

C.U.SHAH UNIVERSITY

Summer Examination-2016

Subject Name : Heat and Thermodynamics

Subject Code : 4SC03PHC1

Branch : B.Sc. (All)

Semester : 3

Date : 30/04/2016

Time : 02:30 To 05:30

Marks : 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

- Q-1 Attempt the following questions: (14)**
- a) Write statement of Zeroth law of thermodynamics. 01
 - b) Write statement of Third law of thermodynamics. 01
 - c) Define: Compressibility. 01
 - d) What is expansion coefficient? 01
 - e) Define: Atmosphere Lapse rate. 01
 - f) Write First law of thermodynamics. 01
 - g) Write Clausius's statement of Second law of thermodynamics. 01
 - h) What is radiant heat? 01
 - i) What is absorbing power? 01
 - j) What is reflecting power? 01
 - k) Define: transmitting power. 01
 - l) Write expression of Clausius-Clapeyron relation. 01
 - m) Define: black body material. 01
 - n) Write statement of Wien's law. 01
- Attempt any four questions from Q-2 to Q-8**
- Q-2 Attempt all questions (14)**
- a) Explain in detail 1st and 2nd order phase transition 07
 - b) Elucidate Carnot engine and its efficiency. 07
- Q-3 Attempt all questions (14)**
- a) Define: specific heat. Develop the relation $C_p - C_v = R$. 07
 - b) Determine the formula of work done during an adiabatic process. 07
- Q-4 Attempt all questions (14)**
- a) Discuss reversible and irreversible changes in thermodynamic process. 05
 - b) Explain temperature-entropy diagram. 05
 - c) Explain heat and work as a state function. 04



Q-5	Attempt all questions	(14)
	a) Explain thermal equilibrium with suitable example.	05
	b) Explain Joule-Kelvin coefficient for ideal and Van der wall gases.	05
	c) Write a short note on Stefan's law.	04
Q-6	Attempt all questions	(14)
	a) Define: TdS equations. Develop 1 st and 2 nd TdS equations in thermodynamics.	07
	b) Calculate the formula of the work done during isothermal process.	07
Q-7	Attempt all questions	(14)
	a) Describe derivations of Maxwell's relation.	07
	b) Explain in detail main properties of radiant heat.	07
Q-8	Attempt all questions	(14)
	a) Originate 1 st and 2 nd order energy equations.	05
	b) Derive differential form of First law of thermodynamics.	05
	c) Discuss the energy distribution of black body.	04

