Seat No.:	Enrolment No.

Subject Code: 110006

GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER- 1st / 2nd • EXAMINATION – SUMMER • 2014

Date: 18-06-2014

	1. 2. 3.	Name: Elements of Mechanical Engineering 2:30 pm - 05:00 pm Total Marks: 70 as: Attempt any five questions Make suitable assumptions wherever necessary. Figures to the right indicate full marks. Use of steam tables is permissible.	
Q.1	(a) (b)	Discuss the quality and quantity governing method of IC engine. With a neat sketch explain combined separating and throttling calorimeter.	07 07
Q.2	(a) (b)	State the advantages and disadvantages of gaseous fuels. List the various gaseous fuels. Define the following (i) Energy (ii) Specific heat (iii) Zeroth law of thermodynamics (iv) Temperature	07 07
Q.3	(a) (b)	With a neat sketch explain the working of vapour compression refrigerant system. A system contains 0.19 m³ of air at pressure of 5 bar and 190 °C. It is expanded adiabatically until the pressure is 1 bar. The gas is then heated at constant pressure till its enthalpy increases by 100 kJ. Determine total work done.	07 07
Q.4	(a) (b)	Derive an expression for air standard efficiency of Otto cycle. Two boiler A and B discharge equal amount of steam into common main steam pipe. The boiler A discharges steam at 10 bar and 350 °C and B discharges at 10 bar and with dryness fraction 0.9. Calculate the condition of steam after mixing.	07 07
Q.5	(a) (b)	With a neat sketch explain the working of any one type of water tube boiler. Explain the working of 4 stroke diesel engine.	07 07
Q.6	(a) (b)	Differentiate between belt, chain and gear drive. Explain the concept of multistaging in reciprocating compressor. What are its advantages?	07 07
Q.7	(a) (b)	With a neat sketch explain any one type of coupling. Enlist the properties and applications of any one non-ferrous metal.	07 07
