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Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Auxiliary Systems of Automotive Engines

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting
at least TWO questions from each part.**

PART - A

- 1 a. A four-cylinder, four stroke square engine running at 40 rev/sec has a carburetor venturi with a 3 cm throat. Assuming the bore to be 10 cm, volumetric efficiency of 75%. The density of the air to be 1.15 kg/m³ and co-efficient of air flow to be 0.75. Calculate the suction at the throat. (08 Marks)
- b. Describe with a neat sketch, the construction and working of a solex carburetor used in an four wheeler. (12 Marks)
- 2 a. Explain with a neat sketch the construction and working of an battery ignition used in four cylinder in-line SI engine. (10 Marks)
- b. With a neat sketch, explain the electronic fuel injection system for S.I. Engine. (10 Marks)
- 3 a. Sketch and explain the Common Rail Direct Injection (CRDI) system and also list the merits and demerits. (12 Marks)
- b. Briefly explain with sketch:
 - (i) Pin the nozzle. (ii) Pin taux nozzle. (08 Marks)
- 4 a. Explain the construction and working of an pneumatic governor. Mention its merits and demerits. (10 Marks)
- b. Write a short note on:
 - (i) Factors affecting fuel spray formation.
 - (ii) Penetration and dispersion (10 Marks)

PART - B

- 5 Sketch and explain the following:
 - (i) Waste heat recovery system.
 - (ii) Helmholtz resonator.
 - (iii) Oil-bath-air cleaner.
 - (iv) Absorber type Muffler. (20 Marks)
- 6 a. Explain with a neat sketch thermostat assisted cooling system. (10 Marks)
- b. Sketch and explain construction and working of,
 - (i) Downflow type radiator. (ii) Crossflow type radiator. (10 Marks)
- 7 a. Explain with a neat sketch, full pressure type of wet sump lubrication system for four stroke engine. (10 Marks)
- b. Write a short note on:
 - (i) Boundary lubrication.
 - (ii) Hydrodynamic lubrication.
 - (iii) Elastohydrodynamic lubrication.
 - (iv) Important properties of lubricating oil. (10 Marks)
- 8 a. Explain with neat sketch, turbo charger with inter cooler for an automotive vehicle. (10 Marks)
- b. Write the merits and demerits of super charging. (10 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.