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

Total No. of Questions : 09

B.Tech. (AE) (Sem.–4)

INTERNAL COMBUSTION ENGINES

Subject Code : AE-202

Paper ID : [A0708]

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTION 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 has to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.**

SECTION-A

1. Write briefly :

a) Define Engine and heat engine.

b) Differentiate between external combustion and internal combustion engines.

c) Why is choke used in carburetor?

d) How does a two stroke engine differ from a four stroke engine?

e) Explain the term scavenging efficiency.

f) Enumerate the factors affecting delay period.

g) What are various components to be lubricated in an engine?

h) How do additives help to obtain desired properties of lubricants?

i) Enumerate the limitations to supercharging.

j) Differentiate between air cooling and water cooling systems.

SECTION-B

2. Briefly explain the classification of two stroke engines based on scavenging processes giving neat sketches for each engine.

3. Explain various mechanisms of lubrication bringing out their functions.

4. Briefly explain the stages of combustion in SI engines elaborating the flame front propagation. Explain various factors affecting the flame speed.

5. Briefly explain the working of centrifugal and roots supercharger giving neat sketches.

6. Explain the forced circulation cooling system giving a neat sketch.

SECTION-C

7. (a) Mention the basic aspects covered by the engine performance. Explain the parameters by which the performance of an engine can be evaluated.

   (b) Giving neat sketches, explain various types of combustion chambers used in CI engines. (5,5)

8. (a) How are injection systems classified? Write short note on common rail injection system.

   (b) Explain the use of study of the heat balance of an engine. (5,5)

9. What do you understand by term turbo-charging? How is turbo-charging different from supercharging? Explain with a neat sketch the principle of exhaust turbo-charging of a single cylinder engine. (10)