CBCS SCHEME

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18ME752

Seventh Semester B.E. Degree Examination, Dec.2024/Jan.2025
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. Illustrate the various methods of cylinder arrangements adopted in multi cylinder engines along with their relative merits. **(10 Marks)**

b. List the merits and demerits of hybrid engines when compared with convention engines. **(06 Marks)**

c. Highlight the importance of air swirl in IC engines and also mention different methods available for swirl generation in CI engines. **(04 Marks)**

OR

2 a. With the neat line diagram, explain the working of forced feed lubrication system. Also mention significance of lubrication. **(10 Marks)**

b. Illustrate the working of thermo siphon type cooling system adopted in engine. **(06 Marks)**

c. List down the major requirements for engine cooling. **(04 Marks)**

Module-2

3 a. With a neat line diagram explain the working principle of gear shift mechanism for a manual transmission system. **(10 Marks)**

b. Illustrate the functions of differential. Also explain the operation of constant mesh gear box along with advantages and sliding mesh gear box. **(10 Marks)**

OR

4 a. Explain the working of antilock braking system with neat layout along with advantages and disadvantages. **(10 Marks)**

b. Explain the working of hydraulic braking system with neat diagram. **(10 Marks)**

Module-3

5 a. With a neat line diagram working of power steering. **(10 Marks)**

b. Mention the requirements of suspension system. With the neat line diagram explain working of leaf spring. **(06 Marks)**

c. Write the difference between torsion bar and air suspension system. **(04 Marks)**

OR

6 a. List the different types of ignition systems and explain any one type of ignition systems with neat line diagram. **(10 Marks)**

b. Draw the layout of Ackerman steering geometry. **(06 Marks)**

c. Define the following terms:
i) Castor ii) Camber. **(04 Marks)**

Module-4

7 a. Highlight the advantages of super charging over naturally aspirated engines. With the neat line diagram, explain the working of centrifugal type supercharger. **(10 Marks)**

b. Distinguish between supercharging and turbocharging. **(06 Marks)**

c. Mention the different factors effecting turbocharger lag. **(04 Marks)**

OR

8 a. Explain the construction and working principle of zenith carburetor with neat sketch. **(10 Marks)**

b. Illustrate the working of common rail direct injection system. **(06 Marks)**

c. Explain octane and cetane ratings for petrol and diesel fuel. **(04 Marks)**

Module-5

9 a. Write a short note on:
i) Catalytic converter
ii) Cleaning of exhaust gas. **(08 Marks)**

b. Explain the working of exhaust gas recirculation system with neat diagram. **(08 Marks)**

c. List the various methods of controlling engine emissions. **(04 Marks)**

OR

10 a. Illustrate advantages of air injection system in reducing overall emission along with line diagram. **(08 Marks)**

b. Write a short note on Euro-III and Euro-IV norms. **(08 Marks)**

c. Mention the different parameters which comes under Motor Vehicles Act. **(04 Marks)**

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