

Enrollment No: _____

Exam Seat No: _____

C. U. SHAH UNIVERSITY

Summer Examination-2022

Subject Name : Thermal Physics and Statistical Mechanics**Subject Code : 4SC03TPS1****Branch: B.Sc. (Chemistry, Mathematics)****Semester: 3****Date: 27/04/2022****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.
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Q-1	Attempt the following questions:	(14)
	a) Define Compressibility.	01
	b) State the Zeroth law of thermodynamics.	01
	c) Define Internal energy.	01
	d) Give classification of Quantum Statistics.	01
	e) Define Temperature.	01
	f) What is Phase space?	01
	g) What is Macroscopic state?	01
	h) What is meant by Mean free path?	01
	i) Define Gibbs energy.	01
	j) Give statement of Equipartition theorem.	01
	k) What are Fermions?	01
	l) Define Carnot cycle.	01
	m) Define Enthalpy.	01
	n) Define Joule- Thompson Effect.	01

Attempt any four questions from Q-2 to Q-8.

Q-2	Attempt all questions	(14)
	a) Explain in details Works-done during an adiabatic process	07
	b) Derive Maxwell's relation for Thermodynamics.	07
Q-3	Attempt all questions	(14)
	a) Explain in detail TdS equations.	07
	b) Derive relation between C_p - C_v .	07
Q-4	Attempt all questions	(14)
	a) What is Carnot cycle? Explain in details Carnot Theorem.	07
	b) Derive Maxwell's law of distribution of velocity and give its experimental verification.	07



Q-5	Attempt all questions	(14)
	a) Explain in detail Fermi-Dirac Distribution Law.	07
	b) Explain in details Temperature-Entropy diagram.	07
Q-6	Attempt all questions	(14)
	a) Write a short note on Clausius- Clapeyron relation.	07
	b) Explain Macroscopic and Microscopic states in details.	07
Q-7	Attempt all questions	(14)
	a) Explain in details Bose Einstein Distribution Law.	07
	b) Explain in details work-done during Isothermal process.	07
Q-8	Attempt all questions	(14)
	a) Explain in details application of First law of thermodynamics.	08
	b) Write a short note on reversible and Irreversible process.	06

