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B.E. / B.Tech. (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOVEMBER/DECEMBER 2013

Mechanical Engineering

Semester – 6

ME 518 / ME 9036 – Advanced IC Engines

Regulation 2004 / 2008

Time : 3 Hours

Max. Marks : 100

Answer ALL Questions

PART A (10 x 2 = 20 Marks)

1. What are the engine variables that affect SI engine knock?
2. What are the factors which affect the flame speed?
3. What is delay period?
4. What is turbocharging?
5. What are the sources of formation unburnt hydrocarbon in SI engines?
6. What are catalytic converters?
7. What is a biodiesel?
8. Compare LPG and petrol as fuel for SI engines.
9. What are the advantages of common rail direct injection engine?
10. What are the energy sources for fuel cells?

PART – B (5 x 16 = 80 Marks)

11. Explain the multipoint injection system in a SI engine.
 12. (a) Explain the various stages and the process of combustion in CI engines.
(OR)
(b) Explain with figures the phenomena of knock in CI engines.
 13. (a) Explain the formation of NO_x in CI engines.
(OR)
(b) Explain with neat sketches the method of measuring unburned hydrocarbons.
 14. (a) Explain the two methods by which hydrogen can be used in CI engines.
(OR)
(b) What are the advantages and disadvantages of using LPG in SI engines?
 15. (a) Explain the principle of operation of a homogeneous charge compression ignition engine. Describe the various control mechanisms for HCCI.
(OR)
(b) Explain with figures the principle of operation of a common rail direction injection engine.
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