NGO & SONS
ACADEMIC COACHING

Parramatta Campus:
Level 3, 1-3 Fitzwilliam St
Fairfield Main Campus:
39 Barbara St

PHYSICS

Module 6: Electromagnetism

HOMEWORK BOOKLET PART 2

YEAR 12

Name:

Class:

Booklet 4: Electromagnetic Induction

This booklet will cover:

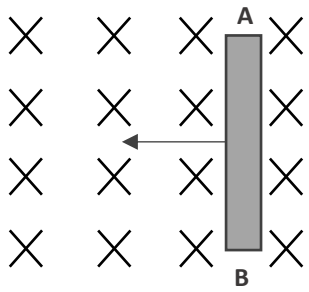
- 6.4.1. Magnetic Flux
- 6.4.2. Faraday's Law
- 6.4.3. Lenz's Law
- 6.4.4. Eddy Currents
- 6.4.5. Electromagnetic braking

Foundation	/11
Development	/16
Challenge	/16
Total Marks	/43

Section 1:

Foundation

1) A metal bar is being moved through a uniform magnetic field at a constant velocity as shown below.



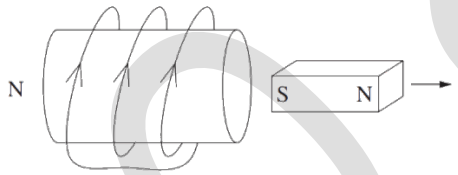
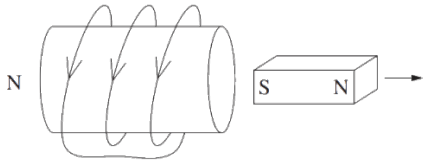
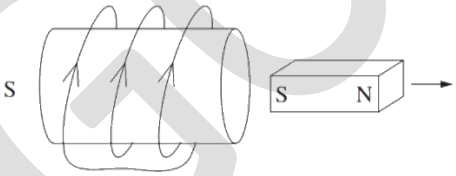
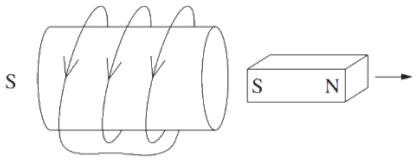
Determine which end of the rod will become negatively charged.

(1 mark)

a) A
b) B
c) Both ends.
d) Neither end.

2) A bar magnetic is moved away from a stationary solenoid. Which diagram correctly shows the direction of the induced current in the coil and the resulting magnetic polarity of the solenoid?

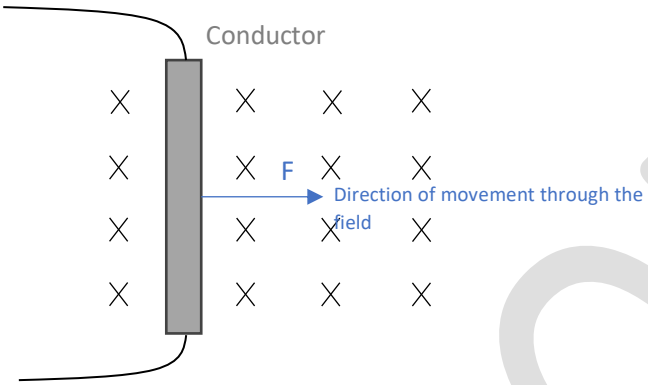
(1 mark)

a)		b)	
c)		d)	

Section 2:

Development

1) A conductor is connected to a galvanometer is moved by force *F* through a magnetic field, as shown below.



In terms of the principles of physics involved, predict the direction of the induced current in the conductor and explain why it *must* be in this direction.

(4 marks)

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Section 3:

Challenge Questions!

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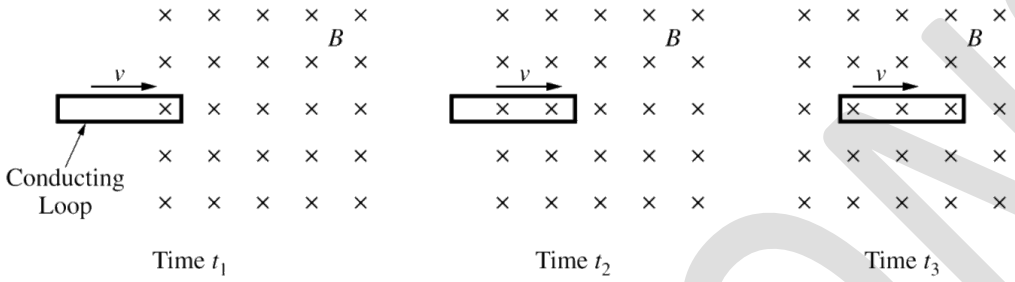
1) The diagram below shows a rectangular conducting loop at three instants of time. The loop moves at a constant speed through a magnetic field going into the page.



Compare the magnitude and direction of the current at times t_1, t_2 and t_3. Include an explanation of why there is or is not a current and the direction of the current if one is present using physics concepts or principles.

(5 marks)

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