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18ME752

Seventh Semester B.E. Degree Examination, Feb./Mar. 2022
Automotive 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. Mention any two components functions and materials used for manufacturing. (06 Marks)
b. Explain with neat sketch various methods of cylinder arrangements used in multi cylinder engine. (08 Marks)
c. With neat sketch, explain the working of thermo-syphon cooling system. (06 Marks)

OR

- 2 a. What is the purpose of lubrication for an IC engine? List the properties of lubricants. (06 Marks)
b. With neat sketch, show the different combustion chamber designs used in SI engine. (08 Marks)
c. Explain dry sump lubrication system, with the help of neat sketch. (06 Marks)

Module-2

- 3 a. What is the functions of clutch? List the design requirements of clutch. (06 Marks)
b. With the help of neat sketch, explain single-plate clutch. (08 Marks)
c. Sketch and explain working of propeller shaft. (06 Marks)

OR

- 4 a. List the various types of braking system. What are the requirements for braking system? (06 Marks)
b. Explain with neat sketch: (i) Disc braking system (ii) Drum braking system (08 Marks)
c. State the advantages and disadvantages of hydraulic braking system. (06 Marks)

Module-3

- 5 a. Define the following: (i) Camber (ii) Caster (iii) King pin inclination (06 Marks)
b. Explain with neat sketch the re-circulating ball type steering gear box. (08 Marks)
c. What are the difference between battery ignition system and magneto ignition system? (06 Marks)

OR

- 6 a. What are the types of ignition systems? State the requirements of ignition system. (06 Marks)
b. With neat sketch, explain power steering mechanism. (08 Marks)
c. With a neat circuit diagram, explain the working of battery ignition system. (06 Marks)

Module-4

- 7 a. What is supercharging? List the advantages and disadvantages of supercharging. (06 Marks)
b. Explain with neat sketch:
(i) Centrifugal type supercharger
(ii) Root blower type supercharger (10 Marks)
c. What are the limitations of turbocharging? (04 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

OR

- 8 a. Define the following:
- (i) Octane number
 - (ii) Cetane number
 - (iii) Detonation
- (06 Marks)
- b. Explain with neat sketch:
- (i) Single point fuel injection system
 - (ii) Multi point fuel injection system
- (10 Marks)
- c. What are the fuel mixture requirements for S.I. engine? (04 Marks)

Module-5

- 9 a. What are different emission standards? Explain briefly. (06 Marks)
- b. Discuss how evaporative emission can be controlled. (08 Marks)
- c. Explain with neat sketch the positive crankcase ventilation system. (06 Marks)

OR

- 10 a. What are catalytic convertors? How they are helpful in reducing HC, CO and NO_x emission? (06 Marks)
- b. With a neat sketch explain the operation of air injection system for treating the exhaust gas. (08 Marks)
- c. Discuss redesign of combustion chamber to control emission. (06 Marks)
