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12MTP24/13MTH24

Second Semester M.Tech. Degree Examination, June / July 2014
Theory of IC Engines

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. What are the basic constituent of any fuel. Explain the details classification of all possible fuels available in nature, with examples. (10 Marks)
- b. What are the good properties of fuel used for combustion in IC engines? (10 Marks)
- 2 a. What are the paraffins, olefins, Nephthnes and aromatics? (10 Marks)
- b. Explain the use of alcohols in IC engines. (10 Marks)
- 3 a. Explain the availability of engine processes and comparison with real engine cycle with neat sketch. (10 Marks)
- b. An engine with 200 mm cylinder diameter and 300 mm stroke works on theoretical diesel cycle. The initial pressure and temperature of air used are 1 bar and 27°C. The cut-off is 8% of the stroke. Determine
 - i) Pressures and temperatures at all salient points.
 - ii) Theoretical air standard efficiency. (10 Marks)
- 4 a. Explain the multiple-barrel carburetors, with neat sketch. (10 Marks)
- b. Explain the flow in intake manifolds along with design requirements with sketch. (10 Marks)
- 5 a. Explain the difference in knocking in SI engines and CI engines with neat sketch. (10 Marks)
- b. Explain the ignition delay period, rapid and controlled combustion in CI engines. (10 Marks)
- 6 a. Explain the operating variables that affect SI engine performance, efficiency and emissions with figure. (10 Marks)
- b. Explain the super charged and turbocharged engine performance in four stroke cycle SI engines and four stroke cycle CI engines. (10 Marks)
- 7 a. Explain the pressure measurement in engines and crank angle diagram in engines. (10 Marks)
- b. Explain the instruments used for measurement of pollutants in diesel and petrol engines. (10 Marks)
- 8 a. Explain the difference between Bharat stage norms and Euro norms. (10 Marks)
- b. Explain the five methods to control emission in engines. (10 Marks)

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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.