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Unit Standard 30478

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 lubricants and lubrication systems.

1. Complete the table by describing how lubricants carry out each of the functions listed.

Lubricates	Forms a fluid film between loaded moving parts to prevent wear from metal to metal contact
Cools	Absorbs heat away from friction surfaces
Prevents corrosion	Contains additives designed to prevent rust from forming inside the engine
Cleans	Contains detergents to remove deposit build up in the engine
Seals	Acts as a barrier to prevent pressure loss passed the piston rings

2. What is the relationship between engine speed and oil viscosity?

Low viscosity oils that are free flowing are best for high speed applications while high viscosity oils are best for low speed applications.

3. Provide 2 advantages and 2 disadvantages of high viscosity oil.

Advantages Increased leak protection and the thick film leads to reduce wear potential

Disadvantages Absorbs energy, sluggish in hydraulic systems and increased pressure drops.

4. Engine oil has an API rating, what does this mean?

The API is a rating system that measures how well an oil holds up under service condition in the engine. Vehicle manufacturers will specify which rating is acceptable for their engines.

5. Some engine oils have a 'W' as part of their rating. What does this mean?

The W indicates that the oil has met the low temperature standard (winter requirement)

6. What is the relationship between engine oil viscosity and temperature?

A change in temperature has a greater impact on low viscosity oil than on high viscosity oil. For low temperatures applications low viscosity oil is used and for high temperature applications high viscosity oil is used.

7. List 5 main functions of grease.

- Reduce friction and wear
- Provide corrosion protection
- Seal bearing from water
- Resist leakage, dripping and throw off
- Be compatible with seals
- Repel moisture

8. What is meant by the 'dropping point of grease'?

The dropping point is the temperature at which grease separates or changes into a liquid state.

9. Complete the table by describing the function of each engine oil additive.

Detergent	Helps to keep metal surfaces clean and prevents deposit build up
Extreme pressures	Maintains lubrication where high pressures and close tolerances are encountered
Anti-rust	Builds up a protective coating on metal parts that repels water droplets
Foam inhibitor	Speeds up the rate at which air bubbles in the oil break up
Seal swell	Adds properties that reduce leakage
Viscosity Index Improver	Helps an oil give lubrication protection at low and high temperatures. Gives oil best properties of both light and heavy oils.

10. Describe the main purpose of the lubrication system.

The job of the lubrication system is to circulate oil between moving engine components. The oil reduces friction between moving components, which increases engine power and efficiency and helps to extend engine life. It carries heat away from engine components, cleans engine components, helps prevent corrosion, helps the piston ring seal in compression pressures, and clings to metal surfaces.