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Unit Standard 21668

**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 materials and equipment used to clean automotive components.

- 1. Provide a brief description of each of the following items of cleaning equipment.**

### **Brake wash machine**

A brakes wash machine is used by automotive technicians when inspecting and cleaning automotive brake parts. The brake solvent solution is a water and detergent mixture that cleans the braking components while providing protection from exposure to hazardous brake dust.

### **Ultrasonic cleaner**

These cleaners use air bubbles to clean very delicate automotive components such as fuel injectors. The air bubbles are the result of a chemical reaction that takes places inside the cleaner when ultrasonic waves react with a conducting fluid.

### **Cabinet**

Cabinets use air pressure to direct glass beads or sand the components to remove rust, grime and other contaminants. The component is placed inside the cabinet and the cabinet is sealed. To operate the technician wears the built in gloves to hold and direct the blast gun. The blast gun is usually pedal operated.

### **Parts wash machine**

A parts wash machine is used by automotive technicians when cleaning automotive components. The electric or air driven re-circulating fluid pump draws the solvent solution from the solvent drum and delivers the solvent to the wash bath through the fluid nozzle. The solvent solution then passes through a filtration system before re-entering the solvent drum.

### **Basket cleaner**

An agitator and basket machine is similar to a household washer/drier machine. Parts are placed into the basket and the lid is closed. Once set the machine uses hot water and solvent to clean the component. The machine will then dry the component.

**Steam cleaner**

A steam cleaner is used by automotive technicians when removing stubborn dirt, oil, grime and grease from automotive components. Water is heated and pressurised within the steam cleaner to create a concentrated energy force that can be directed at the stubborn material.

**Drip tray**

A drip tray used by automotive technicians to collect any fluid run off from workshop benches.

**2. Complete the following table by providing an automotive use for each cleaning agent**

Gasket stripper	Gasket stripper assists in the removal of gaskets, adhesives and sealants. It dissolves the gasket and sealant materials and removes dried oil, grease and paint from metal components.
Electrical cleaner	Electrical cleaners are used to remove grease, oil, dirt, wax, moisture and other foreign material that may cause electrical failures.
Carburettor parts cleaner	Carburettor parts cleaner dissolves carburettor deposits inside and out. It can be used to clean each of the following components: <ul style="list-style-type: none"> <li>• PCV valves.</li> <li>• Carburettor housings.</li> <li>• Automatic chokes.</li> <li>• EGR valves.</li> <li>• Linkages.</li> <li>• Jets.</li> </ul>
Engine degreaser	Engine degreaser delivers a jet of cleaning solution that flushes oil and grease from dirty engines.

**3. What are the health and safety dangers of overexposure to solvents containing hydrocarbons?**

Can lead to cancer, nervous system damage and skin diseases.

**4. Why is it important to check the flash point before using solvents?**

Engine components can get very hot so to avoid combustion you should only use solvents which have a flash point above 60°C.

**5. What are the main advantages associated with water based cleaning solutions when compared to solvent based solutions.**

Water based solutions are usually non flammable, non toxic and environmentally more friendly than solvent based solutions.

**6. What safety precautions should be observed when storing flammable and/or toxic substances?**

When storing flammable and/or toxic substances, protective clothing must be worn, the storage container must be sealed and the storage instructions provided by the manufacturer must be followed.

**7. How should used cleaning rags be disposed of?**

Used cleaning rags should be placed into a recycling bin.

## **ELEMENT TWO**

Demonstrate knowledge of cleaning automotive components.

### **1. List an automotive cleaning use for each of the following:**

- Wire brush: Remove carbon build up from battery
- Sand paper: To achieve a clean flat mating surface
- File: To clean, reshape or sharpen metal surfaces
- Scraper: To remove paper gasket material

### **2. List the most appropriate tool or cleaning agent that should be used in each of the followings instances:**

- Clean brake linings: Brakes parts cleaner
- Clean grime from sensors: Electrical cleaner
- Remove deposits from EGR valves: carburettor parts cleaner
- Clean disassembled gears and shafts: Parts wash machine

### **3. Explain why it is important to wear each of the following when using cleaning agents**

- Safety gloves  
Protects hands from burns, lacerations and dermatitis
- Safety goggles  
Protects eyes from chemical splashes and debris
- Safety boots  
Protect toes, support ankles and is oil and water resistant
- Filter mask  
Protects lungs from inhalation of toxic fumes

- 4. What is the name of the law that workshops must abide by when handling and storing harmful cleaning agents?**

Resource Management Act 1991

- 5. Outline the procedure involved when removing gasket material.**

Mask painted surfaces surrounding the area to be cleaned as the gasket stripper will dissolve paint.

Hold the container upright 200-300mm from the area to be sprayed.

Spray areas to be stripped.

Allow to set 5-10 minutes and then remove gasket and/or gasket stripper with a gasket scraper.

Remove remaining residue from the gasket surface.

- 6. Outline the procedure involved when cleaning electronic components in an engine bay.**

Disconnect the battery.

Disconnect the dirty electrical connectors.

Apply electrical cleaner to both contact surfaces and allow to dry.

Reconnect the electrical connectors.

Reconnect the battery.

If necessary, repeat application.

- 7. Outline a procedure involved when cleaning a crankshaft that has been removed from an engine.**

Place the crankshaft into the bath of the parts wash machine.

Wear the appropriate protective clothing.

Switch on the parts wash machine.

Direct the solvent nozzle onto the area to be cleaned.

Using the cleaning brush attachment, remove all dirt, grease, oil and grime from the area.

Switch off the parts machine.

Allow the solvent to drain from the component.

Remove the component from the bath and place securely on to the workshop bench.

Remove excess sludge from the bath and clean the bath area thoroughly, ready for re-use.

Using a clean dry workshop rag, dry the component.

**8. Provide two safety precautions that are particularly relevant when using a parts wash machine.**

Flammable liquid. Keep away from heat, sparks and flame. Do not place hot parts in solvent.

Vapour harmful. Use only in well ventilated locations. Avoid repeated and/or prolonged breathing of vapours.

Use of compressed air to dry parts may cause a high concentration of solvent vapours.

Do not clean or degrease porous or absorbent materials.

Do not use solvents on friction materials such as brake linings and clutch surfaces that are to be re-used.

Wipe rubber and metal brake parts completely dry before re-assembly.

Drain cleaned parts in the bath until dripping ceases.

Avoid contact with eyes.

Avoid repeated and/or prolonged contact with skin. Wear protective gloves and clothing.

Do not smoke, eat or drink in the work area.

Do not obstruct or hang anything in the work area. Obstructions prevent the cover from closing in the event of fire.

Where lamp is provided do not use light bulb rated over 60 watts.

Do not allow the unit to operate unattended.

**9. How should chemicals that are used for automotive cleaning applications be stored?**

All chemicals should be stored in the dangerous goods store. All lids must be securely tightened. All containers should be clearly labelled.

**10. How should chemical waste that was used for automotive cleaning applications be disposed of?**

All waste should be collected and placed in the recycling bin.

**11. Explain why it is important to avoid electronic components when steam cleaning.**

Steam cleaning involves the use of heated water which will damage electrical components

**12. Would it be appropriate to clean an electrical switch using a parts wash machine? Please explain your answer.**

No as the solvent solution will damage the electrical switch.