Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 31051

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

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. Mention the flammability limit for gasoline fuel.

2. List a few anti knock agents commonly added to gasoline.

3. Define 'tumble' motion of air.

4. What are the various stages of combustion in a compression ignition engine?

5. What is the chemical composition of liquefied petroleum gas?

6. List out any two demerits of hydrogen fuel.

7. What do you understand by zero emission vehicle?

8. What is meant by 'stratification?'

9. Name any two sources of CO emission in petrol engines.

10. What are the noble metals used in catalytic converter?

PART B — (5 × 16 = 80 marks)

11. (a) Discuss the various stages of normal and abnormal combustion in S.I engines with a sketch. (10 + 6)

Or

(b) Describe various types of S.I engine combustion chambers in detail with a schematic.

12. (a) Explain the fuel spray behavior and structure of diesel fuel.

Or

(b) With diagrams, explain the various types of air motion created in C.I. engine combustion chambers.

13. (a) (i) Describe the suitability of Ethanol CNG as a fuel for SI engines.

(ii) With a schematic layout, explain the modifications required for LPG usage in a petrol car. Also explain how the LPG system works.

Or

(b) (i) List four properties of bio-gas. (4)

(ii) What is bio-diesel? How does a CI engine perform when operated with a bio-diesel? Also list the merits of bio-diesel as a fuel for CI engine. (3 + 6 + 3)

14. (a) What is a homogeneous charge compression ignition engine? Explain the working of the same, indicating its merits and demerits.

Or

(b) What is GDI? How does GDI system work? Explain with a sketch.

15. (a) (i) Discuss the method of controlling oxides of nitrogen and particulates from exhaust of a CI engine. (12)

(ii) Briefly explain about particulate traps. (4)

Or

(b) (i) Describe the functioning of a three way catalytic converter with a sketch. (12)

(ii) What is a driving cycle? Mention its significance. (4)