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## Eighth Semester B.E. Degree Examination, Jan./Feb. 2023

### Automobile Engineering

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

#### Module-1

- 1 a. List the components of automotive engine and mention their functions. (06 Marks)
- b. Explain any two methods of swirl generation in C.I. engine. (06 Marks)
- c. Explain with neat sketch working of the forced circulation type water cooling system. (08 Marks)

OR

- 2 a. What is the difference between a dry and wet liner? (04 Marks)
- b. Explain the valve timing of 4-stroke compression ignition engine with a suitable diagram. (08 Marks)
- c. With the help of neat sketch, explain dry sump lubrication system. (08 Marks)

#### Module-2

- 3 a. Brief the working of disc brake. (04 Marks)
- b. What is the function of clutch? Explain with a neat sketch the working of single plate clutch. (08 Marks)
- c. With a line diagram, explain the operation of antilock braking system. (08 Marks)

OR

- 4 a. Explain with a neat sketch the working of torque converter. (06 Marks)
- b. With a line diagram, describe the working of hydraulic brake system. (06 Marks)
- c. What are the requirements of braking system? Explain with a neat sketch, working of master cylinder. (08 Marks)

#### Module-3

- 5 a. Define the following : (06 Marks)
  - (i) Camber
  - (ii) Caster
  - (iii) King Pin inclination
- b. Explain with neat sketch, the recirculating ball type steering gear box. (06 Marks)
- c. With a diagram, explain the working of power steering system. (08 Marks)

OR

- 6 a. Explain with a neat sketch, working of air suspension system. (08 Marks)
- b. Explain with neat sketch leaf spring and coil spring. (06 Marks)
- c. With a line diagram, describe the working of battery ignition system. (06 Marks)

#### Module-4

- 7 a. Distinguish between supercharging and turbocharging. (04 Marks)
- b. Explain with a neat diagram, the working of centrifugal supercharger. (08 Marks)
- c. List the alternate fuels for C.I. engine and explain any two. (08 Marks)

**OR**

- 8 a. With a line diagram, explain supercharging of engine by compressor method. (08 Marks)  
b. Explain with neat sketch, the operation of turbocharger. (06 Marks)  
c. Explain the working of common rail direct injection system with a neat diagram. (06 Marks)

**Module-5**

- 9 a. Briefly explain different types of emission from IC engines. (06 Marks)  
b. With a neat diagram, explain how Exhaust Gas Recirculation (EGR) system reduces. (08 Marks)  
c. With a neat diagram, explain vapour recovery system for evaporative emissions control. (06 Marks)

**OR**

- 10 a. What are different emission standards? Explain briefly. (08 Marks)  
b. What are catalytic converters? How they are helpful in reducing emissions. (06 Marks)  
c. Write short note on :  
(i) Photo chemical smog.  
(ii) Motor Vehicle Act. (06 Marks)

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