



NZQA accredited and registered provider

Starting and Charging

PRACTICE PAPER ONLY

Test Paper One / Time allowed 90 mins

To be completed by the student

Student Name _____ Date __ / __ /2020

School/Provider _____

To be completed by the School Invigilator/Coordinator/Tutor

I confirm that this assessment was completed by the student named above as a closed book exercise under exam conditions

Invigilator Name _____

Invigilator Sign _____

Assessed By _____

Date __ / __ / 2020

Assessor's
Stamp

Assessors Note: Materials relate to unit standard 234-30563

SAMPLE ASSESSMENT INSTRUCTIONS

PLEASE MAKE SURE TO READ AND SIGN THIS SECTION

ASSESSMENT INSTRUCTIONS

- Before starting this assessment you should have achieved a mark of at least 80% for your workbook.
- Use a black or blue ball point pen. (do not use pencil)
- Write your full name on the cover page.
- This is a closed book assessment, so you cannot bring any reference material in, or seek help from anyone else.
- You need to answer all the questions.
- Read the questions carefully, and give detailed answers when asked to.
- You must complete the assessment under exam conditions.
- To achieve the unit standard you must show competency for each outcome.

Complete the following by circling Yes or No as appropriate:

Are you ready to be assessed? **Yes No**

Have the assessment instructions these been explained to you? **Yes No**

Do you understand the assessment instructions? **Yes No**

Have you all the materials/resources that you need for this assessment? **Yes No**

Please sign to acknowledge that you have read these instructions and are ready to be assessed.

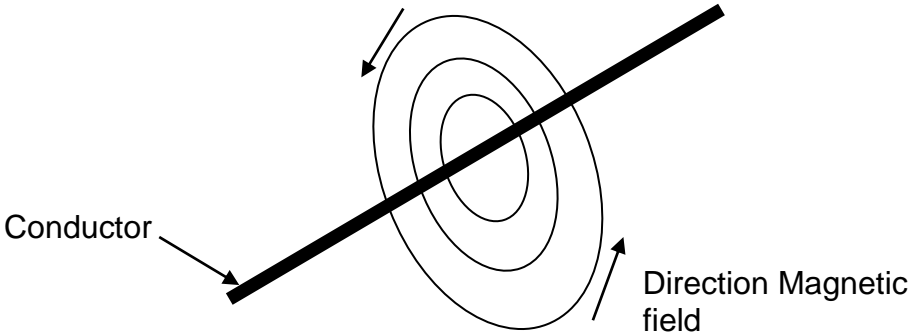
Student Signature: _____ **Date:** _____

You must complete the assessment instructions on Page 2 before starting this assessment!

ELEMENT ONE

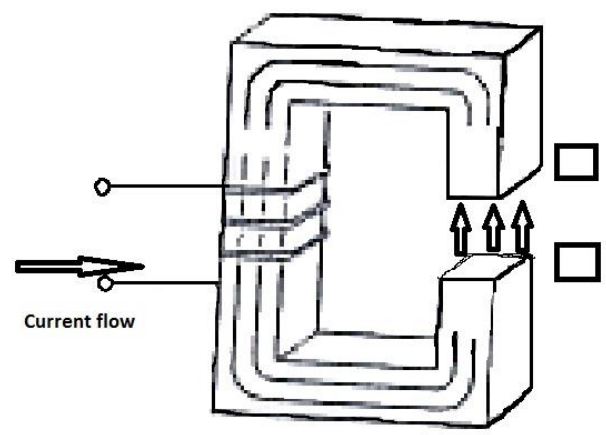
Demonstrate knowledge of electromagnetism as applied to automotive units.

- 1. If you pass an electric current through a conductor a magnetic field will form circles around the current as in the diagram below.**

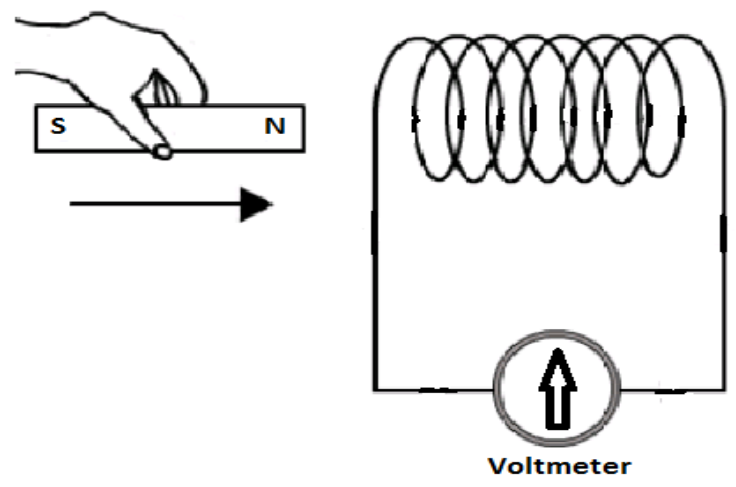


Describe how you would use Flemings right hand rule to determine the direction of current flow.

2. Identify the polarity of the magnetic field on the diagram below. Enter N or S in the appropriate box.



3a; What would the voltmeter show when a magnet is moved through the coil of wire as in the diagram below?



b; What would the voltmeter show if the magnet was stationary inside the coil of wire

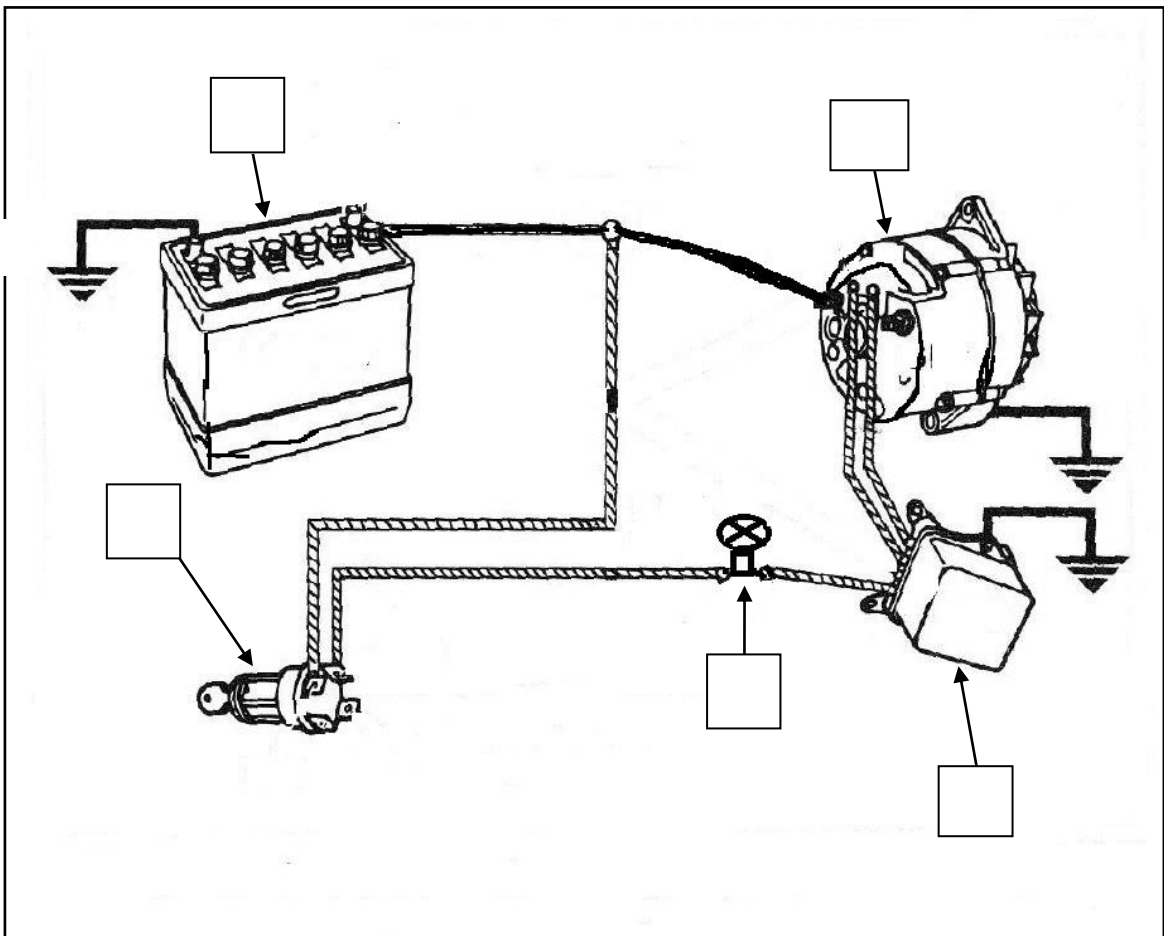
C; Justify your answer for b,

ELEMENT TWO

Demonstrate knowledge of the operation of a charging system that uses an alternator.

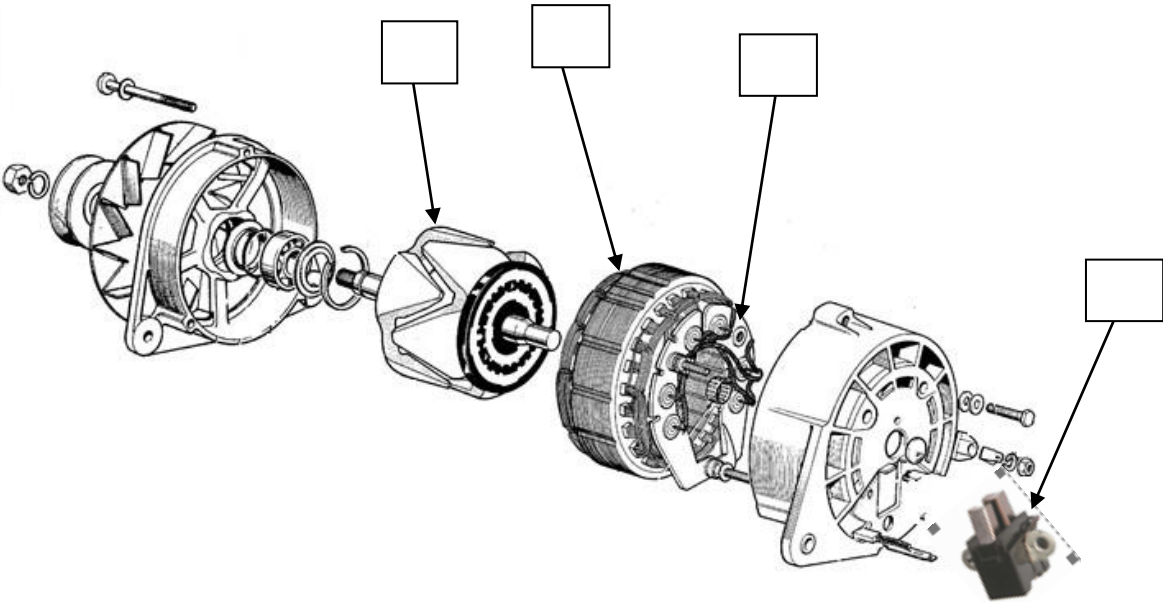
1. Refer to the list provided to match each charging component with its correct location in the diagram below. Write the appropriate letter in the box next to its arrow.

- | | | | |
|----|-----------------------|----|-------------------|
| A. | Charge indicator bulb | B. | Alternator |
| C. | Battery | D. | Voltage regulator |
| E. | Ignition switch | | |



2. Identify the alternator components on the diagram below.

- A: Brushes
- B: Rotor
- C: Rectifier assembly
- D: Stator



3. Match the following functions to each of the charging system components in the table below.

A	Wiring loom	A7	1	Carries electrical current to components
B	Voltage regulator		2	Changes alternating current to direct current
C	Charge indicator		3	Controls the voltage output
D	Stator		4	Provides voltage from the battery to the alternator
E	Rectifying diodes		5	Drives the alternator at engine speed
F	Ignition switch		6	Produces a variable strength magnetic field
G	Battery		7	Produces alternating current
H	AC generator		8	Chemically stores electricity
I	Rotor		9	A warning lamp and can provide a path for current flow to the rotor
J	Drive belt		10	Alternating current is induced in these windings

4. When talking about Alternators, what does the word Rectify mean? and how does this happen?

5. Describe how increasing or decreasing the current going through the rotor will change the output of the alternator.

ELEMENT THREE

Demonstrate knowledge of the operation of a starting system.

1. Identify the starter motor components on the cutaway diagram below.

A: Armature

B: Pinion Lever

C: Field Winding

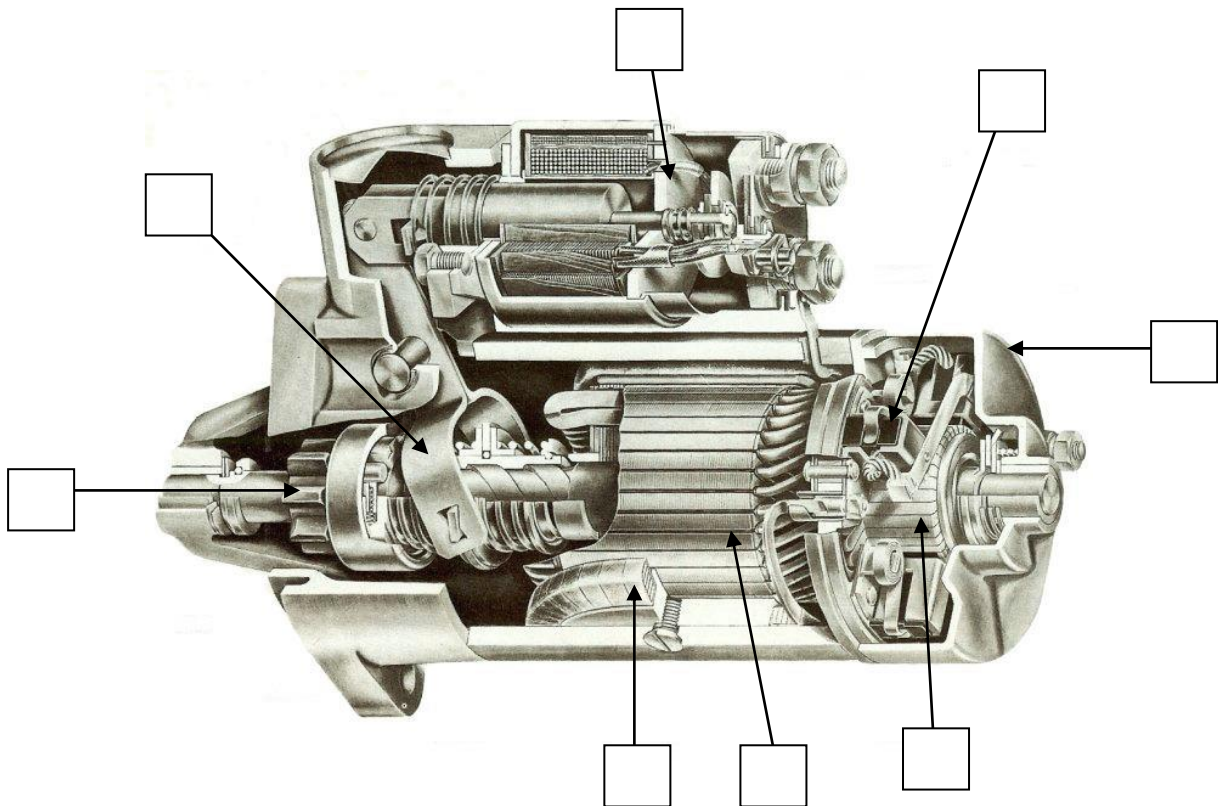
D: Housing

E: Solenoid

F: Pinion Gear

G: Commutator

H: Brush



2. From the list provided identify the types of starter motor shown in the pictures below.

Inertia

Pre-Engaged

Gear Reduction



Starter type: _____



Starter type: _____



Starter type: _____

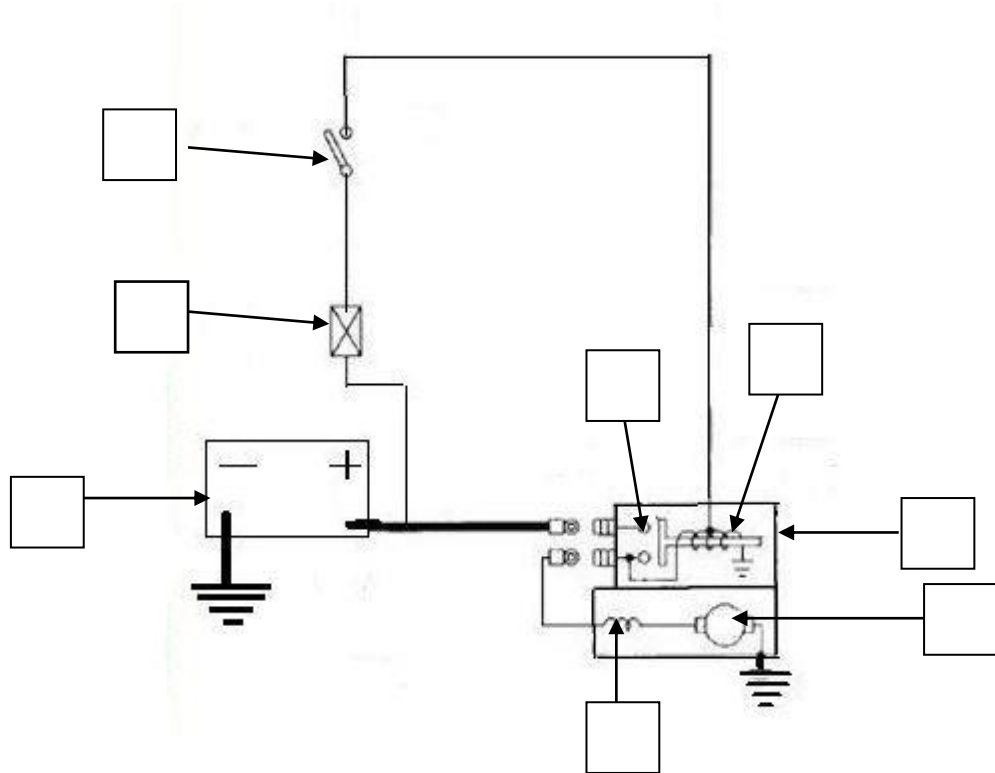
3. How does an inertia type starter get the pinion gear to engage the ring gear?

4. How does a pre-engage type starter get the pinion gear to engage the ring gear?

5. Identify the components in the diagram of the starter circuit below.

- A. Starter switch
- C. Battery
- E. Field coils
- G. Armature

- B. Solenoid coils
- D. Solenoid switch contacts
- F. Fusible link
- H. Solenoid



6. Outline the function of the starter circuit components listed below.

Solenoid:

Field coils:

Battery:

Starter switch:

FINISHED? CHECK THAT YOU HAVE ATTEMPTED ALL QUESTIONS!



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