

KERALA AGRICULTURAL UNIVERSITY

B.Tech (Food.Engg) Programme
IInd Semester Re-Examination- June -2014

Cat. No: Meen.1203

Title: Engineering Thermodynamics (2+1)

Marks: 80

Time: 3 hours

I. Fill up the blanks and state true or false (10x1 = 10)

1. Thermo couple is working based on the principle of _____ effect.
2. The phenomenon of conversion of CO₂ (dry ice) directly into vapour is called _____.
3. Capacity for producing an effect or work is _____.
4. Entropy may be measured as a function of _____ and _____.
5. For atmospheric air 'cp/cv' is equal to _____.
6. The efficiency of Ericsson cycle is equal to _____ cycle.
7. The characteristic equation of a gas is _____.
8. The value of universal gas constant is _____ J/kg/K.
9. 273°K = _____ °F.
10. Work done in a steady flow process is given by the expression _____.

II. Write short notes on ANY TEN (10x3 = 30)

1. Differentiate intensive and extensive properties.
2. What is process?
3. Define change in entropy.
4. Differentiate positive and negative heat transfer.
5. State law of conservation of energy.
6. Define super heated steam.
7. Define mechanical equilibrium.
8. Define latent heat of vapourization.
9. What is Clausius inequality?
10. Define Isentropic process.
11. Define Quasi – static process.
12. What is two-stage compressor?

III. Write short essays on ANY SIX (6x5 = 30)

1. Explain compression process with P-V diagram.
2. Write on constant volume process with P-V-T relationship.
3. Plot Otto cycle on temperature-entropy diagram.

4. What is meant by volumetric efficiency of a compressor? Explain how the clearance affects it.
5. Define pyrometer. Briefly explain thermo – electric pyrometer with neat sketch.
6. Explain the work done of an adiabatic process with a P-V diagram.
7. Mention the important applications of compressed air in engineering.
8. Determine the volume occupied by a given mass of air occupies 2 cubic meter at 15°C. The pressure remains unchanged.

IV. Write essay on ANY ONE

(1x10 = 10)

1. Derive the following expressions for an isothermal process.
 - a. P-V-T relationship
 - b. Work done by gas
 - c. Change in internal energy
 - d. Heat transferred
 - e. Change in enthalpy
2. Derive the expression for efficiency of Dual combustion cycle with neat sketch.