

# GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER- VI EXAMINATION – SUMMER 2020

**Subject Code: 2161902**

**Date: 26/10/2020**

**Subject Name: INTERNAL COMBUSTION ENGINES**

**Time: 10:30 AM TO 01:00 PM**

**Total Marks: 70**

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

**MARKS**

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|------------|---|-----------|
| <b>Q.1</b> | (a) State the basic function of piston, piston rings and flywheel.  | <b>03</b> |
|            | (b) Explain with a neat sketch the working of two stroke petrol engine.                                     | <b>04</b> |
|            | (c) Explain the variation in specific heat and loss due to it in an Otto cycle with the help of P-V diagram | <b>07</b> |
| <b>Q.2</b> | (a) Make comparison of SI and CI engine.  | <b>03</b> |
|            | (b) What is scavenging? Explain uniflow scavenging  | <b>04</b> |
|            | (c) Write a short note on effect of time loss, heat loss and exhaust loss in Petrol and Diesel engines      | <b>07</b> |
| <b>OR</b>  |   |           |
|            | (c) Explain construction and working of bomb calorimeter.   | <b>07</b> |
| <b>Q.3</b> | (a) Define: HUCR, Octane number and Cetane number.  | <b>03</b> |
|            | (b) Write short note on adiabatic flame temperature.  | <b>04</b> |
|            | (c) Discuss various mixture requirement for different loads and speeds                                      | <b>07</b> |
| <b>OR</b>  |   |           |
| <b>Q.3</b> | (a) List assumptions for fuel air cycle   | <b>03</b> |
|            | (b) Write the limitations of supercharging SI and CI engines?   | <b>04</b> |
|            | (c) Explain construction and working of simple carburetor with neat sketch.                                 | <b>07</b> |
| <b>Q.4</b> | (a) What are the needs of supercharging?  | <b>03</b> |
|            | (b) Describe the Pintle and Pintaux nozzle with neat sketch and discuss their relative merits & demerits.   | <b>04</b> |
|            | (c) Make comparison of battery and magneto ignition system.   | <b>07</b> |
| <b>OR</b>  |   |           |
| <b>Q.4</b> | (a) List the desired properties of a coolant.   | <b>03</b> |
|            | (b) Make comparison of wet and dry sump lubrication system.   | <b>04</b> |
|            | (c) Draw and explain various stages of combustion in C.I. engine.   | <b>07</b> |
| <b>Q.5</b> | (a) Classify C.I. engine combustion chamber.  | <b>03</b> |
|            | (b) What are the effects of knocking on engine performance?   | <b>04</b> |
|            | (c) State and explain effect of variables on ignition delay in SI engine.                                   | <b>07</b> |
| <b>OR</b>  |   |           |
| <b>Q.5</b> | (a) Write a short note on Euro norms.   | <b>03</b> |
|            | (b) Explain William's line method to find friction power.   | <b>04</b> |
|            | (c) Write short note on catalytic converter.  | <b>07</b> |

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