

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – I • EXAMINATION – WINTER • 2013

Subject code: 712104N**Date: 06-01-2014****Subject Name: Combustion Engineering****Time: 10.30 am – 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.

- Q.1** (a) Explain the different factors affecting Ignition Lag in S.I. Engines. **07**
(b) Write a short note on F - head type of combustion chamber. **07**
- Q.2** (a) Explain the stages of combustion in C.I. Engines. **07**
(b) Write a short note on Open - combustion chambers. **07**
- OR**
- (b) Explain the different methods of generating Air swirl in C.I. Engines. **07**
- Q.3** (a) Explain the various theories of Knocking. **07**
(b) Write a brief note on various parameters affecting Knock in S.I. Engines. **07**
- OR**
- Q.3** (a) Compare Knocking phenomenon in S.I. and C.I. Engines. **07**
(b) Explain the different factors to be considered in the design of combustion chambers for C.I. Engines. **07**
- Q.4** (a) Write a brief note on Combustion Stoichiometry. **07**
(b) Calculate the air-fuel ratio on both molar and mass basis for a hydrocarbon fuel ($C_{12}H_{26}$) with (1) Theoretical amount of air and (2) 160% of Theoretical air. **07**
- OR**
- Q.4** (a) Write a brief note on Droplet Combustion. **07**
(b) Explain the types of Elementary reactions. **07**
- Q.5** (a) Discuss Fluidized Bed Combustion systems. **07**
(b) Write a short note on Chain Reactions. **07**
- OR**
- Q.5** (a) Explain the various types of Burners for combustion of Pulverized coal. **07**
(b) Write a brief note on Pollution due to combustion of solid fuels. **07**
