ADAMAS UNIVERSITY PURSUE EXCELLENCE	**ADAMAS UNIVERSITY** **END-SEMESTER EXAMINATION : JANUARY 2021** (Academic Session: 2020 – 21)		
Name of the Program:	**B.Tech. in Mechanical Engineering**	**Semester:**	V
Paper Title :	Internal Combustion Engines	**Paper Code:**	EME43111
Maximum Marks :	40	**Time duration:**	3 Hours
Total No of questions:	Eight	**Total No of Pages:**	02

Answer all the Groups

Group A

Answer all the questions of the following $5 \times 1 = 5$

1. **a)** Define air fuel ratio.
b) What is purpose of ignition coil in battery ignition system?
c) What is lean mixture?
d) Give two functions of cooling systems in an IC engines.
e) Define indicated power for an IC engine.

GROUP –B

Answer *any three* of the following $3 \times 5 = 15$

2. What is a diesel knock? Explain. How it affects engine performance? Discuss effects of the following on it – **A.** Fuel Quality. **B.** Degree of atomization **C.** Compression ratio.

3. Explain with a neat diagram of the various methods of scavenging process.

4. Explain the valve –timing diagram of four stroke S.I. engine.

5. Explain with the help of P-V diagram, how the actual cycle differ from theoretical cycle in S.I. engine (OTTO Cycle)?

GROUP –C

Answer *any two* of the following $2 \times 10 = 20$

6. Explain different stages of combustion in a S.I. engine? Define the terms - clearance, volume, swept volume, compassion ratio.

7. A four cylinder four stroke engine has a cubic capacity of 1490 cc. it develops maximum power at 4200 rpm and air fuel ratio is 13:1. The air speed at venture is limited to 90 m/s. the volumetric efficiency of engine is 70%. Nozzle lip is 6 mm and atmospheric pressure and temperature are 1.013 bar and 293 K. An allowance is to be made for emulsion tube whose diameter should be taken as 1 /2.5 of venture diameter. Taking following data, calculate the diameter of venture and nozzle. C_{da}-0.85, C_{df}-0.66 and density of fuel=740Kg/m^3.

8. Explain pre – ignition phenomenon. Give its causes and its remedies? Explain the phenomenon of knock in SI Engine and compare it with C.I. engine Knock.