

GCSE Physics A (Gateway)
J249/03 Physics A P1-P4 and P9 (Higher Tier)

Question Set 21

- 21 (a) (i) Name the rule which can be used to predict the direction of the force perpendicular to a current-carrying conductor in a magnetic field.

[1]

A student places four wires of different lengths (**A**, **B**, **C** and **D**) perpendicular to different magnetic fields with different currents flowing.

Look at the table of the results.

Wire	Magnetic flux density (T)	Current (A)	Length (m)
A	0.10	2.5	0.50
B	0.15	2.0	0.75
C	0.20	4.5	0.25
D	0.25	5.0	1.00

Use the results to show that wire **D** experiences the highest force.

Show your working.

- (b) (i) The student decides to build a model transformer. [2]
- The transformer is a step-up transformer which doubles the input voltage.
- Describe how she could build this step-up transformer in a science laboratory. [4]
- (ii) Suggest **one** risk associated with this experiment and how it can be reduced. [4]
- (c) Describe how a microphone works. [2]

[2]

Total Marks for Question Set 21: 11

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