

**FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA**  
**SCHOOL OF TECHNOLOGY EDUCATION**  
**DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION**  
**2012/2013 SECOND SEMESTER EXAMINATION**

**Course Title: Engine Lubrication and Cooling System**

**Course Code: AUT 221                      Time Allowed: 2 Hours**

**Instruction: Answer any Four Questions**

Q1 (A) State three functions of the lubrication system.

(B) Define the following terms as relates to the lubrication system;

1. Viscosity    2. Viscosity Index    3. Pour Point    4. Flash point

(C) List three types of oil filters and where they are placed in the lubrication system

(D) What two advantages does partial flow oil filter have over the full flow?

Q2 (A) Illustrate by means of a sketch the partial flow oil filter and identify the following parts:

1. Filter              2. Oil pump              3. Bypass Circuit    4. Oil Sump

(B) State three required properties of the lubrication oil.

(C) State three effects of too high oil pressure.

(D) State two causes of excessive oil pressure.

Q3 (A) Explain the functions of each of the following:

- i. Oil Pump    ii. Oil Filter    iii. Pressure Relief Valve    iv. Water Pump

(B) State three functions of the cooling system

(C) State three advantages of the liquid cooling system over the air type.

Q4 (A) State two functions each of the following:

- i. Radiator pressure cap    ii. Thermostat

(B) What is the function of the joggle pin positioned in the thermostat?

(C) State two advantages of the pressurized cooling system.

(D) List three major item that requires periodic checks in the air cooled engine.

Q5 (A) State three possible effects of running an engine on a prolonged low temperature.

(B) State two advantages and disadvantages each on the use of water as a cooling medium in the cooling system.

(C) What is the function of the anti-freeze usually added in the cooling system.