Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEMESTER 1^{st} / 2^{nd} (OLD) EXAMINATION WINTER 2016

Subject Code: 110006 Subject Name: Elements of Mechanical Engineering Time:10:30 AM TO 1:00 PM Instructions: Date: 23/01/2 Total Marks			
J	ınstru	1. Attempt any five questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks.	
Q.1	(a) (b)	Explain the following terms in brief: (1)Heat and work (2)Specific heat and calorific value of fuel (3)Differentiate between vapor and gas (4)List various source of energy What is prime mover? How are they classified? Discuss sources of energy used by prime movers	07
Q.2	(a) (b)	What is boiler? Discuss Construction & working of Cochran boiler with neat sketch With a neat sketch explain combined separating and throttling calorimeter.	07 07
Q.3	(a) (b)	Derive an expression for air standard efficiency of Otto cycle. Explain the working of 4 stroke diesel engine.	07 07 07
Q.4	(a) (b)	List various types of bearings and discuss any three of them. Classify the Air compressor. Differentiate between reciprocating compressor & rotary compressor.	07 07
Q.5	(a) (b)	Derive characteristics equation of a perfect gas. For adiabatic process derive relation between pressure, volume. Also derive equation for work done and heat transfer.	07 07
Q.6	(a) (b)	With a neat sketch explain the working of vapour compression refrigerant system. Explain the concept of multi-staging in reciprocating compressor. What are its advantages?	07 07
Q.7	(a)	Sketch single block brake, double block brake and band brake. Give their practical	07

(b)

State the advantages and disadvantages of gaseous fuels. List the various gaseous fuels.

07