PAPER ID-310991

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Subject Code: BME052/BME052A

Roll No: | | | | | | | | | | | | | | |

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

TIME: 3 HRS **M.MARKS: 70**

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

SECTION A

1. Attempt *all* questions in brief. **2 x 07 = 14**

Q no.	Question	CO	Level
a.	Draw valve timing diagram.	2	2
b.	Explain briefly the principle of Turbo Charger.	3	1
c.	How Carburetion occurs in I C Engine? Explain briefly.	2	2
d.	What is the effect of temperature on CO, HC, NOx formation	4	3
e.	Discuss the mixture requirements at different loads and speeds.	2	2
f	Why two stroke engines have higher mechanical efficiency but lower thermal efficiency?	1	3
g.	How GDI Engine works? Explain briefly.	3	2

SECTION B

2. Attempt any *three* of the following: **07 x 3 = 21**

a.	Explain the function of Spark Plug with neat diagram	1	2
b	Explain the effect of CO, HC, NOx and PM on environment and human health	4	3
c	Explain briefly the working of MPFI Engine.	2	2
d.	For the same compression ratio and heat addition, which cycle (Otto, Diesel, Dual) is most efficient or least efficient?	5	3
e	What is the effect of Air-Fuel Ratio on pollution generation? Explain briefly.	4	3

SECTION C

3. Attempt any *one* part of the following: **07 x 1 = 07**

a.	A petrol engine is supplied with fuel which has a calorific value of 42 MJ/kg. The pressure in the cylinder at 30% and 70% of compression stroke are 1.3 bar and 2.6 bar respectively. Assuming $pV^{1.33}$ = Constant, find air standard efficiency of constant volume cycle. Also, find the air standard efficiency of constant pressure cycle if cut-off ratio is 1.2. Also, compare the efficiency of both the cycles if compression ratio is 8.	6	3
b.	The pressure and temperature of a Diesel Cycle at the start are 1 bar and 17°C. The pressure at the end of compression is 40 bar and at the end of expansion is 2 bar. Find the efficiency. Assume Υ = 1.4.	5	3

4. Attempt any *one* part of the following: **07 x 1 = 07**

a.	Discuss various stages of combustion in SI Engine with figure in detail	2	1
b.	Discuss various stages of combustion in CI Engine with figure in detail	2	1

5. Attempt any *one* part of the following: **07 x 1 = 07**

a.	What are different types of combustion chambers in CI Engine? Explain any one in detail	3	2
b.	What are different types of Lubrication System? Explain briefly any one detail.	3	2

6. Attempt any *one* part of the following: **07 x 1 = 07**

a.	Explain the working of Homogeneous charge Spark Ignition Engine.	3	2
b.	What are different gaseous fuels and their properties. Explain in detail.	2	3

7. Attempt any *one* part of the following: **07 x 1 = 07**

a.	Explain the construction and working with neat diagram of Jerk Type Fuel Injection Pump.	3	2
b.	What is the use of Catalytic Convertor? Explain the working of Three Way Catalytic convertor.	4	2