**PVP 20**

Code: 20ME4601E

**III B.Tech - II Semester – Regular Examinations – JUNE 2023**

# AUTOMOBILE ENGINEERING
## (MECHANICAL ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level CO – Course Outcome

| | | | BL | CO | Max. Marks |
|---|---|---|---|---|---|
| **UNIT-I** | | | | | |
| 1 | a) | Explain with a simple schematic diagram, the working of a four-wheel drive automobile. | L3 | CO2 | 7 M |
| | b) | What is chassis? What are the components of the chassis? Indicate their functions. | L2 | CO1 | 7 M |
| **OR** | | | | | |
| 2 | a) | Draw and explain with a simple sketch, a pressurized lubrication system with its relative advantages. | L3 | CO2 | 7 M |
| | b) | Explain how a four-wheel drive mechanism offers better power transmission in an automobile. | L2 | CO1 | 7 M |

| | | | | | |
|---|---|---|---|---|---|
| **UNIT-II** | | | | | |
| 3 | a) | What is the injection system in an automobile engine? Explain different types of injection systems with a suitable diagram. | L3 | CO2 | 7 M |
| | b) | Why cooling is required in automobile engines? Explain the liquid cooling system briefly with a sketch. | L3 | CO2 | 7 M |
| **OR** | | | | | |
| 4 | a) | What is the function of the radiator in automobiles? Explain different types of radiators. | L3 | CO2 | 7 M |
| | b) | List different types of the ignition system that exist in an automobile engine. Explain the magnetic ignition system with a neat sketch. | L3 | CO2 | 7 M |
| **UNIT-III** | | | | | |
| 5 | a) | Explain in detail about Synchromesh Gear Box with neat sketch. | L3 | CO3 | 7 M |
| | b) | What is the necessity for clutch assembly in the transmission system and explain the construction and working of a single plate clutch. | L3 | CO3 | 7 M |
| **OR** | | | | | |
| 6 | a) | Explain the constructional working and performance of a fluid flywheel. Enumerate the advantages of fluid flywheel over the other types of clutches. | L3 | CO3 | 7 M |

| | | | | | |
|---|---|---|---|---|---|
| | b) | Explain briefly the Wishbone arm independent suspension system used in automobiles. | L3 | CO3 | 7 M |
| **UNIT-IV** | | | | | |
| 7 | a) | Sketch and explain various steering geometries. | L3 | CO3 | 7 M |
| | b) | Draw the sketch of a mechanical braking system and explain various parts and working of this braking system. | L3 | CO3 | 7 M |
| **OR** | | | | | |
| 8 | a) | Explain how kingpin inclination or steering axis inclination produces directional stability. | L3 | CO3 | 7 M |
| | b) | Briefly discuss the functional requirements of braking fluids. | L3 | CO3 | 7 M |
| **UNIT-V** | | | | | |
| 9 | a) | Explain about Bendix drive mechanism and solenoid switch. | L3 | CO3 | 7 M |
| | b) | Explain multipoint fuel injection for SI engines. | L3 | CO3 | 7 M |
| **OR** | | | | | |
| 10 | a) | Explain how hydrogen is an alternate fuel for emission control in an automobile engine. | L3 | CO4 | 7 M |
| | b) | What is common rail diesel injection? Explain with a neat sketch. | L3 | CO3 | 7 M |