

CBCS SCHEME

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15AU44

Fourth Semester B.E. Degree Examination, Dec.2018/Jan.2019 Automotive Engines

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain with suitable sketches the working of a four stroke spark ignition engine. (08 Marks)
(08 Marks)
b. Compare the spark ignition engine with compression ignition engine.

OR

- 2 a. Draw the actual valve timing diagram of a two stroke engine. Explain in brief. (08 Marks)
b. Show the diesel cycle on P-V and T-S diagrams and derive an expression for its efficiency. (08 Marks)

Module-2

- 3 a. Write a short note on the air-fuel ratio requirements of a petrol engine from no load to full load. (08 Marks)
b. What is the function of carburetor in an S.I engine? Explain with a neat sketch the operation of a simple carburetor. (08 Marks)

OR

- 4 a. Describe with the help of suitable sketches :
i) Jerk pump injection system
ii) Common rail direct injection system. (08 Marks)
b. Explain the working principle of mechanical and pneumatic governors in diesel engines with neat sketches. (08 Marks)

Module-3

- 5 a. Describe the stages of combustion phenomenon in S.I engines with the help of P-Q diagram. (08 Marks)
b. Describe the effect of following engine variable on flame propagation.
i) Fuel air ratio
ii) Compression ratio
iii) Turbulence
iv) Engine speed. (08 Marks)

OR

- 6 a. Describe the phenomenon of diesel knock. What are the different methods of controlling diesel knock. (08 Marks)
b. Discuss the advantages and disadvantages of induction swirl. (08 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.

Module-4

- 7 a. What are the objects of soupercharging? Explain the effect of soupercharging on the following parameters.
i) Power output
ii) Mechanical efficiency
iii) Fuel consumption. (08 Marks)
- b. What are the advantages and disadvantages of pulse turbo charging? (08 Marks)

OR

- 8 a. Describe the following water cooling system with neat sketches.
i) Thermo-siphon cooling (08 Marks)
ii) Thermostat cooling. (08 Marks)
- b. What are the advantages and disadvantages of water cooled engines. (08 Marks)

Module-5

- 9 a. Discuss the basic requirements of an ideal gasoline and diesel fuel. (08 Marks)
- b. Define octane number and cetane number. Explain the methods of determining these numbers. (08 Marks)

OR

- 10 a. Explain the following wet sump lubrication systems with neat sketches :
i) Splash system (08 Marks)
ii) Full pressure system. (08 Marks)
- b. Discuss the important properties of a lubricating oil which affect engine performance. (08 Marks)

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