



Province of the  
EASTERN CAPE  
EDUCATION

**DIRECTORATE SENIOR CURRICULUM MANAGEMENT (SEN-FET)**

**HOME SCHOOLING SELF-STUDY WORKSHEET**

<b>SUBJECT</b>	<b>AUTOMOTIVE</b>	<b>GRADE</b>	11	<b>DATE</b>	AUGUST 2020
<b>TOPIC</b>	ENGINES (SPECIFIC)	<b>TERM 1 REVISION</b>	(√)	<b>TERM 2 CONTENT</b>	()
<b>TIME ALLOCATION</b>	2 hrs.	<b><u>TIPS TO KEEP HEALTHY</u></b>			
<b>INSTRUCTIONS</b>	This topic focused study material is intended to assist learners in the various approaches used by examiners.	1. <b>WASH YOUR HANDS</b> thoroughly with soap and water for at least 20 seconds. Alternatively, use hand sanitizer with an alcohol content of at least 60%. 2. <b>PRACTICE SOCIAL DISTANCING</b> – keep a distance of 1m away from other people. 3. <b>PRACTISE GOOD RESPIRATORY HYGIENE:</b> cough or sneeze into your elbow or tissue and dispose of the tissue immediately after use. 4. <b>TRY NOT TO TOUCH YOUR FACE.</b> The virus can be transferred from your hands to your nose, mouth and eyes. It can then enter your body and make you sick. 5. <b>STAY AT HOME.</b>			

**QUESTION 1** (Nov 2019)

1.1 What is the function of a glow plug in a compression ignition engine system?

1.2 A four-stroke engine has the following valve timing information:

Inlet valve opens:  $16^\circ$  BTDC

Inlet valve closes:  $34^\circ$  ABDC

Exhaust valve opens:  $36^\circ$  BBDC

Exhaust valve closes:  $12^\circ$  ATDC

Injection :  $16^\circ$  ATDC

Draw a valve timing diagram for this engine.

**QUESTION 2** Use the diagram drawn in QUESTION 1.2 to calculate the following:

2.1 Inlet valve period.

2.2 Exhaust valve period.

2.3 Power period.

2.4 Valve overlap.

**QUESTION 3** Briefly explain the following states of valve timing:

3.1 Valve lead

3.2 Valve lag.

3.3 Give ONE disadvantage of excessive valve clearance.

QUESTION 4 (2018) 7.2 – 7.6

4.1 Draw a valve-timing diagram for a four-stroke engine using the following information:

Inlet valve opens:  $18^\circ$  BTDC.

Inlet valve closes:  $42^\circ$  ABDC.

Exhaust valve opens:  $48^\circ$  BBDC.

Exhaust valve closes:  $10^\circ$  ATDC.

Injection:  $20^\circ$  ATDC

4.2 Use the diagram and calculate the following:

4.2.1 Inlet-valve period

4.2.2 Exhaust-valve period.

4.2.3 Power period

4.2.4 Valve overlap

4.3 What do understand by the term valve timing? Explain in your own words.

4.4 Describe the function of the tensioner in the timing belt assembly.

4.5 Study the diagram in FIGURE 4.5 which illustrates an electromagnet injector.

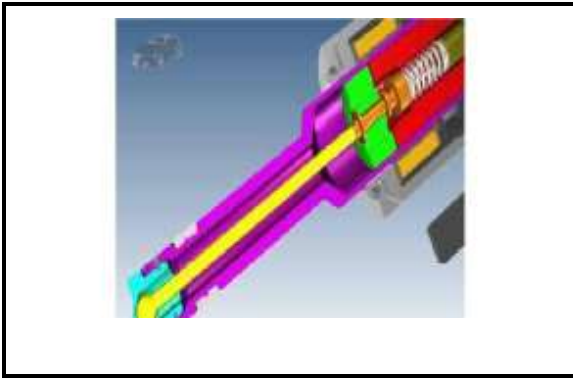


FIGURE 4.5

State TWO advantages of the electromagnetic / solenoid injector.

QUESTION 5 (2019) 7.1

5.1 Study the part from an internal combustion engine as illustrated in FIGURE 5.1 below and answer the questions that follow:

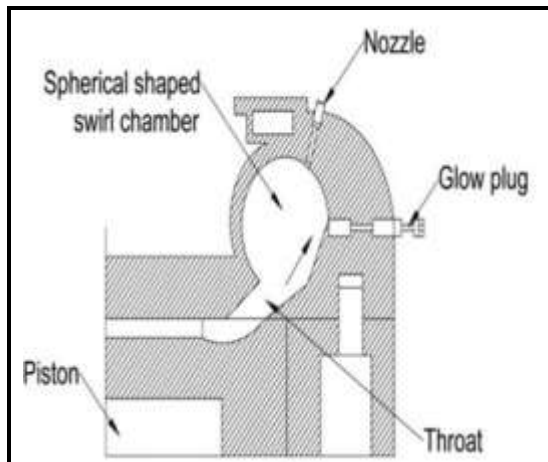


Figure 5.1

5.1.1 Name the type of combustion chamber illustrated in FIGURE 5.1

5.1.2 Give TWO advantages of using the type of combustion chamber in FIGURE 5.1