

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE**

**Regular End Semester Examination – Summer 2022**

**Course: B. Tech. Branch: Mechanical Engineering**

**Semester: VIII**

**Subject Code & Name: BTMECE801A 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 \*\*\***