



GIET UNIVERSITY, GUNUPUR - 765022

B. Tech (Fifth Semester Regular) Examinations, December - 2023 21BMEPC35004 - Internal Combustion Engines (Mechanical)

Time: 3 hrs

Maximum: 70 Marks

(The figures in the right hand margin indicate marks)

PART – A**(2 x 5 = 10 Marks)**Q.1. Answer **ALL** questions

	CO #	Blooms Level
a. Which series of fuel is better for CI engine and for SI engine?	CO1	K1
b. List out some alternative fuels used in IC engines.	CO1	K1
c. How homogenous mixture is different from heterogeneous mixture?	CO2	K1
d. Write the functions of lubricant.	CO3	K1
e. The bore and stroke of a water cooled, vertical, single-cylinder, four stroke diesel engine are 80 mm and 110 mm respectively and torque is 23.5 Nm. Calculate the brake mean effective pressure.	CO4	K2

PART – B**(15 x 4 = 60 Marks)**Answer **ALL** questions

	Marks	CO #	Blooms Level
2. a. With neat sketches explain the working principle of four stroke SI engine.	7	CO1	K2
b. Explain the use of alcohol as alternative fuel.	8	CO1	K2
(OR)			
c. Write short note on LPG.	7	CO1	K2
d. Difference between SI and CI engine.	8	CO1	K1
3.a. With a neat sketch explain the working of a simple carburettor.	10	CO2	K2
b. Explain the factors that affect the variables for flame front propagation.	5	CO2	K2
(OR)			
c. Explain the classification of solid injection system with neat sketch.	10	CO2	K2
d. Explain the phenomenon of knock in SI engine.	5	CO2	K2
4.a. Describe the methods of scavenging in two stroke engines.	10	CO3	K3
b. Describe any two methods of supercharging.	5	CO3	K2
(OR)			
c. Illustrate the working of a splash lubrication system with neat sketch.	10	CO3	K3
d. Explain the working of thermosyphon system.	5	CO2	K2
5.a. A six cylinder, gasoline engine operates on the four stroke cycle. The bore of each cylinder is 80 mm and the stroke is 100 mm. the clearance volume per	10	CO4	K3

cylinder is 70 cc. At a speed of 4000 rpm, the fuel consumption is 20 kg/h and the torque developed is 150 Nm. Calculate i) brake power ii) brake mean effective pressure iii) brake thermal efficiency iv) relative efficiency considering calorific value is 13000 kJ/kg and the engine works on Otto cycle with $\gamma = 1.4$ for air.

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| b. Explain SI engine performance by using a curve. | 5 | CO4 | K2 |
| (OR) | | | |
| c. The following details were noted in a test on a four cylinder, four stroke engine, diameter = 100 mm, stroke = 120 mm, speed of engine = 1600 rpm, fuel consumption = 0.2 kg/min, Calorific value = 44000 kJ/kg, Brake Circumference = 300 cm and weight = 40 kg. If mechanical efficiency is 80 %, calculate brake thermal efficiency, indicated thermal efficiency, indicated mean effective pressure, brake specific fuel consumption. | 10 | CO4 | K3 |
| d. Write on Morse test and state its purpose. | 5 | CO4 | K2 |

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