

Automotive Engines VTU CBCS Question Paper Set 2018



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CBCS Scheme

USN

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15AU44

Fourth Semester B.E. Degree Examination, Dec.2017/Jan.2018 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 the working principle of a two stroke engine with suitable sketches. (08 Marks)
- b. Compare the four stroke and two stroke engines. (08 Marks)

OR

- 2 a. Draw an actual valve timing diagram for low speed four stroke SI engine. Explain in brief. (08 Marks)
- b. Derive an expression for thermal efficiency of the diesel cycle. (08 Marks)

Module-2

- 3 a. What is the function of carburetor? Explain with a neat sketch the operation of a simple carburetor. (08 Marks)
- b. What are the advantages and disadvantages of petrol injection system. (08 Marks)

OR

- 4 a. Explain common rail and distributor pump injection systems with neat sketches. (10 Marks)
- b. Explain the working principle of a mechanical governor with a neat sketch. (06 Marks)

Module-3

- 5 a. Describe the various stages of combustion in SI engine with the help of pressure crank angle diagram. (08 Marks)
- b. Explain the effect of engine variables on flame propagation in brief. (08 Marks)

OR

- 6 a. Describe the phenomenon of knocking or detonation in diesel engines. What are the methods of controlling diesel knock? (08 Marks)
- b. What are the advantages and disadvantages of induction swirl in CI engines. (08 Marks)

Module-4

- 7 a. Explain the effects of supercharging on performance of the engine. (06 Marks)
- b. Explain two stage turbocharging and hyperbar turbocharging with neat sketches. (10 Marks)

OR

- 8 a. Describe Thermo – Syphon cooling system with a neat sketch. (08 Marks)
b. What are the advantages and disadvantages of water cooled engines. (08 Marks)

Module-5

- 9 a. What are the various requirements of an ideal gasoline? (06 Marks)
b. Define octane number and cetane number of the fuel. Explain how they are measured in a single cylinder test. (06 Marks)

OR

- 10 a. Explain the full pressure type wet sump lubrication system with a neat sketch. (08 Marks)
b. What are the important properties of a lubricating oil. Explain in brief. (08 Marks)

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CBCS Scheme

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15AU44

Fourth Semester B.E. Degree Examination, June/July 2017

Automotive Engines

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. What is an engine? Write the classification of I.C. engine. (04 Marks)
- b. Explain different engine component with neat sketch. (06 Marks)
- c. Explain with neat sketch construction and working of two-stroke SI engine. (06 Marks)

OR

- 2 a. With the help of a neat sketch, explain the construction and working of four stroke compression ignition (C.I) engine. (08 Marks)
- b. Write the comparison between:
 - i) Two stroke and four stroke engine
 - ii) Diesel and petrol engine. (08 Marks)

Module-2

- 3 a. With the help of a neat sketch, explain construction and working of simple carburetor. (08 Marks)
- b. Explain with neat sketch,
 - i) Pintle nozzle
 - ii) Pintause nozzle. (08 Marks)

OR

- 4 a. Sketch and explain the common rail diesel injection (CRDI) system and also list the merits and demerits. (08 Marks)
- b. What is governor? Explain the construction and working of pneumatic governor. (08 Marks)

Module-3

- 5 a. What is combustion? With a neat sketch, explain the stages of combustion of compression ignition (CI) engine. (08 Marks)
- b. Write short notes on:
 - i) Swirl chamber
 - ii) Squish. (08 Marks)

OR

- 6 a. Explain the factors affecting flame propagation in S.I. engine. (08 Marks)
- b. Explain the factors affecting delay period in C.I. engine. (08 Marks)

Module-4

- 7 a. Explain with neat sketch, construction and working of turbo charging with intercooler. (08 Marks)
- b. Explain thermosymphon cooling system with neat sketch. (08 Marks)

OR

- 8 a. Classify the types of cooling system and explain force feed cooling system with neat sketch. (08 Marks)
b. Write the comparison between air cooling and water cooling system. (08 Marks)

Module-5

- 9 a. Explain with neat sketch, full pressure type of wet sump lubrication system for four stroke engine. (08 Marks)
b. List and explain the properties of lubricating oil. (08 Marks)

OR

- 10 a. Explain the splash system of wet sump lubrication system, with a neat sketch. (08 Marks)
b. Define and differentiate between:
i) Boundary lubrication
ii) Hydrodynamic lubrication
iii) Elasto hydrodynamics lubrication (08 Marks)

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