

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION
DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION

Course Title: POWER ENGINES

Course Code: ITE 516

Course Unit: 2

TIME : TWO HOURS

Session: 2021/2022 FIRST SEMESTER EXAMINATION

Instruction: Answer Any Four Questions Only.

- 1a. Based on the under listed factors, classify the power engines appropriately:
(i)Type of Motion (ii)Number of Cylinders (iii)Dimension of the Cylinder Bore
(iv)Mechanical Cycles (v)Ignition System. **5 marks**
- 1b. With the aid of neat labeled diagrams, explain the working principle of two and four stroke cycle engine with respect to power engines. **10 marks**
- 2a. State the major function of governors used in automotive engines and outline the types of governors commonly used in motor vehicles. **4 marks**
- 2b. With the aid of neat labeled diagrams, distinguish between the working principle of centrifugal and pneumatic governors used in power engines. **11 marks**
- 3a. With the aid of neat labeled diagram, explain the principle of operation of Ricardo Comet Swirl Combustion Chamber used on motor vehicles. **9 marks**
- 3b. Outline any four advantages and two disadvantages of the Ricardo comet swirl combustion chambers used on motor vehicles. **6 marks**
- 4a. With respect to power engines, outline ten comparisons between Otto and clerk engines. **5 marks**
- 4b. With the aid of neat labeled diagram, explain the principle of operation of Root's blower supercharger used on modern vehicles. **10 marks**
- 5a. Outline any five functional requirements of an injection system in internal combustion engine. **5 marks**
- 5b. With the aid of neat labeled diagram, explain the working principle of fuel injector used in automotive power engines. **10 marks**
- 6a. Outline four major function of nozzle in relation to combustion chamber. **5 marks**
- 6b. With the aid of neat labeled diagram, explain the principle of operation of Vane blower super charger used on modern vehicles. **10 marks**