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Eighth Semester B.E. Degree Examination, July/August 2022
Advanced I.C. Engines

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Discuss the thermodynamic analysis of S.I Engine combustion. (10 Marks)
b. Define flame front and flame velocity. Discuss effect of air-fuel ratio and compression ratio on flame propagation. (10 Marks)

OR

- 2 a. Define knocking in S.I. engine. Discuss the factors influencing the knocking in S.I. Engine. (10 Marks)
b. Compare the conventional ignition system and alternative ignition system in S.I. Engines. (10 Marks)

Module-2

- 3 a. Discuss the stages of combustion in C.I. Engine, with the help of Crank angle diagram. (10 Marks)
b. Explain the direct injection system and indirect injection system in C.I. Engines with necessary sketches. (10 Marks)

OR

- 4 a. Define delay period and discuss engine variables influencing delay period in diesel engine combustion phenomenon. (10 Marks)
b. Compare different types of swirls in a diesel engine. Discuss their merits and de-merits. (10 Marks)

Module-3

- 5 a. Write short notes on:
(i) Charts for burnt mixture. (ii) Charts for Unburnt mixture. (10 Marks)
b. With a suitable graph, explain the effect of supercharging on the following:
(i) Power output (ii) Mechanical efficiency. (iii) Fuel consumption. (10 Marks)

OR

- 6 a. Discuss the Brayton cycle with a neat graph. (06 Marks)
b. Explain the working of gas turbine. (04 Marks)
c. Explain the methods of modification of simple cycle. (10 Marks)

Module-4

- 7 a. With a block diagram, explain the MPFI system. (10 Marks)
b. Explain the constructing and working of stirling engine with a neat sketch. (10 Marks)

OR

- 8 a. Explain the principle of Exhaust Gas Recirculation (EGR) system in Turbocharger with neat sketch. (10 Marks)
b. Discuss the T-S diagram of Reheat gas turbine cycle with schematic diagram. (10 Marks)

Module-5

- 9 a. What do you mean by stratified charged engine? Explain its working with suitable sketches. (10 Marks)
- b. With a neat diagram, explain the working of Wankel rotary engine. (10 Marks)

OR

- 10 a. With a block diagram, explain how the free Piston Engine works. (10 Marks)
- b. Discuss the effect of air cleaners and silencers on engine performance. (10 Marks)

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