

**Federal University of Technology, Minna.**  
**Department of Industrial and Technology Education**

**Session:** 2020/2021 Second Semester Examination  
**Course Title:** Auto-Electrical System and Air-Conditioning  
**Course Code:** ITE 528  
**Time Allowed:** 2 Hours  
**Instruction:** Attempt four (4) Questions Only

- 1a. With the aid of a simple sketch describe the principle of operation of the coil ignition system
- 1b. What is the heat range of a spark plug?
- 1c. List the factors that determine the thermal capacity of a plug
- 2a. What is the purpose of the alternator?
- 2b. What are the criteria that the charging system must meet when the engine is running?
- 2c. Make a table and identify three (3) common symptoms and faults of the charging system malfunction
- 3a. Draw a simple sketch of the inertia type starter motor and describe its principle of operation
- 3b. Identify three (3) charging system faults and its associated symptoms
- 3c. List the criteria that an internal combustion engine requires in order to start and continue running.
- 4a. Describe any two (2) methods of recharging a battery.
- 4b. Vehicle battery is used as a source of energy in the vehicle when the engine, and hence the alternator, is not running. Explain five (5) other requirements of the battery
- 4c. List six considerations when deciding where a vehicle battery should be positioned
- 5a. Describe the operation of an air conditioning system.
- 5b. Make a clearly labelled sketch to show the main components of an air conditioning system
- 5c. List four process testing procedure for checking an air conditioning system
- 6a. What is the main purpose of light in a vehicle?
- 6b. Sketch and explain the procedure for carrying out head lamp alignment manually
- 6c. Identify two (2) vehicle central door defects and action to be taken remedy the defects