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Question Paper Code : 51050

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Seventh Semester

Mechanical Engineering

080120052 – INTERNAL COMBUSTION ENGINES

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the various factors affecting engine mixture requirements in spark ignition engine?
2. List the different types of combustion chambers found in spark ignition engine.
3. State briefly about air motion in CI engines using diagrams.
4. How do the injection pressure and the fuel quality affect the engine knock?
5. How does the engine perform using ethanol fuel as compared to engines using petrol?
6. What is the composition of Natural gas?
7. Give a brief introduction to lean burn engines.
8. List the importance of plasma ignition system in petrol engine.
9. What are the various sources of pollutants present in the automotive industry?
10. Write briefly about emission norms and the Indian driving cycles.

PART B — (5 × 16 = 80 marks)

11. (a) Explain in detail about the factors affecting knock in SI engines. (16)

Or

- (b) With a neat sketch explain in detail about the different types of fuel injection system used in SI engines. (16)

12. (a) Discuss in detail about the various stages of combustion in a CI engine. (16)

Or

- (b) What are the different types of combustion chambers in CI engines? Explain in detail. (16)
13. (a) What are the modifications to be made in CI engine running on biogas and hydrogen? Explain in detail about the use of biodiesel as fuel in CI engines and the various merits and demerits of its use. (16)

Or

- (b) Explain in detail about the effects of using hydrogen fuel on engine emission. (16)
14. (a) With a neat sketch explain in detail about recent turbo charged and variable compression ratio engines. (16)

Or

- (b) Discuss in detail about the various combustion systems used in a direct injection stratified and Homogeneous charge compression ignition engines. (16)
15. (a) Write short notes on the formation of unburnt hydro carbon and NO_x in IC engines. (16)

Or

- (b) Explain in detail about the catalytic converters and particulate traps used for the exhaust emission control in IC engines. (16)