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**Handtools**

**PRACTICE PAPER - ANSWER BANK**

**Assessors Note:**

**This answer bank should be used as the primary resource when marking students work. However, responses to some questions may be subjective and tutors are advised to exercise their professional judgement when making assessment decisions.**

## **ELEMENT ONE**

Demonstrate knowledge of hand tools and workshop equipment.

### **1 Identify each of the following hand tools and outline its main use.**

- A:** Tool: Ball Pein hammer  
Use: Designed for striking metal objects when reshaping.
- B:** Tool: Double open ended spanner  
Use: Tightening and loosening nuts and bolts in restricted areas
- C:** Tool: Hacksaw  
Use: Designed to cut metal objects.
- D:** Tool: Socket Ratchet  
Use: Allows tightening or loosening a nut or bolt when fitted with a socket
- E:** Tool: Tap  
Use: Designed to cut internal threads into a hole in metal objects.
- F:** Tool: Die  
Use: Designed to cut external threads on rods.
- G:** Tool: File  
Use: To shape smooth and sharpen by removing metal filings
- H:** Tool: Thread File  
Use: Repairing damaged external threads
- I:** Tool: Scraper  
Use: To remove gasket material

### **2 Identify each of the following workshop tools and outline their main use.**

- A:** Tool: Portable electric hand drill  
Use: For drilling thinner materials and where the drill needs to be taken to the job.
- B:** Tool: Bench Grinder  
Use: Sharpening, rounding and removing sharp edges

**3 Identify each of the following workshop equipment items and outline their main use.**

- A:** Name: Parts Wash  
Use: To clean grease and oil from automotive parts
- B:** Name: Steam Cleaner  
Use: To remove stubborn dirt, oil, grime and grease from automotive components.
- C:** Name: Tyre Machine  
Use: To aid the operator in the removal and refitting of a tyre.
- D:** Name: Four Post Hoist  
Use: To raise a vehicle for the technician to access under the vehicle easily.
- E:** Name: Oil filter removal tool  
Use: To remove oil filters
- F:** Name: Trolley Jack  
Use: To raise and lower vehicles
- G:** Tool: Air grinder  
Use: Grinding components and shaping.
- H:** Name: MIG Welder  
Use: To weld metal together
- I:** Name: Multi meter  
Use: To measure voltage, resistance and current flow in electrical circuits

**4. Identify each of the following measuring equipment items and outline their main use.**

- A:** Name: Vernier Calliper  
Use: To measure inside/outside diameter and depth
- B:** Name: Outside Micrometer  
Use: To accurately measure outside diameters
- C:** Name: Dial Test Indicator  
Use: To measure distance, roundness and alignment
- D:** Name: Combination square  
Use: To be used as a multi purpose measure and level

**E:** Name: Feeler Gauge  
Use: For measuring clearances

**5. List two reasons why tools should be kept clean.**

Any two of the following:

- Helps prevent grease or oil from being transferred to the customer's vehicle.
- Assists the technician to maintain a firm grip of the tool.
- Helps to maximise the life of the tool.

**6. Explain why it is important to always use the recommended tools and equipment for the particular task.**

To prevent costly damage to tools and or machinery being worked on.

To prevent possible injury that may arise from using the wrong tool or equipment.

To ensure that any warranties for the tools and equipment remain valid.

**7. List four safety checks that should be carried out on power tools before use.**

Any four of the following:

- Check tool body for breaks
- Electrical fittings are sound and secure
- Extension leads are safe
- The equipment is used with a transformer
- The area is free of water, oil and fire hazards

**8. What is the reading on the following micrometer scale? Answer in (mm's)**

Micrometer Reading: 9.40 mm

**9. Match up each hand tool with its description: For example**

**A – ball pein hammer = 8 – strikes metal objects for reshaping**

<b>A</b>	Ball Pein hammer	<b>A8</b>	1	Used for viewing inaccessible components
<b>B</b>	Hacksaw	<b>B6</b>	2	Used to install a rivet to secure two components
<b>C</b>	Chisel	<b>C12</b>	3	Used on slotted headed screws
<b>D</b>	Inspection mirror	<b>D1</b>	4	Removes multi-sized nuts and bolts
<b>E</b>	Magnet	<b>E9</b>	5	Removes carbon deposits, flaking material, paint and dirt.
<b>F</b>	Circlip Pliers	<b>F11</b>	6	Cuts metal objects
<b>G</b>	Rivet gun	<b>G2</b>	7	Designed to remove hexagon and torx headed bolts
<b>H</b>	Standard Screwdriver	<b>H3</b>	<b>8</b>	Used for striking metal objects
<b>I</b>	Wire brush	<b>I5</b>	9	Used to retrieve nuts and bolts from confined areas
<b>J</b>	Adjustable wrench	<b>J4</b>	10	Marks work to locate a drill
<b>K</b>	Allen Keys	<b>K7</b>	11	Used to insert and remove spring loaded clips to and from circular components
<b>L</b>	Centre punches	<b>L10</b>	12	Made from hardened steel and used for splitting metal objects

**10. Match up each of the following hand held power and pneumatic tools with its description: For example**

**A – Drill = 5 – strikes metal objects for reshaping**

<b>A</b>	Drill	<b>A5</b>	1	Used to sharp or uneven edges
<b>B</b>	Grinder	<b>B1</b>	2	Uses abrasive material for smoothing surfaces
<b>C</b>	Polisher/buff	<b>C6</b>	3	Tool used for turning screws
<b>D</b>	Sander	<b>D2</b>	4	Used when removing wheel nuts
<b>E</b>	Screwdriver	<b>E3</b>	<b>5</b>	Used when drilling holes
<b>F</b>	Pneumatic Wrench	<b>F4</b>	6	Used during the finishing process to ensure a smooth and glossy finish

**11. Match up each of the following workshop equipment items with its description: For example**

<b>A</b>	Air compressor	<b>A5</b>	1	Used to protect interiors seats and upholstery and exterior paint work
<b>B</b>	Computer system	<b>B8</b>	2	Used to remove harmful gases from the workshop
<b>C</b>	Extractor fans	<b>C2</b>	3	Used to apply lubrication under pressure to joints
<b>D</b>	Diagnostic equipment	<b>D18</b>	4	Used to securely clamp components to allow them to be worked on safely at a comfortable height.
<b>E</b>	Floor creeper	<b>E17</b>	<b>5</b>	Supplies air pressure for pneumatic tools and equipment
<b>F</b>	Grease gun	<b>F3</b>	6	Used during disassembly of components with a interference fit
<b>G</b>	Hoist	<b>G14</b>	7	Provides a low heat source to join electrical wiring
<b>H</b>	Engine lifter	<b>H10</b>	8	Used to store vehicle and customer information
<b>I</b>	Parts tray	<b>I19</b>	9	Used to carry out wheel angle adjustments
<b>J</b>	Drill press	<b>J16</b>	10	Used to raise and support heavy automotive components
<b>K</b>	Protective covers	<b>K1</b>	11	Thread restoring and cutting tools
<b>L</b>	Pullers	<b>L6</b>	12	Used to identify a distorted cylinder head surface
<b>M</b>	Soldering iron	<b>M7</b>	13	Contains service, repair, and disassembly/ assembly information
<b>N</b>	Axle stands	<b>N15</b>	14	Used to raise vehicles above head height for working underneath
<b>O</b>	Straight edge	<b>O12</b>	15	Used to support a vehicle where a hoist is unavailable
<b>P</b>	Wheel aligner	<b>P9</b>	16	Allows work to be held securely for accurate drilling
<b>Q</b>	Workshop manuals	<b>Q13</b>	17	A cushioned frame on wheels that a technician lies on when working under vehicles
<b>R</b>	Taps and dies	<b>R11</b>	18	Plugs into modern vehicles to retrieve engine fault codes
<b>S</b>	Work bench and vice	<b>S4</b>	19	Used to store nuts and bolts when disassembling engine components

13. Complete the table by providing an automotive use for each of the following measuring tools:

Measuring tool	Automotive Use
Measuring tape	Measuring exhaust pipe, vehicle to ground clearance, head light beam setting and carry out engineering tasks such as panel fabrication.
Spark plug gap gauge	Measuring the electrode gap on a variety of spark plugs.
Torque wrench	Securing nuts and bolts to manufacturers specifications.

## ELEMENT TWO

Demonstrate knowledge of maintaining workshop tools and equipment.

**1. Identify at least three instances of poor tool maintenance or use in the following situation.**

Leroy has been given the job of cleaning a cylinder head. He goes to use the scraper and finds it has been broken and placed back on the tool board. He finds a steel rule that has been lying in a box of nuts and bolts and uses this to scrape the gasket material from the cylinder head. In doing so Leroy damages the steel rule and cuts his fingers. Leroy needs to go the medical centre.

Leroy should have used the appropriate tool

Leroy should have worn gloves

Leroy should not have placed the scraper back on the tool board

**2. List two reasons why tools should be kept clean and lubricated.**

Tools should be clean so that they can be used safely (not as likely to slip or break during use).

Applying lubricant will help maintain the ideal performance of the tool over its service life.

**3. Provide two reasons why workshop tools should be returned to their area after use.**

Tools should be returned to their designated area so that they can be found easily when required.

Easier for the workshop to keep track of its tools.

**4. Match up the Act of Parliament with its most appropriate rule. Please enter the appropriate letter in the box provided.**

A: Resource Management Act 1991

B: Health and Safety in Employment Act 1992

**B**

This Act sets rules to ensure that workshop hazards are minimised, both management and staff are responsible for ensuring that this happens.

**A**

This Act sets rules to ensure that workshop waste is properly disposed of, both management and staff are responsible for ensuring that this happens.

**5. Identify two instances of incorrect tool use in the following situation.**

Leroy has been asked to replace a worn suspension ball joint. He finds a torque wrench on his workbench and he begins to remove the ball joint. Before long Leroy's hands are covered in grease and he is finding it difficult to maintain a firm grip on the tool. He locates a length of pipe and slides it over the handle of the torque wrench to aid leverage. He then applies full pressure. Unfortunately, the pipe slips off the handle and Leroy's elbow collides with the inner guard and is severely gashed.

- 1 Leroy is using the wrong tool for the job.
- 2 Leroy did not clean the tool before use
- 3 Leroy should not have added the pipe

**6. Identify 2 actions that Leroy should have taken to have prevented this accident from occurring.**

- 1 Leroy should have used the correct tool.
- 2 Leroy should make sure that tools are clean before he uses them

**7. Is this torque wrench now fit to be used by other workshop staff (tick as appropriate)? Please explain your answer.**

**NO**

A torque wrench is a precision tool and should not be in this way. It's likely that the full pressure applied by Leroy may have damaged the tool. The tool should be recalibrated and checked before use.

**8. Which of the following statements is correct? Please circle A, B, or C**

- A Micrometers should be stored on a shadow board
- B Micrometers should be stored in their original container where possible
- C Micrometers can be stored with other tools in a tool box

9. Match up each tool with its appropriate maintenance procedure. Please enter the number that matches the letter in the grey space provided.

	Tool			Maintenance Procedure
A	Punches	<b>A8</b>	1	Remove filings from the blade and check handle for security.
B	Torque wrenches	<b>B3</b>	2	Remove dirt, grime and grease. Ensure that the handle is in good condition and check for loose head or split handle.
C	Hacksaws	<b>C9</b>	3	Remove dirt, grime and grease. Calibrate and store in original container. Check socket head attachment for wear.
D	Files	<b>D1</b>	4	Remove dirt, grime and grease. Check the blades for damage. Damaged blades will produce inaccurate readings
E	Adjustable wrenches and spanners	<b>E10</b>	5	Remove dirt, grime and grease. Ensure tip is free from damage and that the shank is secure in the plastic handle grip.
F	Hammers	<b>F2</b>	6	Remove dirt, grime and grease. Sharpen edges as required.
G	Feeler gauges	<b>G4</b>	7	Remove dirt, grime and grease. Check spindle operates freely and use zeroing gauges to calibrate.
H	Screwdrivers	<b>H5</b>	8	Remove any burrs and maintain the head to avoid slip off.
I	Micrometers	<b>I7</b>	9	Ensure blade is in good condition and is secure and correctly tensioned
J	Chisels	<b>J6</b>	10	Remove dirt, grime and grease. Check jaws for wear.

