

- (ii) increase current / p.d.

accept voltage for p.d.

1

increase strength of magnetic field

accept move poles closer together

1

- (iii) reverse (poles of) magnets

1

reverse battery / current

1

- (c) (i) 1.5 or 150%

efficiency = $120 / 80 (\times 100)$

gains 1 mark

an answer of 1.5 % or 150

gains 1 mark

2

- (ii) efficiency greater than 100%

or
output is greater than input
or
output should be 40 (W)

1

- (iii) recorded time much shorter than actual time
accept timer started too late
accept timer stopped too soon

1

[12]