

GYANMANJARI INSTITUTE OF TECHNOLOGY

MECHANICAL ENGINEERING DEPARTMENT

CLASS TEST No.1

Subject: Elements of Mechanical Engg.

Date: 19.02.2016

Instruction:

Marks: 30

- 1. All questions are compulsory**
- 2. Make suitable assumption wherever necessary**
- 3. Take $C_p=1.005 \text{ kJ/kgk}$ $C_v=0.718 \text{ kJ/kgk}$ for air**

Q.No	A	B	Mark
1.	Explain with neat sketch the construction and working of Babcock and Wilcox boiler.	Explain with neat sketch construction and working of a Cochran boiler.	07
2.	Derive $PV/T=C$ with usual notation	Derive $C_p-C_v=R$ with usual notation	07
3.	Explain Zeroth Law and First law of thermodynamics.	Define Pressure and explain Absolute Pressure, Gauge Pressure and Atmospheric pressure	04
4.	5kg of air is heated from an initial volume 0.5 m^3 to final volume 1.3 m^3 at constant pressure 4bar Determine (i)heat supplied (ii) work done (iii)initial and final temperature of air	Air whose pressure, volume, and temperatures are 5.23 bar, 0.06 m^3 and 196°C respectively has the state changed at constant pressure until its temperature becomes 27°C . Calculate (i) Heat Transferred. (ii) Work Done during the process.	07
5.	Write similarities and Dissimilarities between heat transfer and work transfer.		05