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**Question Paper Code : 31050**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015

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. Define mean effective pressure and stoichiometric air-fuel ratio.
2. Define Octane number of a fuel and antiknock index.
3. Draw the p-v diagram of an ideal Diesel cycle and indicate the various processes.
4. Distinguish between physical delay and chemical delay in CI engine combustion.
5. What is the chemical composition of liquefied petroleum gas?
6. List out any two demerits of hydrogen fuel.
7. What do you mean by Lean Burn Engines?
8. What do you mean by zero emission vehicles?
9. How pollution is controlled in SI engine?
10. What is the reason for smoke formation in CI engine?

PART B — (5 × 16 = 80 marks)

11. (a) Describe in detail the idle system and altitude compensation in a modern carburetor. (16)

Or

- (b) (i) Discuss briefly the phenomenon of knock in SI engines. (8)  
(ii) What are the knock limited parameters in SI engines? Explain. (8)
12. (a) Explain the fuel spray behavior and structure of diesel fuel. (16)

Or

- (b) With diagrams, explain the various types of air motion created in C.I. engine combustion chambers. (16)
13. (a) (i) Discuss briefly the production of ethanol from sugarcane. (8)  
(ii) Compare the exhaust emissions of a methanol engine and a gasoline engine. (8)

Or

- (b) What are the methods by which hydrogen can be used in SI engines? Explain.
14. (a) Explain the working principle of stratified charge engines. (16)

Or

- (b) Explain the working principle of variable compression ratio engine with neat diagram. (16)
15. (a) What are the factors which control the formation of oxides of nitrogen and how it is control? (16)

Or

- (b) Discuss in detail any two types of driving cycles used in emission measurement. (16)