

CBCS SCHEME

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18ME824

Eighth Semester B.E. Degree Examination, June/July 2024 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. What are the basic components of an automobile engine? Briefly explain them. (10 Marks)
b. Briefly explain the essential components of a valve actuating mechanism. (08 Marks)
c. What are the functions of piston rings? (02 Marks)

OR

- 2 a. Differentiate between wet and dry liners. (05 Marks)
b. Explain the concept of HCCI engines. What are its advantages and disadvantages? (07 Marks)
c. Explain thermosyphon and pump circulation system. (08 Marks)

Module-2

- 3 a. With a neat sketch, explain the working of single plate clutch. (07 Marks)
b. Explain the working of overdrive operation. (05 Marks)
c. An automobile weighing 13445N makes an emergency stop at 95km/hr at which the total resistance is 805N. Assume coefficient of adhesion as 0.5. Calculate:
i) The retarding force, if the brakes are applied to locking point.
ii) Heat flow per minute at each wheel at the beginning of braking. (08 Marks)

OR

- 4 a. What are the requirements of a good braking system? (06 Marks)
b. Compare between disk brakes and drum brakes. (06 Marks)
c. A passenger car with all wheel brakes weighing 1300N makes an emergency stop at 96km/hr. The rolling and air resistance at 96km/hr is 820N total. The coefficient of adhesion is 0.5. Calculate:
i) The retarding force if the brakes are applied at locking point.
ii) Heat flow per second at each wheel at the beginning of braking. (08 Marks)

Module-3

- 5 a. What are different types of steering gears? With sketch, explain any two of them. (08 Marks)
b. With a neat sketch, explain the working of battery ignition system. What are its advantages and disadvantages? (08 Marks)
c. What are the main objectives of suspension system? (04 Marks)

OR

- 6 a. Explain the principle of air suspension system write its advantages over conventional metal springs. (08 Marks)
b. Differentiate between battery and magneto ignition system. (05 Marks)
c. Explain the working of rotating armature type ignition system. (07 Marks)

Module-4

- 7 a. Explain the following types of super charger:
i) Centrifugal type (08 Marks)
ii) Vane type. (06 Marks)
- b. Compare mechanical supercharging and turbocharging. (06 Marks)
- c. Explain normal and abnormal combustion in SI engines. (06 Marks)

OR

- 8 Write note on:
a. Conventional fuels used in IC engines.
b. Cetane and octane numbers
c. Electronic injection system
d. Common rail direct injection system. (20 Marks)

Module-5

- 9 a. Describe the exhaust gas recirculation device for the control of oxides of nitrogen. (08 Marks)
- b. Explain the working of positive crank case ventilation system. (06 Marks)
- c. Write note on:
i) Motor vehicle act.
ii) Emission standards. (06 Marks)

OR

- 10 a. Explain the various methods used to reduce pollutants in the exhaust gases. (08 Marks)
- b. Explain :
i) Air injection system
ii) Air aspirator valve
iii) Catalytic converter package. (12 Marks)

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