

GUJARAT TECHNOLOGICAL UNIVERSITY**M.E –Ist SEMESTER–EXAMINATION – JULY- 2012****Subject code: 712104N****Date: 11/07/2012****Subject Name: Combustion Engineering****Time: 2:30 pm – 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) What do you mean by combustion? State the general conditions necessary for combustion. **07**

(b) Explain briefly combustion phenomenon in S.I. engines. **07**

Q.2 (a) State the types of combustion chamber in S. I. Engine and discuss divided combustion chamber with neat sketch. **07**

(b) Explain flame structure of injected fuel spray characteristics of C.I. engines with neat sketch. **07**

OR

(b) Explain briefly the phenomenon of diesel knock in C. I. Engine combustion chamber. **07**

Q.3 (a) Enlist the mechanism of combustion reactions and explain any one in details. **07**

(b) What are the factors effecting for normal combustion in spark ignition engine? **07**

OR

Q.3 (a) Enlist the types of combustion processes and also discuss slow combustion processes. **07**

(b) Describe the M-combustion chamber system for compression ignition engine. **07**

Q.4 (a) Write short note on kinetics of liquid fuel combustion in an open vessel. **07**

(b) Describe gas burners for burning gaseous fuels in domestic and industrial heating application. **07**

OR

Q.4 (a) Write short note on structure of flame for a simple gas burner. **07**

(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? **07**

OR

Q.5 (a) Explain with neat sketch cyclone firing burner. **07**

(b) The percentage composition of a sample of coal is C=90%, H₂=3.5%, 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. **07**
