Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(AE) (2012 to 2017) (Sem.–3)

INTERNAL COMBUSTION ENGINES

Subject Code : BTAE-303/401

M.Code : 72204

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Answer briefly :

a) What do you understand by firing order?

b) Define Square engine.

c) Name five components of an engine.

d) What do you mean by cold starting of CI engine?

e) Name the main components of a lubrication system.

f) Explain the effect of spark advancement on engine performance.

g) How thermostat work?

h) Define Volumetric efficiency.

i) Explain the necessity of engine cooling.

j) What do you mean by supercharging?

SECTION-B

2. Explain with figures various type of combustion chambers used in CI engine. Explain the phenomenon of spray evaporation and combustion in CI engine.

3. a) Write a note on effects of detonation.

   b) Explain the factors affecting the delay period in C.I. engines and summarize those.

4. a) Write the special features of modern carburetor.

   b) Give list of the benefits of electronic fuel injection system.

5. Explain how the quantity of fuel to be injected inside combustion chamber of diesel engine is controlled with fuel injection pump?

6. Explain the thermosiphon cooling system.

SECTION-C

7. In an Otto engine pressure and temperature at the beginning of compression are 1 bar and 37°C respectively. Calculate the theoretical thermal efficiency of the cycle, if the pressure at the end of adiabatic compression is 15 bar. Peak temperature during the cycle is 2000K. Calculate the heat supplied per kg of air, work done per kg of air and the pressure at the end of adiabatic expansion. Take C_v = 0.717 kJ/kg°K and adiabatic index = 1.4.

8. a) Compare dry sump and wet sump lubrication system.

   b) Write short note on SI engine fuel injection systems.

9. Define Supercharging and give its advantages. Also explain the methods of supercharging and explain with sketch **any one** of them.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.