

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech. Branch: Mechanical Engineering

Semester: VIII

Subject Code & Name: BTMEC801A Fundamentals of Automotive Systems

Max Marks: 60

Date:04/07/2022

Duration: 3.45 Hr.

**Instructions to the Students:**

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

(Level/CO) Marks

**Q. 1 Solve Any Two of the following.**

- A) What are the limitations of the supercharging in an IC engine? 06
- B) Briefly explain the following: (i) time loss factor (ii) heat loss factor (iii) exhaust blowdown factor. 06
- C) Explain the loop scavenging process in two-stroke engine with neat schematic diagram. 06

**Q.2 Solve Any Two the following.**

- A) Explain the stages of combustion in CI engine? 06
- B) Briefly discuss the air--fuel ratio of a petrol engine from no load to full load. 06
- C) Explain the exhaust gas recirculation (EGR) method for controlling the emissions from the engine. 06

**Q. 3 Solve Any Two of the following.**

- A) Explain the engine power-torque vs speed characteristics for actual internal combustion engine with suitable performance curve. 06
- B) Explain the working of clutch in automotive with suitable layout. 06
- C) Describe the working of multi speed gear box 06

**Q.4 Solve the following.**

- A) Explain the hydraulic braking system. 06
- B) What is antilock braking system? Explain with suitable diagram. 06

**Q. 5 Solve Any Two of the following.**

- A) Explain the hydraulic power steering system with suitable schematic diagram. 06
- B) Describe the various types of front suspension systems. 06
- C) What are the causes of tyre heat and how can it be reduced? 06

\*\*\* End \*\*\*