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**BTECH**  
**(SEM V) THEORY EXAMINATION 2024-25**  
**I C ENGINE, FUELS & LUBRICATION**

TIME: 3 HRS

M.MARKS: 100

**Note:** Attempt all Sections. In case of any missing data; choose suitably.

## SECTION A

**1. Attempt all questions in brief.** **2 x 10 = 20**

Q no.	Question	CO	Level
a.	What is compression ratio?	1	K 2
b.	State two differences between two stroke and four stroke engine.	1	K 2
c.	Define detonation in CI engine.	2	K 2
d.	Define Swirl & Squish.	2	K 2
e.	Define MPFI.	3	K 2
f.	What is the main function of spark plug?	3	K 2
g.	What are the various pollutants present in combustion products?	4	K 2
h.	What are the different kinds of fuels used in IC engine?	4	K 2
i.	Write disadvantages of air-cooling system.	5	K 4
j.	Write any two properties of lubricants.	5	K 4

## SECTION B

**2. Attempt any three of the following:** **10 x 3 = 30**

a.	What are the assumptions of air standard cycle? Explain the working of two stroke SI engine.	1	K 2
b.	Discuss the various types of Direct Injection type combustion chamber used in CI engine.	2	K 2
c.	Explain the scavenging process in two stroke engine. Discuss the two scavenging processes used in two stroke engine.	3	K 2
d.	Describe with the help of neat sketch a magneto ignition system.	4	K 2
e.	Write short notes on: a) 3-way catalytic convertor b) Selective catalytic reduction	5	K 4

## SECTION C

**3. Attempt any one part of the following:** **10 x 1 = 10**

a.	In a constant volume 'Otto cycle', the pressure at the end of compression is 15 times that at the start, the temperature of air at the beginning of compression is 38°C and maximum temperature attained in the cycle is 1950°C. Determine: a) Compression ratio. b) Thermal efficiency of the cycle. c) Work done.	1	K 3
b.	Explain the valve timing diagram of 4-stroke diesel engine with neat sketches.	1	K 2

**4. Attempt any one part of the following:** **10 x 1 = 10**

a.	What is flame propagation? Discuss the effect of various engine variables on flame propagation of SI engine.	2	K 2
b.	Explain the variables affecting delay period in CI engine.	2	K 2



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<b>5. Attempt any one part of the following:</b>		<b>10 x 1 = 10</b>	
a.	State the functional requirements of fuel injection system. Explain any one type of CI fuel injection system with neat sketch.	3	K 2
b.	Explain the working principle of simple carburetor with diagram.	3	K 2
<b>6. Attempt any one part of the following:</b>		<b>10 x 1 = 10</b>	
a.	How knock emissions are caused and what are their effects on environment and human health?	4	K 2
b.	Explain important qualities of SI engine fuels.	4	K 2
<b>7. Attempt any one part of the following:</b>		<b>10 x 1 = 10</b>	
a.	Classify wet sump lubrication system. Explain anyone wet sump lubrication system with neat sketch.	5	K 4
b.	Why is cooling necessary for I.C. engine? Explain with a neat sketch thermostat method of cooling I.C. engines.	5	K 4

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