



**KERALA AGRICULTURAL UNIVERSITY**  
**B. Tech. (Agrl. Engg.) 2021 Admission**  
**IV Semester Final Examination – July 2023**

**Fpme.2207**

**Thermodynamics and Automotive Engines (2+1)**

**Marks: 50**  
**Time: 2 hours**

- I Fill in the blanks (10x1=10)**
1. The closed system is a system of .....mass.
  2. .... is the example of extensive properties.
  3. .... is the sum of internal energy and product of p and v.
  4. The air standard efficiency of an Otto cycle compared to the diesel cycle for the given compression ratio is .....
  5. 10:1 to 12:1 range of the compression ratio is applicable for ..... stroke engine.
- State True or False**
6. The air-fuel mixture ratio varies from 10:1 to 20:1 in the Four-strokes of the petrol engine.
  7. Lubricating oil minimizes wear and helps the parts cool.
  8. Piston, piston rings, Tappets, and cams on the camshaft are lubricated by a splash system.
  9. Fuel injection in an SI engine increases the volumetric efficiency.
  10. The heat balance sheet is used to find the engine performance.
- II Write short notes on ANY FIVE of the following (5x2=10)**
1. What do you understand by macroscopic and microscopic viewpoints? State on one line.
  2. What is an intensive property? Give an one example.
  3. Define the first law of thermodynamics.
  4. What is the function of the carburetor?
  5. What is the need of the governors in the engine?
  6. Define the compression ratio.
  7. What is the purpose of the ignition system in the engine?
- III Answer ANY FIVE of the following (5x4=20)**
1. What is the difference between a closed system and an open system?
  2. Explain mechanical, chemical and thermal equilibrium.
  3. How do you find the indicated power of an engine?
  4. Why is it called a 2-stroke engine? Draw the diagram.
  5. What is the advantage of a magneto ignition system over a battery ignition system?
  6. Write down IC engine and parts names with principle.
  7. What is the fuel supply in SI and CI engines and the difference between the two engines?
- IV Write an essay on ANY ONE of the following (1x10=10)**
1. Derive the Otto cycle efficiency with help of PV and TS diagram.
  2. Draw a neat sketch of the fuel injection system for the CI engine and explain the working principle.

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