Centre Number	Candidate Number	Candidate Name

NAMIBIA SENIOR SECONDARY CERTIFICATE

MOTOR MECHANICS ORDINARY LEVEL 6189/1

PAPER 1 2 hours

Marks 100 **2022**

Additional Materials: Non-programmable calculator

INSTRUCTIONS AND INFORMATION TO CANDIDATES

- Write your Centre Number, Candidate Number and Name in the spaces at the top of this page and on all separate answer sheets used.
- Write in dark blue or black pen.
- You may use a soft pencil for any rough work, diagrams or graphs.
- You may use a non-programmable calculator.
- Do not use correction fluids.
- Do not write in the margin *For Examiner's Use*.
- You may use blank pages for working drawings or when answers are crossed out and corrected.
- The number of marks is given in brackets [ ] at the end of each question or part question

For Examiner's Use	
Section A	
Section B	
Total	

Marker	
Checker	

ORDINARY LEVEL

This document consists of **19** printed pages **1** blank page.

Republic of Namibia

MINISTRY OF EDUCATION, ARTS AND CULTURE

For Examiner's Use

SECTION A

1 Fig. 1 shows different tyre inflation pressures.

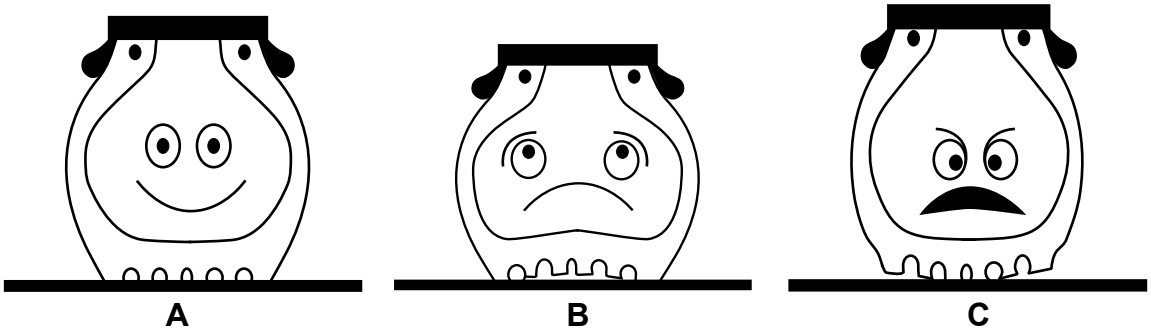


Fig. 1

Identify **A**, **B** and **C**, and state the tyre wear pattern it will cause.

A .....

Wear pattern: .....

B .....

Wear pattern: .....

C .....

Wear pattern: ..... [6]

2 Fig. 2 shows lubricants, that were invented to prevent abnormal wear and tear caused by friction.

Fig. 2

Mention **two** effects the wrong viscosity of oil will have on a motor vehicle's engine.

.....

.....

.....

..... [2]

For Examiner's Use

3 Fig. 3 shows a hacksaw.

Fig. 3

(a) State **two** reasons why the blade can break.

1 .....

.....

2 .....

..... [2]

(b) Give the reason why the teeth of the blade must always face forward.

.....

..... [1]

4 James lives one block from his school. His father told him that the school is about 215 yards from their house. State the distance in meters.

.....

.....

.....

..... [2]

For Examiner's Use

5 Fig. 4 shows three basic electrical circuits.

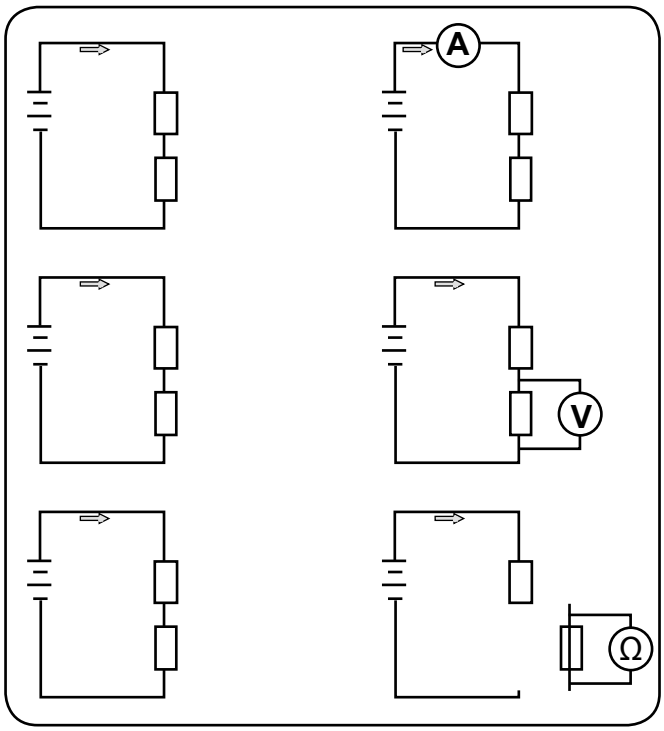


Fig. 4

Study the picture and give the basic principle of measurement for:

(i) Current that flows through a resistor:

.....

.....

.....

..... [2]

(ii) Voltage that flows through a resistor:

.....

.....

.....

..... [2]

(iii) Resistance of a resistor:

.....

.....

.....

..... [2]

For Examiner's Use

6 A vehicle has been recalled by the manufacturer for modification. State in which publication the rectification for this recall will be found.

.....

..... [1]

7 Fig. 5 shows different types of nuts used for fastening.

A **B** **C**

Fig. 5

Identify the locknut.

..... [1]

8 Fig. 6 shows a person wearing a safety belt.

Fig. 6

Describe why a safety belt in a motor vehicle is regarded as an active safety feature and how it is checked.

.....

.....

.....

..... [2]

For Examiner's Use

9 Name **three** safety factors to remember when handling tools.

1.....

.....

2.....

.....

3.....

..... [3]

10 Fig. 7 shows fasteners.

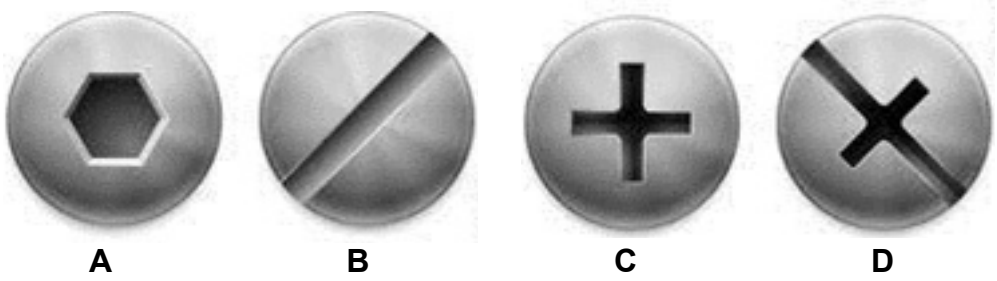


Fig. 7

State the specific tools to fasten or loosen these fasteners.

A .....

B .....

C .....

D ..... [4]

[30]

For Examiner's Use

SECTION B

11 **(a)** A variety of materials are handled in the workplace, some of which are hazardous and should therefore be handled with extreme care.

Complete Table 1 by suggesting preventative measures for the possible hazards.

Possible hazard	Preventative measure
(i) Materials that are lying around in the workshop can be a tripping and fire hazard.	…… …… …… ……
(ii) Material that is not stacked safely, can tumble and injure.	…… …… …… ……
(iii) Flammable material, including gas and liquids, is a fire hazard and can cause explosions.	…… …… …… ……
(iv) Lifting materials that are too heavy or using the wrong lifting techniques can cause muscle injuries.	…… …… …… ……
(v) Handling material with sharp edges can cause serious cuts.	…… …… …… ……

[5]

For Examiner's Use

(b) List **three** ways in which the body usually come into contact with chemicals.

1 .....

.....

2 .....

.....

3 .....

..... [3]

(c) Explain why heatstroke is considered to be more serious than heat exhaustion.

.....

.....

.....

..... [2]

[10]

For Examiner's Use

12 Fig. 8 shows the components of an engine driven by a drive belt.

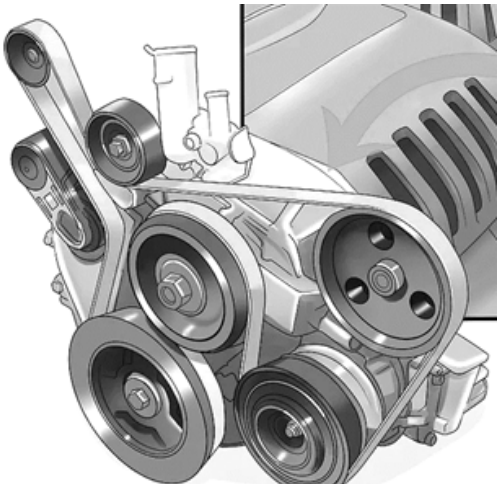


Fig. 8

(a) Give the name of this drive belt.

..... [1]

(b) List **four** causes of belt slip.

1 .....

.....

2 .....

.....

3 .....

.....

4 .....

..... [4]

(c) Fig. 9 shows a timing chain layout.

Being under constant tension, the chain will stretch over time.

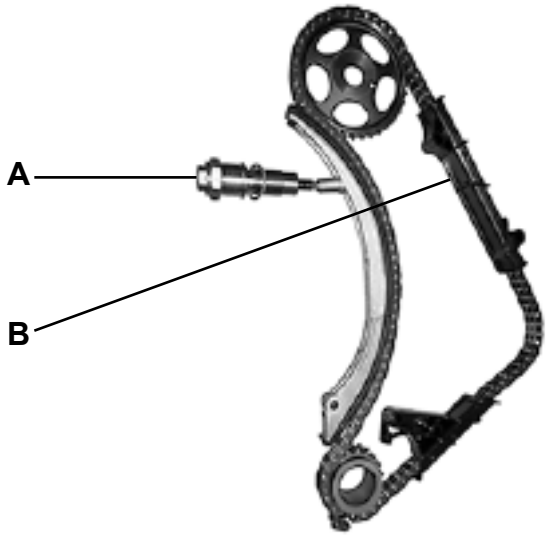


Fig. 9

(i) Identify the different parts.

A.....

B..... [2]

(ii) Mention **three** results of a stretched timing chain.

1 .....

.....

2 .....

.....

3 .....

..... [3]

[10]

For Examiner's Use

13 Fig. 10 shows an outside micrometer.

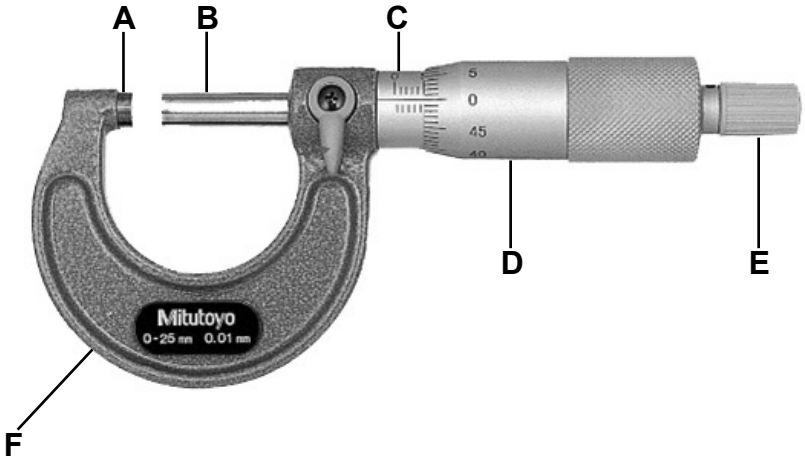


Fig. 10

(a) Identify the parts:

A .....

B .....

C .....

D .....

E .....

F ..... [6]

(b) Fig. 11 shows inside micrometer readings.

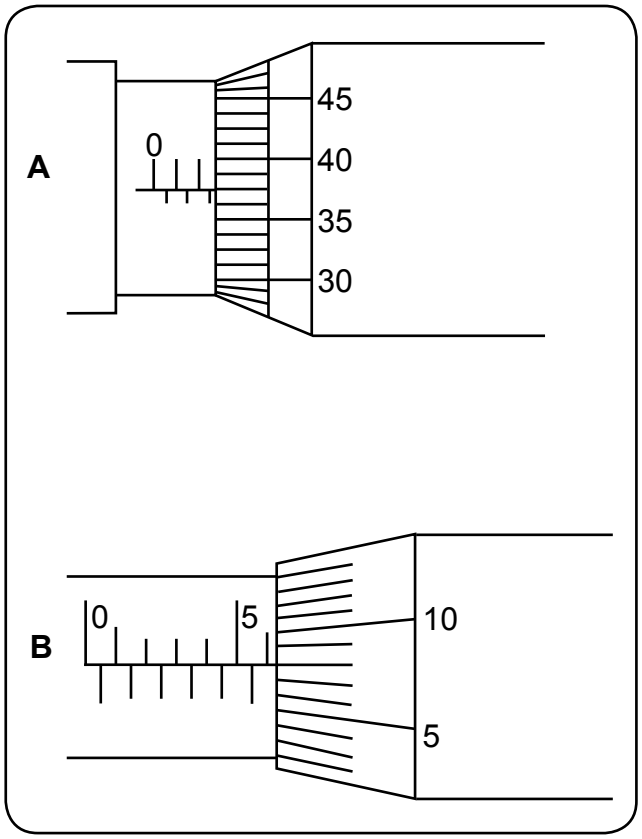


Fig. 11

Give each reading.

A .....

..... [2]

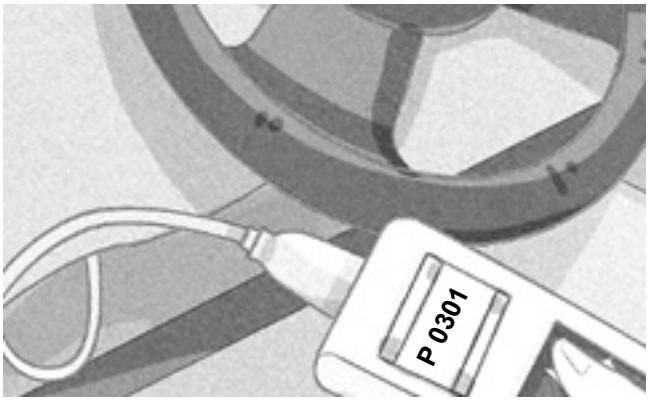
B .....

..... [2]

[10]

For Examiner's Use

14 A customer arrives at your workshop, complaining that he experiences that his car stutters when idling, and when he accelerates. He also mentions that the stuttering started after the engine overheated due to coolant loss because of a leaking radiator hose. The Engine Control Unit (ECU) fault-code tells that there is a misfire at cylinder 1.



(a) Diagnose **three** possible causes for the misfiring and give **two** examples of each possible cause.

Possible cause:.....

.....

Examples: .....

..... [3]

Possible cause:.....

.....

Examples: .....

..... [3]

Possible cause:.....

Examples: .....

..... [3]

(b) Give a reason why valve clearance is necessary in an engine.

.....

..... [1]

[10]

For Examiner's Use

15 Fig. 12 shows two sets of 12 Volt batteries.

(a) Draw battery cables connecting the batteries in series.

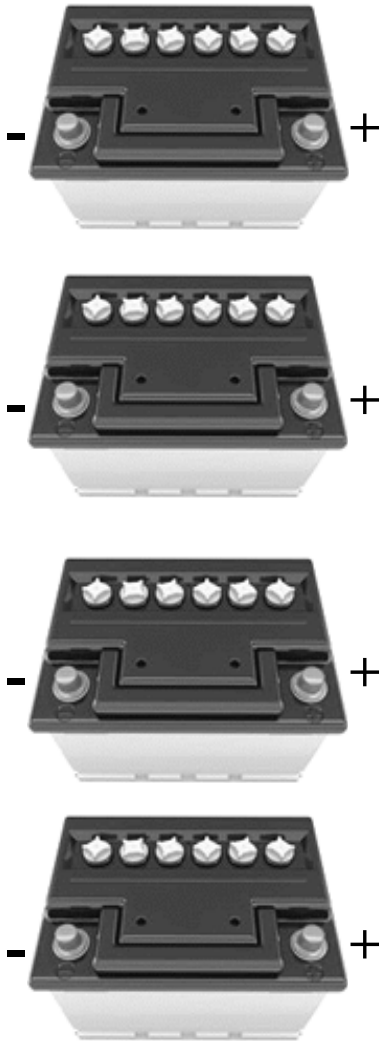


Fig. 12.1

[2]

(i) Calculate the total voltage.

.....

.....

.....

..... [2]

(ii) Draw battery cables connecting the batteries in parallel.

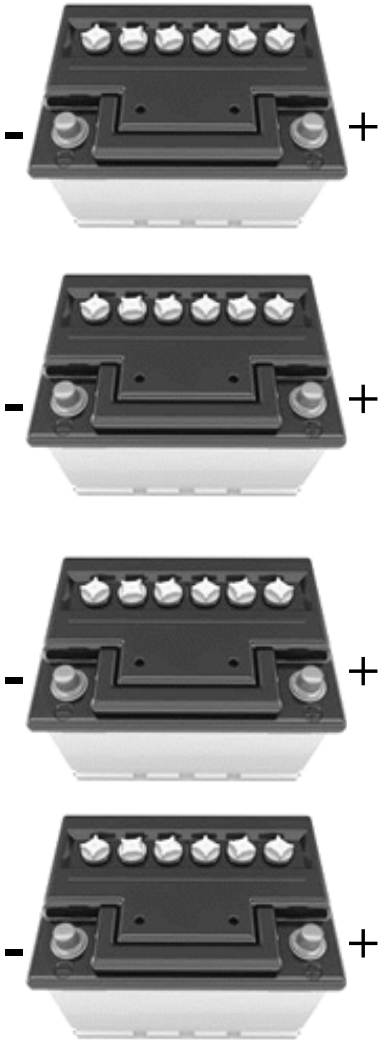


Fig.12.2

[2]

(iii) Calculate the total voltage.

.....

.....

.....

..... [2]

(b) Name **two** possible causes of slow-cranking or no-cranking of an engine.

1 .....

.....

2 .....

..... [2]

[10]

For Examiner's Use

16 Fig. 13 shows the results of a dry cylinder pressure compression test on a four-cylinder spark ignition engine. With reference to the vehicle manufacturer's specifications, the normal pressure should be between 125 to 175 psi.

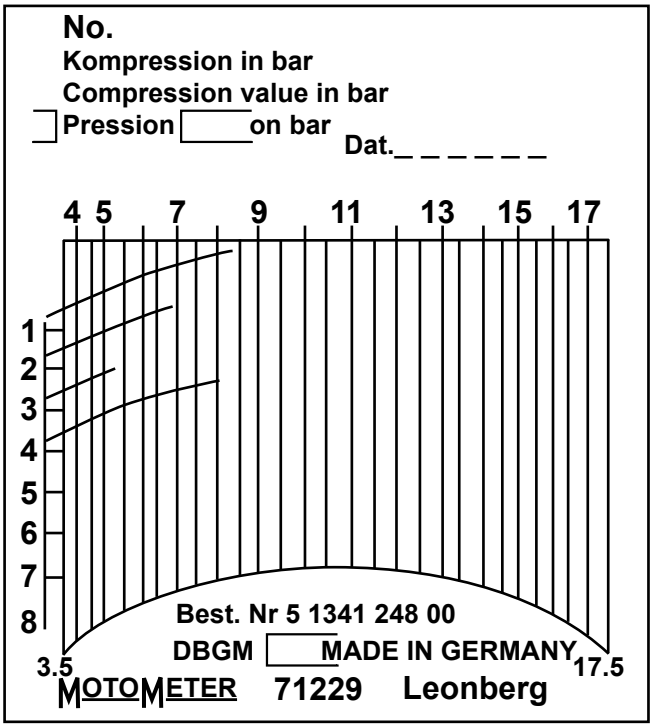


Fig. 13

(a) State the function of a cylinder pressure compression test.

.....

..... [1]

(b) Indicate **three** possible causes for the poor pressure readings in cylinders 2 and 3.

1 .....

.....

2 .....

.....

3 .....

..... [3]

For Examiner's Use

(c) Convert the measured pressures from bar to psi.

Cyl. 1 .....

Cyl. 2 .....

Cyl. 3 .....

Cyl. 4 ..... [4]

(d) Make **two** possible repair recommendations to rectify the cylinder pressures of cylinders 2 and 3.

1 .....

.....

2 .....

..... [2]

[10]

For Examiner's Use

17 Fig. 14 shows two different suspension systems.

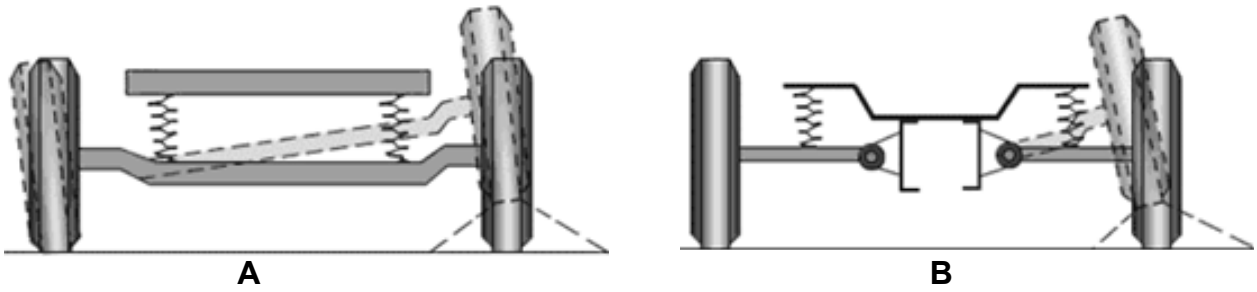


Fig. 14

(a) Identify the systems **A** and **B**.

A .....

B ..... [2]

(b) Differentiate between system '**A**' and system '**B**'.

A .....

.....

B .....

..... [2]

(c) Fig. 15 shows a cartoon of a vehicle with worn shock absorbers.

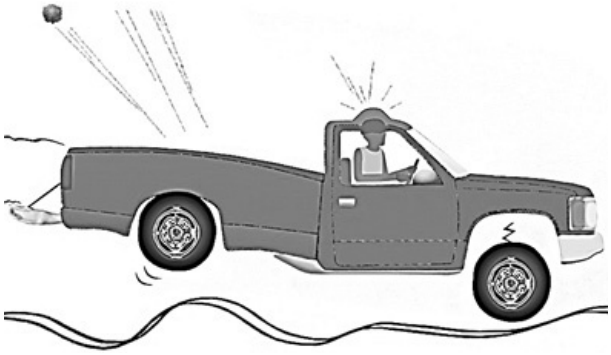


Fig. 15

Worn shock absorbers causes excessive body motion, and should be inspected regularly.

Describe how the following tests are done:

Bounce test .....

.....

.....

..... [2]

Visual inspection .....

.....

.....

..... [2]

Road test .....

.....

.....

..... [2]

[10]

[70]

[100]

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