Seat No.: _

Enrolment No.__

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E –Ist SEMESTER–EXAMINATION – JULY- 2012

Subject code: 712104N

Subject Name: Combustion Engineering Time: 2:30 pm – 05:00 pm Instructions: Date: 11/07/2012

Total Marks: 70

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- Q.1 (a) What do you mean by combustion? State the general conditions 07 necessary for combustion.
 - (b) Explain briefly combustion phenomenon in S.I. engines. 07
- Q.2 (a) State the types of combustion chamber in S. I. Engine and discus 07 divided combustion chamber with neat sketch.
 - (b) Explain flame structure of injected fuel spray characteristics of C.I. 07 engines with neat sketch.

OR

- (b) Explain briefly the phenomenon of diesel knock in C. I. Engine 07 combustion chamber.
- Q.3 (a) Enlist the mechanism of combustion reactions and explain any one in 07 details.
 - (b) What are the factor effecting for normal combustion in spark ignition 07 engine?

OR

- Q.3 (a) Enlist the types of combustion processes and also discus slow 07 combustion processes.
 - (b) Describe the M-combustion chamber system for compression ignition 07 engine.
- Q.4 (a) Write short note on kinetics of liquid fuel combustion in an open 07 vessel.
 - (b) Describe gas burners for burning gaseous fuels in domestic and 07 industrial heating application.

OR

- Q.4 (a) Write short note on structure of flame for a simple gas burner.
 (b) Write short note on oil burners
 07
- Q.5(a) Discuss fluidised bed combustion system.07(b) What are the coal combustion pollutants? How is it controlled?07OR07
- Q.5 (a) Explain with neat sketch cyclone firing burner.
 (b) The percentage composition of a sample of coal is C=90%, H₂=3.5%, 07
 O2=3.0%, N2=1.0%, S=0.5%, The remaining being ash. Estimate the minimum weight of air required for the combustion of 1 kg of this fuel and the composition of the dry products of combustion, by volume, if 50% excess air is required.
