



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

MECHANICAL TECHNOLOGY (AUTOMOTIVE)

GUIDELINES FOR PRACTICAL ASSESSMENT TASKS

GRADE 12

2020

These guidelines consist of 43 pages.

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1. INTRODUCTION/BACKGROUND

The 17 Curriculum and Assessment Policy Statements subjects which contain a practical component all include a practical assessment task (PAT). These subjects are:

- **AGRICULTURE:** Agricultural Management Practices, Agricultural Technology
- **ARTS:** Dance Studies, Design, Dramatic Arts, Music, Visual Arts
- **SCIENCES:** Computer Applications Technology, Information Technology, Technical Sciences
- **SERVICES:** Consumer Studies, Hospitality Studies, Tourism
- **TECHNOLOGY:** **MECHANICAL TECHNOLOGY**, Civil Technology, Electrical Technology, and Engineering Graphics and Design

A practical assessment task (PAT) mark is a compulsory component of the final promotion mark for all candidates offering subjects that have a practical component and counts 25% (100 marks) of the end-of-year examination mark. The PAT is implemented across the first three terms of the school year. This is broken down into different phases or a series of smaller activities that make up the PAT. The PAT allows for learners to be assessed on a regular basis during the school year and it also allows for the assessment of skills that cannot be assessed in a written format, e.g. test or examination. It is therefore important that schools ensure that all learners complete the practical assessment tasks within the stipulated period to ensure that learners are resulted at the end of the school year. The planning and execution of the PAT differs from subject to subject.

The PAT allows the teacher to directly and systematically observe applied competence. The PAT comprises the application/performance of the knowledge, skills and values particular to that subject and counts 25% of the total promotion/certification mark out of 400 for the subject.

The PAT is implemented across the first three terms of the school year.

Any profession requires of its members a thorough grounding in both theory and practice and MECHANICAL TECHNOLOGY is no exception. It is emphasized that the goal of the practical assessment task is to produce a skilled learner in each specialisation field. A nation's true wealth is in its manpower and education that should aim to develop the talents of a learner so that he/she can contribute to the well-being of the society by using and developing scientific and technological resources.

To prepare a learner in MECHANICAL TECHNOLOGY'S specialisation fields, one must focus on the following:

- An attitude where the learner can selectively use ideas, gather evidence and facts, to drawing logical conclusions to put them to good use creatively and with imagination;
- A capability to express ideas and information clearly by speech, writing, drawing and manufacturing and
- A willingness and capability to accept and exercise responsibility, to make decisions, and to learn by experience.

Attributes such as these cannot all be achieved in a classroom. A sound knowledge of engineering sciences is essential to equip the MECHANICAL TECHNOLOGY learner with the necessary practical capabilities for the required processes. Practical training is the application of acquiring essential skills to bridge between trade theory and practice.

Practical application in the workshop must therefore be made an interesting and challenging experience to develop the learner physically and mentally. The learner must show his/her initiative, curiosity and persistence in learning. In order to stimulate and develop self-confidence the granting of some degree of responsibility during the practical application is very important.

2. TEACHER GUIDELINES

2.1 Administration of the PAT

Teachers are requested to make copies of the different specialisation PAT documents. These documents need to be handed out to the learners at the beginning of the year. The Practical Assessment Task for Grade 12 is externally set, internally assessed and externally moderated.

Teachers must attach due dates for the different facets of the PAT (refer to the CAPS document). In this manner, learners can easily assess their progress. Instances where formal assessments take place, it is the responsibility of the teacher to administer assessment.

The PAT should be completed within the first three terms. The PAT should be completed under controlled conditions (refer to Mechanical Technology SPECIALISATION: CAPS Grade 10–12).

2.2 Assessment of PAT

Frequent and developmental feedback is needed to ensure necessary guidance and support to the learner.

Both formal and informal assessment should be conducted to ensure that the embedded skills are developed. Informal assessment can be conducted only to monitor progress of the learner. Formal assessment should always be conducted and recorded by the teacher.

2.3 Moderation of PAT

The tasks, projects, assessment criteria as well as the mark sheets must be presented to the moderator during moderation of the PAT.

The moderator should be able to call on a learner to explain and demonstrate the functions, principles and skills during the moderation purposes.

On completion the moderator will, if necessary, adjust the marks of the group up or downwards depending on the decision reached as a result of moderation.

2.4 Consequences of absence/non-submission of tasks.

If a learners' practical assessment task is incomplete or unavailable with valid reason, the learner may be given three weeks before the commencement of the final end-of-year examination to submit the outstanding task. Should the learner fail to fulfill the outstanding PAT requirement, such a learner will be awarded a zero mark for that PAT component.

A learner's results are regarded as incomplete if he/she does not offer any component of the PAT task. He/She will be given another opportunity based on the decision of the head of the assessment body. Should the learner fail to fulfill the outstanding PAT requirement, the marks for these components will be omitted and the final mark for Mechanical Technology will be adjusted for promotion purposes in terms of the completed tasks.

2.5 Declaration of authenticity

NAME OF THE SCHOOL:

NAME OF LEARNER:

(FULL NAME(S) AND SURNAME)

NAME OF TEACHER:

I hereby declare that the project submitted for assessment is my own, original work and has not been previously submitted for moderation.

SIGNATURE OF CANDIDATE

DATE

As far as I know, the above declaration by the candidate is true and I accept that the work offered is his or her own.

SIGNATURE OF TEACHER

DATE

SCHOOL STAMP

3. LEARNER GUIDELINES

Instructions to the learner

- The practical assessment task (PAT) consists of a specialisation task in **Automotive**. The practical work is spread over three terms, as set out in this document. (See CAPS document.)
- All tasks must be completed according to the time frames set out in each of the tasks.
- Learners are requested to actively engage in all practical assessment tasks.
- Learners who are uncooperative will receive demerits or a zero mark for that particular section of the work.
- Learners who act unsafely in the workshop and place other learners in danger, will be given additional corrective tasks to improve their safety awareness.

4. AUTOMOTIVE (SPECIFIC)**Term: 1 to 3****Starting date: January 2020****Completion date: August 2020****INTRODUCTION:**

- This section comprises EIGHT practical tasks (choose any FOUR of the EIGHT given tasks, namely):
 - Compression test (Task 1)
 - Cylinder leakage test (Task 2)
 - Gas analysing test (Task 3)
 - Wheel balancing (Task 4)
 - Charging system (Task 5)
 - Radiator pressure test (Task 6)
 - Fuel pressure test (Task 7)
 - Measuring engine components (Task 8)
- It also comprises ONE compulsory task, namely:
 - Engines – valves (Task 9)

NOTE: Number of tasks = 5 (4 + 1)

The teacher must explain to the learners which knowledge and skills will be assessed during these tasks as well as the time to complete each task.

Activity outcome:

- Learners apply theoretical knowledge in practice
- Safety, tools, maintenance and systems and control
- Correct use of tools and equipment
- Use equipment to diagnose low compression or other faults in the engine cylinder

NOTE: CONDUCT ANY FOUR OF THE EIGHT TASKS GIVEN.

- These tasks must be done under the supervision of the teacher and the learners should be assessed while performing these tasks.
- The learners should answer questions, record findings and give reasons for certain actions on the worksheet provided while they are performing these tasks.

TASK 1: Compression test – Questions

- Answer the questions on WORKSHEETS 1.1 and 1.2.

TASK 1: Compression test – Procedure

- Use the specification manual to obtain readings for the engine that you are using to conduct the compression test.
- Do a dry compression test on a four-cylinder, four-stroke petrol engine and record the findings on WORKSHEET 1.3.

NOTE: The learner must record and give reasons for certain actions when he/she completes this task.

TASK 2: Cylinder leakage test – Questions

- Answer the questions on WORKSHEETS 2.1 and 2.2.

TASK 2: Cylinder leakage test – Procedure

- Use the specification manual to obtain readings for the engine that you will be using to conduct the cylinder leakage test.
- Do a cylinder leakage test on a four-cylinder, four-stroke petrol engine and record the findings on WORKSHEET 2.3.

NOTE: The learner must record and give reasons for certain actions when he/she completes this task.

TASK 3: Gas analysing test – Questions

- Answer the questions on WORKSHEETS 3.1 and 3.2.

TASK 3: Gas analysing test – Procedure

- Use the specification manual to obtain readings for the engine that you will be using to conduct the gas analysing test.
- Do a gas analysing test on an internal combustion engine and record the findings on WORKSHEET 3.3.

NOTE: The learner must record and give reasons for certain actions when he/she completes this task.

TASK 4: Wheel Balancing – Questions

- Answer the questions on WORKSHEETS 4.1 and 4.2.

TASK 4: Wheel Balancing – Procedure

- Perform the wheel balancing procedures on a wheel tyre assembly and record the findings on WORKSHEET 4.3.

NOTE: The learner must record and give reasons for certain actions when he/she completes this task.

TASK 5: Charging system – Questions

- Answer the questions on WORKSHEET 5.1.

TASK 5: Charging system – Procedure

- Perform the charging system procedures on an alternator, parts, stripping, testing and assembling and thereafter record the findings on WORKSHEET 5.2.

NOTE: The learner must record and give reasons for certain actions when he/she completes this task.

TASK 6: Radiator test – Questions

- Answer the questions on WORKSHEET 6.1.

TASK 6: Radiator test – Procedure

- Perform the radiator test procedures on a radiator cap, radiator and record the findings on WORKSHEET 6.2.

TASK 7: Fuel pressure test – Questions

- Answer the questions on WORKSHEET 7.1.

TASK 7: Fuel pressure test – Procedure

- Perform the fuel pressure test procedures on a fuel system and record the findings on WORKSHEET 7.2.

TASK 8: Measuring engine components – Questions

- Answer the questions on WORKSHEET 8.1.

TASK 8: Measuring of engine components and calculating compression ratio – procedure:

- Answer the questions on WORKSHEET 8.2.

TASK 9 (COMPULSORY)**TASK 9: Engines – Valves – Questions**

- Answer the questions on WORKSHEET 9.1.

TASK 9: Engines – Valves – Procedure

- Complete WORKSHEET 9.2.

TASK 1: COMPRESSION TEST – QUESTIONS**WORKSHEET 1.1****NAME:** _____

QUESTION	ANSWER	MARK	TOTAL
1. Explain the term <i>engine compression</i> .		2	
2. Give THREE reasons for low compression in an engine.		3	
3. State the effect of low compression on an engine.		2	
4. Give a reason when the compression in an engine must be checked?		1	
5. Name TWO compression tests that can be done on an internal combustion engine.		2	
TOTAL – Compression test – questions		10	

TASK 1: COMPRESSION TEST – PROCEDURE**WORKSHEET 1.2****NAME:** _____

PROCEDURE	REASON	MARK	TOTAL
Start engine to obtain running temperature		2	
Remove spark plugs		2	
What action should take place before the spark plugs are removed?		2	
Remove the air filter		2	
Remove HT lead from coil		2	
Fully open accelerator		2	
Crank the engine		2	
Record the readings		2	
Compare readings between cylinders		2	
Compare readings with manufacturer's specifications		2	
Conduct a wet compression test on the cylinder with the lowest reading		5	
TOTAL – Compression test – procedure		25	

TASK 1: COMPRESSION TEST – PROCEDURE**WORKSHEET 1.3****NAME:** _____

Results of the cylinder compression test executed:			
PROCEDURE	RESULT	MARK	TOTAL
Cylinder compression according to manufacturer's specifications		1	
Cylinder 1 reading		2	
Cylinder 2 reading		2	
Cylinder 3 reading		2	
Cylinder 4 reading		2	
Conclusion before and after wet compression test	Before:	4	
	After:		
Procedure to follow		2	
TOTAL – Compression test – procedure		15	

TOTAL – Compression test – questions	Worksheet 1.1	10	
TOTAL – Compression test – procedure	Worksheet 1.2	25	
TOTAL – Compression test – procedure	Worksheet 1.3	15	
GRAND TOTAL		50	

TASK 2: CYLINDER LEAKAGE TEST – QUESTIONS**WORKSHEET 2.1****NAME:** _____

QUESTION	ANSWER	MARK	TOTAL
1. State the difference between the <i>cylinder compression test</i> and the <i>cylinder leakage test</i> .		2	
2. Why is it necessary to conduct a cylinder leakage test on an internal combustion engine?		2	
3. State THREE causes of cylinder leakages on an internal combustion engine		3	
4. Explain THREE procedures to determine the location of leakages on an internal combustion engine		3	
TOTAL – Leakage test – questions		10	

TASK 2: CYLINDER LEAKAGE TEST – PROCEDURE

WORKSHEET 2.2

NAME: _____

[illegible]

TASK 2: CYLINDER LEAKAGE TEST – PROCEDURE**WORKSHEET 2.3**

NAME: _____

Results of the cylinder leakage test executed:			
PROCEDURE	RESULT	MARK	TOTAL
Cylinder pressure		2	
Cylinder 1 – Result		2	
Conclusion		2	
Cylinder 2 – Result		2	
Conclusion		2	
Cylinder 3 – Result		2	
Conclusion		2	
Cylinder 4 – Result		2	
Conclusion		2	
Procedures to follow		2	
TOTAL – Leakage test – procedure (Results)		Worksheet 2.3	20
TOTAL – Leakage test – procedure		Worksheet 2.2	20
TOTAL – Leakage test – questions		Worksheet 2.1	10
		GRAND TOTAL	50

TASK 3: GAS ANALYSING – QUESTIONS**WORKSHEET 3.1****NAME:** _____

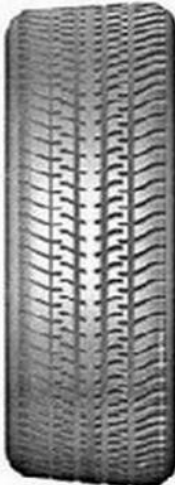


QUESTION	ANSWER	MARK	TOTAL
1. Why is a gas analyser used on an internal combustion engine?		3	
2. When is it necessary to analyse the exhaust gases of an internal combustion engine?		2	
3. What influences the combustion under different operating conditions? List FOUR such influences.		4	
4. State FOUR possible causes and corrective method for high CO readings.		4	
5. Name FOUR possible causes and corrective methods for high NO _x readings.		4	
6. Give FOUR reasons for high CO ₂ readings.		4	
7. State FOUR safety measures to be carried out when using the gas analyser.		4	
TOTAL – Gas analysing – questions		25	

TASK 3: GAS ANALYSING – PROCEDURE**WORKSHEET: 3.3****NAME:** _____

Results of the gas analysing procedure on an internal combustion engine:			
PROCEDURE	RESULT	MARK	TOTAL
CO – reading		2	
Conclusion		2	
HC – reading		2	
Conclusion		2	
CO ₂ – reading		2	
Conclusion		2	
Final conclusion		3	
TOTAL – Gas analysing – procedure (Results)		Worksheet 3.3	15
TOTAL – Gas analysing – procedure		Worksheet 3.2	10
TOTAL – Gas analysing – questions		Worksheet 3.1	25
GRAND TOTAL			50

TASK 4: WHEEL BALANCING – QUESTIONS**WORKSHEET 4.1****NAME:** _____

QUESTION	ANSWER	MARK	TOTAL
1. Give THREE reasons for balancing the wheels of a motor vehicle.		3	
2. State THREE effects of unbalanced wheels on a motor vehicle.		3	
3. Why is it necessary for the wheel balancing machine to be in a good working condition?		1	
4. State the functions of the wheel-weight hammer.		3	
5. State THREE pre-checks that must be carried out before wheel balancing.		3	
6. Define <i>static balance</i> of a wheel and tyre assembly		2	
7. Define <i>dynamic balance</i> of a wheel and tyre assembly.		3	

<p>8. FIGURE 4.1.8 indicates different tyre conditions. State the cause of each condition.</p>	A	B	C	3	
					
	FIGURE 4.1.8				
	A -				
	B -				
	C -				
<p>9. State FOUR safety measures to be carried out when using the balancing equipment.</p>				4	
TOTAL – Wheel balancing – questions				25	

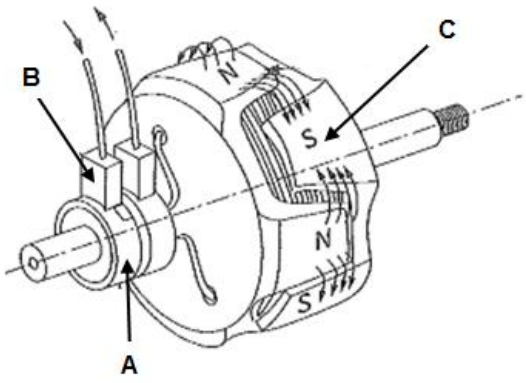
TASK 4: WHEEL BALANCING – PROCEDURE**WORKSHEET 4.3**

NAME: _____

Balancing of a wheel and tyre assembly:			
PROCEDURE	RESULT	MARK	TOTAL
Condition of wheel tyre assembly		2	
Describe the lack of balancing		3	
Procedure to follow		3	
Final result		2	
TOTAL – Wheel balancing – procedure		Worksheet 4.3	10
TOTAL – Wheel balancing – procedure		Worksheet 4.2	15
TOTAL – Wheel balancing – questions		Worksheet 4.1	25
		GRAND TOTAL	50

TASK 5: CHARGING SYSTEM – QUESTIONS**WORKSHEET 5.1**

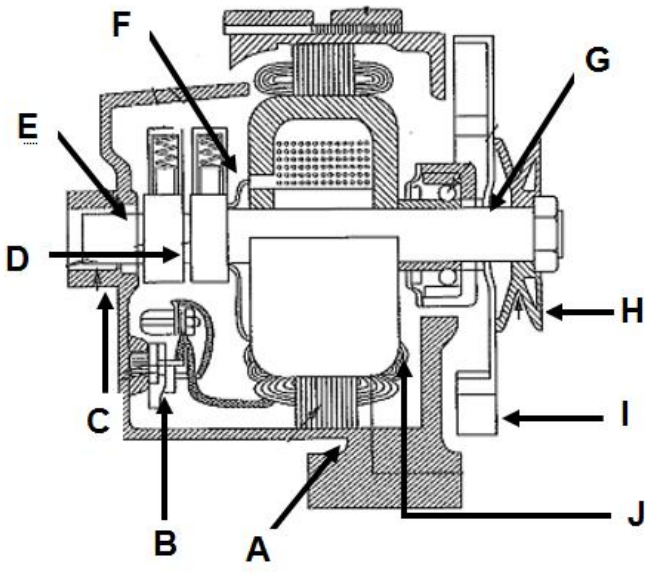
NAME: _____

QUESTION	ANSWER	MARK	TOTAL
1. What is the function of the alternator?		2	
2. State basic theory of the alternator.		3	
3. Name THREE methods to increase the output frequency of the alternator.		3	
4. What are the functions of the stator and stator windings?		4	
5. Label parts (A–C) of the rotor in FIGURE 5.1.5.	 <p style="text-align: center;">FIGURE 5.1.5</p>	3	
	A -		
	B -		
	C -		
6. What are the functions of the rotor assembly?		3	

QUESTION	ANSWER	MARK	TOTAL
7. What are the functions of the slip ring and brush assembly?		4	
8. What is the function of the diode?		2	
9. State the function of the heat sink.		2	
10. What is the purpose of the voltage regulator?		2	
11. State the function of the capacitor.		2	
TOTAL – The Charging System – questions		30	

TASK 5: THE CHARGING SYSTEM – PROCEDURE**WORKSHEET 5.2**

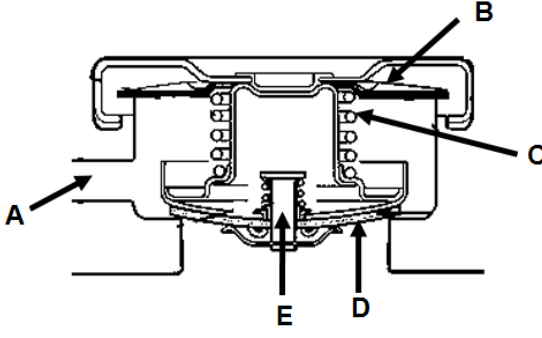
NAME: _____

QUESTION	ANSWER	MARK	TOTAL
1. Label any FIVE parts (A–J) of the alternator in FIGURE 5.2.1.	 <p style="text-align: center;">FIGURE 5.2.1</p>	5	
	A -		
	B -		
	C -		
	D -		
	E -		
	F -		
	G -		
	H -		
	I -		
	J -		
2. List FOUR safety measures to be carried out when working on an alternator.		4	

3. Explain the correct sequence for stripping, testing and assembling of an alternator. (11)

[illegible]

TASK 6: RADIATOR TEST– QUESTIONS**WORKSHEET 6.1****NAME:** _____

QUESTION	ANSWER	MARK	TOTAL
1. What is the function of the radiator?		2	
2. What type of metal is used to manufacture the radiator core and tanks?		2	
3. State SIX safety requirements to consider when setting up the radiator test.		6	
4. Name FOUR manufacturer's specifications required to carry out a radiator test		4	
5. What is the function of the thermostat?		2	
6. Label parts A–E of the radiator cap shown in FIGURE 6.1.6.	 <p style="text-align: center;">FIGURE 6.1.6</p>	4	
	A -		
	B -		
	C -		
	D -		
	E -		
TOTAL – Radiator test – questions		20	

TASK 6: RADIATOR TEST – PROCEDURE**WORKSHEET 6.2**

NAME: _____

QUESTION	ANSWER	MARK	TOTAL
1. Explain the correct sequence to conduct a radiator pressure test.		6	
2. Explain how you will test the radiator cap.		5	

3. FAULT	POSSIBLE CAUSES	CORRECTIVE MEASURES	MARK	TOTAL
The motor vehicle is overheating. Identify SIX possible faults/causes and corrective measures.			19	
TOTAL – Radiator test – procedure			30	
TOTAL – Radiator test – questions			20	
GRAND TOTAL			50	

TASK 7: FUEL PRESSURE TEST – QUESTIONS**WORKSHEET 7.1****NAME:** _____

QUESTION	ANSWER	MARK	TOTAL
1. What is the function of the pressure fuel tester?		1	
2. Name TWO types of fuel pumps.		2	
3. State SIX safety requirements while setting up the fuel pressure tester.		6	
4. Name FOUR manufacturer's specifications required to carry out a fuel test.		4	
5. What is the function of a fuel filter?		1	
TOTAL – Fuel pressure test – questions		14	

TASK 7: FUEL PRESSURE TEST – PROCEDURE**WORKSHEET 7.2**

NAME: _____

QUESTION	ANSWER	MARK	TOTAL
1. Explain the correct sequence of events to conduct a fuel pressure test.		9	

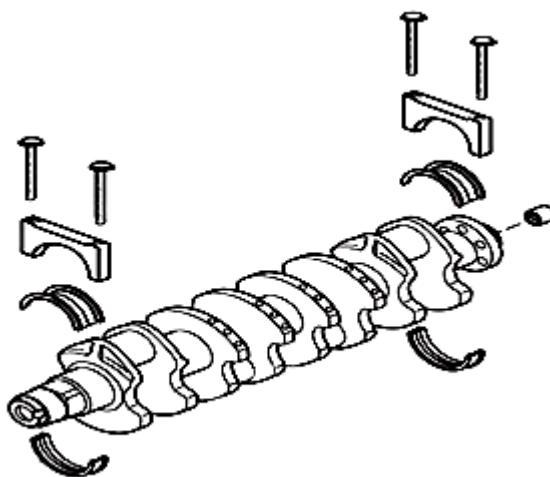
2. FAULT	POSSIBLE CAUSES	CORRECTIVE MEASURES	MARK	TOTAL
<p>A motor vehicle is experiencing power loss. After an investigation it is suspected that the fuel system may be the problem.</p> <p>Identify FIVE possible causes and give the corrective measures for each.</p>			20	
TOTAL – Fuel test faults – questions			20	
TOTAL – Fuel test – procedure			30	
GRAND TOTAL			50	

**TASK 8: MEASURING OF ENGINE COMPONENTS AND CALCULATING
COMPRESSION RATIO – QUESTIONS****WORKSHEET 8.1****NAME:** _____

QUESTION	ANSWER	MARK	TOTAL
1. What is the function of the crankshaft?		2	
2. Why is the vibration damper fitted to the front of the crankshaft?		2	
3. Explain what is meant by <i>swept volume</i> .		2	
4. Define <i>clearance volume</i> .		2	
5. What do you understand by the term <i>compression ratio</i> ?		2	
TOTAL – Definitions		10	

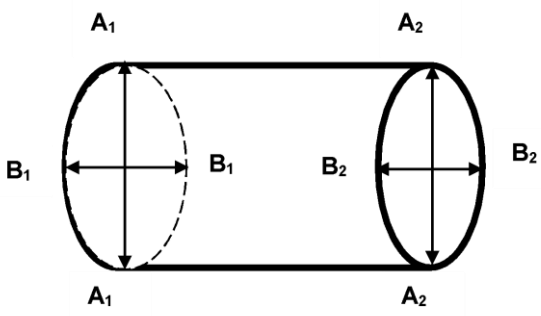
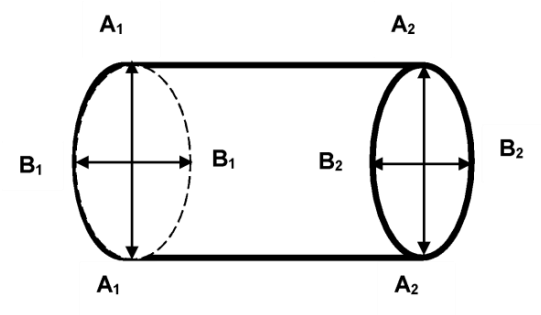
TASK 8: MEASURING OF ENGINE COMPONENTS AND CALCULATING COMPRESSION RATIO – PROCEDURE**WORKSHEET 8.2****NAME:** _____

Measure the cylinder bore and crankshaft journal of an internal combustion engine. Answer the questions that follow.

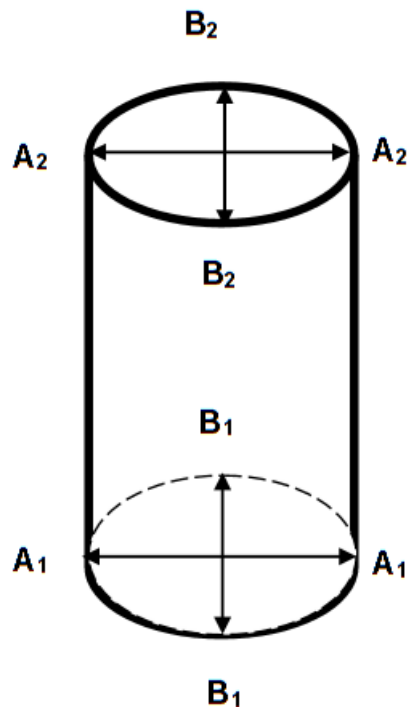
**FIGURE 8.2.1: CRANKSHAFT AND MAIN BEARINGS**

1.	Obtain specifications for the following:
	1.1 Big-end journal
	1.2 Main journal
	1.3 Cylinder bore diameter
	1.4 Strokes
	1.5 Clearance

(5)

2.	Measure big-end journal No. _____
	
FIGURE 8.2.2: BIG-END JOURNAL	
2.1	Ovality:
	$A_1 - B_1 =$
	$A_2 - B_2 =$
2.2	Taper:
	$A_1 - A_2 =$
	$B_1 - B_2 =$
2.3	Wear:
	(7)
3.	Measure main journal No. _____
	
FIGURE 8.2.3: MAIN JOURNAL	
3.1	Ovality:
	$A_1 - B_1 =$
	$A_2 - B_2 =$
3.2	Taper:
	$A_1 - A_2 =$
	$B_1 - B_2 =$
3.3	Wear:
	(7)

4. Measure cylinder bore No. _____

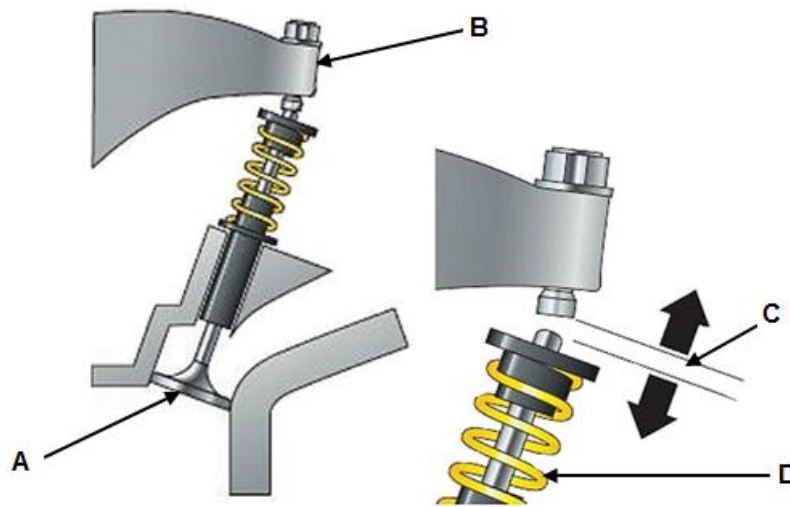
**FIGURE 8.2.4: CYLINDER BORE**

4.1	Ovality:
	$A_2 - B_2 =$
	$A_1 - B_1 =$
4.2	Taper:
	$A_1 - A_2 =$
	$B_1 - B_2 =$
4.3	Wear:

(7)

THE FOLLOWING TASK IS COMPULSORY**TASK 9: ENGINES – VALVES – QUESTIONS (four-cylinder SI engine)****WORKSHEET 9****NAME:** _____

1. FIGURE 9.1 shows the valve assembly of an internal combustion engine. Answer the questions that follow.

**FIGURE 9.1: VALVE ASSEMBLY**

- 1.1 Label parts A–D indicated in FIGURE 9.1.

A -

B -

C -

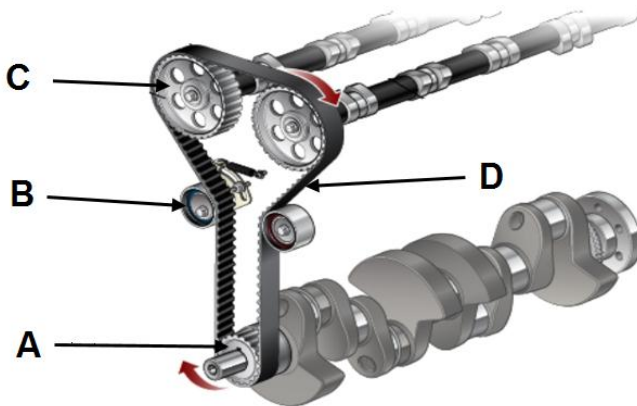
D -

(4)

- 1.2 Name TWO types of valves found inside the combustion chamber of an SI engine and state the function of each.

(4)

2.	Setting of valve timing:		
2.1	What is the position of the crankshaft?		
		(2)	
2.2	Describe the position of the camshaft.		
		(2)	
2.3	What are the TWO common methods used to link the camshaft to the crankshaft?		
		(2)	

3.	FIGURE 3.1 indicates the cam/crank shaft layout of an internal combustion engine. Answer the questions that follow.		
 <p style="text-align: center;">FIGURE 3.1</p>			
3.1	Identify the type of drive shown in FIGURE 3.1.		
		(2)	
3.2	Label parts A–D indicated in FIGURE 3.1.		
	A -		
	B -		
	C -		
	D -		
		(4)	

3.3	What is the function of part A in the system indicated in FIGURE 3.1?		
		(2)	
3.4	State FOUR advantages of the drive in FIGURE 3.1.		
		(4)	
4	Answer the following questions regarding setting of the valve clearance.		
4.1	What is the reason for the engine being at normal operating temperature?		
		(2)	
4.2	Give TWO reasons why the clearance for each type of valve differs.		
		(2)	
4.3	Give TWO reasons why the surface area for each type of valve differs.		
		(2)	
4.4	Name TWO harmful effects of excessive valve clearance.		
		(2)	
4.5	Name TWO effects on the performance of a SI engine if the valve clearance is too small.		
		(2)	
4.6	Explain the correct sequence of events to be used when setting valves on an internal combustion engine.		
		(4)	
TOTAL – Engines – Valves – questions		40	

TASK 9: ENGINE – VALVES – PROCEDURE (COMPULSORY)**WORKSHEET 9.2**

NAME: _____

Setting valves and timing			
Describe the following regarding valve timing.			
TERM	DESCRIPTION	MARK	TOTAL
Cam shaft position		2	
Number of valves		2	
Type of crank/cam drive		2	
Firing order		2	
Valve clearance		2	
TOTAL – Engines – Valves – procedure		Worksheet 9.2	10
TOTAL – Engines – Valves – questions		Worksheet 9.1	40
		TOTAL 9	50

MECHANICAL TECHNOLOGY																
AUTOMOTIVE																
MARK SHEET																
GRADE		12		DATE												
		LEARNERS														
TASKS	M A R K S															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
COMPRESSION TEST TASK 1	50															
CYLINDER LEAKAGE TEST TASK 2	50															
GAS ANALYSING TASK 3	50															
WHEEL BALANCING TASK 4	50															
ALTERNATOR TASK 5	50															
RADIATOR TEST TASK 6	50															
FUEL PRESSURE TEST TASK 7	50															
ENGINE MEASUREMENT TASK 8	50															
ENGINES – VALVES TASK 9	50															
GRAND TOTAL	250															
Final PAT Mark	100															
SIGNATURE OF TEACHER																
SIGNATURE OF DEPARTMENT HEAD																

5. CONCLUSION

On completion of the practical assessment task learners should be able to demonstrate their understanding of the industry, enhance their knowledge, skills, values and reasoning abilities as well as establish connections to life outside the classroom and address real-world challenges. The PAT furthermore develops learners' life skills and provides opportunities for learners to engage in their own learning.