

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-VI Examination-Nov/Dec-2011

Subject code: 161805**Date: 30/11/2011****Subject Name: Applied Thermodynamics -II****Time: 10.30 am -1.00 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 are Gravimetric and volumetric compositions? Where are they used? **07**
(b) Enumerate the characteristics of a good fuel. **07**
- Q.2** (a) Explain one dimensional steady flow of a compressible fluids. **07**
(b) Explain sonic, subsonic and supersonic flow. **07**
- OR**
- (b) Explain flow of steam through nozzles and diffusers. **07**
- Q.3** (a) Define a steam turbine and state its field of application. **07**
(b) What are the advantages of a steam turbine over the steam engine. **07**
- OR**
- Q.3** (a) Explain the difference between impulse turbine and a reaction turbine. **07**
(b) What do you mean by compounding of a steam turbine? Discuss various methods of compounding steam turbines. **07**
- Q.4** (a) Derive the expression for maximum blade efficiency in a single stage impulse turbine. **07**
(b) Describe briefly the various methods of "steam turbine governing". **07**
- OR**
- Q.4** (a) Show with the help of diagrams, the difference between theoretical and actual vapour compression cycle. **07**
(b) Explain briefly and air refrigerator working on a reverse Carnot cycle. Derive expression for its C.O.P. **07**
- Q.5** (a) Explain Fourier's law of heat conduction. Also explain thermal conductivity of insulating materials. **07**
(b) (I). What is black body? How it works? **07**
(II). Explain Stefan-Boltzmann law
- OR**
- Q.5** (a) What are the differences between natural convection and forced convection. Also explain Reynolds' no., Nusselt no. **07**
(b) Explain application of heat transfer in marine heat exchangers. **07**
