

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (OLD) EXAMINATION – WINTER 2018****Subject Code:161902****Date: 11/12/2018****Subject Name: Internal Combustion Engines****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

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

Q.1 (a) Explain with neat sketch Detonation in C. I. Engine. Also mention the Factor affecting the detonation 07

(b) Explain use of alcohol as a fuel in IC Engines. 07

Q.2 (a) Explain with neat sketch Combustion stages in S. I. Engine. Also define Auto ignition Temperature. 07

(b) Explain types of nozzles used in CI Engines. 07

OR

(b) Prove that the Air fuel Ratio for Simple Carburetor if air is assumed to be incompressible is equal to 07

$$\text{A.F. Ratio} = \frac{C_{da} A_a \sqrt{2\rho_a(\Delta p)}}{C_{df} A_f \sqrt{2\rho_f [(\Delta p) - h g \rho_f]}}$$

Q.3 (a) Explain hydrogen used as a fuel in IC Engines. 07

(b) Explain the Methods of obtaining Friction Power and explain any one of them in details. 07

OR

Q.3 (a) Explain following terms: burning time loss factor, heat loss factor, pumping and friction loss. 07

Q.3 (b) Explain with neat sketch working Simple Carburetor. Also explain Drawback and application of simple Carburetor. 07

Q.4 (a) Define Supercharging and give its advantages. Also explain the methods of Supercharging and explain any of them. 07

(b) Explain simple jet type carburetor with neat sketch. 07

OR

Q.4 (a) What are the criteria for the selection of I.C.Engine fuels? 07

Q.4 (b) Explain alternative fuels for I. C. Engine and explain any one of Fuel in details. Also Define Octane and Cetane No. 07

Q.5 (a) Explain Ignition Requirement. Also Give Types of Ignition Systems and explain in detail any one of them. 07

(b) Explain alternative fuels for I. C. Engine and explain any one of Fuel in details. Also Define Octane and Cetane No. 07

OR

Q.5 (a) Explain Valve Timing Diagram of 4 stroke petrol engines. 07

(b) What is Variable Compression Ratio(VCR) Engine and explain methods of obtaining VCR and performance of VCR Engine. 07
