

**FEDERAL UNIVERSITY OF TECHNOLOGY MINNA  
SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION  
DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION  
SECOND SEMESTER EXAMINATION, 2019/2020 SESSION**

**COURSE CODE: ITE 223**

**COURSE TITLE; ENGINE LUBRICATION AND COOLING SYSTEM**

**TIME: 2 HOURS**

**INSTRUCTIONS:** Answer Only Four (4) Questions. ANSWER ONE (1) IN (SECTION A) IN ADDITION TO ANY OTHER THREE (3) FROM (SECTION B).

**(SECTION A).**

**ANSWER ONLY ONE (1) QUESTION FROM THIS SECTION**

1a. With the aid of a line diagram, show the layout of an automobile engine lubrication system showing at least three (3) Parts placed in the right position.

1b. Briefly describe the operation of the engine lubrication system with respect to the parts listed in 1a above.

1c. Describe and state the function of the (engine oil) dip stick.

2a. with the aid of a line diagram, show the layout of an automobile engine water cooling system showing at least five (5) parts placed in the right position.

2b. briefly describe the operation of the automobile engine water cooling system with respect to 2a above.

2c. Briefly describe the operation and state the function of the thermostat in the cooling system

**(SECTION B).**

**ANSWER ANY THREE (3) FROM THIS SECTION**

3a. Briefly discuss the need for lubrication in an automobile engine.

3b. Define the following lubricant properties: (i) Flash Point (ii) Pour Point (iii) Viscosity (iv) Viscosity index (v) Demulsibility.

3c. list five (5) engine parts that engine oil is supplied to during the lubrication process.

4a. list and discuss five (5) major part of the engine lubricating system

4b. list and describe two types of oil filtering system in the engine

4c. State Four sources of contaminants in an Automobile Engine

5a. Briefly explain the need for a cooling system in an automobile engine

5b. list and explain the two main types of engine cooling system

5c. Enumerate the three factors on which the amount of heat dissipated into the air depends

6a. list five (5) advantages and two disadvantages of the air cooling system in comparison to the water cooling system.

6b. list and explain any five (5) parts of the water cooling system

6c. State five (5) features of a good anti-freeze