CBCS SCHEME

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21ME742

Seventh Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Theory and Design of IC Engines

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Define compression ratio. State the importance of compression ratio in I.C. engines. **(10 Marks)**

b. What are the main factors affecting engine efficiency in IC engines? **(05 Marks)**

c. How does engine displacement affect engine performance in an IC engine? **(05 Marks)**

OR

2 a. Explain with a neat sketch thermostat cooling system. **(10 Marks)**

b. Discuss the advantages and disadvantages of air cooled and liquid cooled engines. **(10 Marks)**

Module-2

3 a. Explain the important qualities of an IC engine fuel. **(10 Marks)**

b. What is carburetion? Explain the mixture requirements for different loads and speeds. **(10 Marks)**

OR

4 a. What is the main function of an MPFI system in a vehicle? What are the advantages of an MPFI? **(10 Marks)**

b. What are the requirements of fuel injection system? What are the methods of fuel injection? **(05 Marks)**

c. What are the nozzles used in CI engines? Explain any one. **(05 Marks)**

Module-3

5 a. State and explain different combustion stages in SI engines with a neat crank angle diagram. **(10 Marks)**

b. Differentiate between normal and abnormal combustion phenomena in case of SI engines. **(10 Marks)**

OR

6 a. Explain the 1st stage of combustion in CI engines in detail. **(10 Marks)**

b. What are the factors tending to reduce knocking in SI and CI engines? **(10 Marks)**

Module-4

7 a. What are the major exhaust emissions? Explain any two. **(10 Marks)**

b. Which is the most effective after treatment for reducing engine emissions? **(05 Marks)**

c. What are soot particles? **(05 Marks)**

OR

8 a. List the visible and invisible emissions in IC engines. **(05 Marks)**

b. How does the oil consumption increases in IC engines and what are its effects? **(05 Marks)**

c. What is flame quenching? Explain the reasons for flame quenching process. **(10 Marks)**

Module-5

9	a.	Discuss the advantages and disadvantages of n Alcohol as a fuel.	(10 Marks)
	b.	Explain the working of a stratified engine with a neat diagram.	(10 Marks)

OR

10	a.	List the advantages and disadvantages of hydrogen as a fuel in IC engines.	(10 Marks)
	b.	Explain with a neat diagram the working of a wankel engine.	(10 Marks)

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