Enrollment No:	Exam Seat No:

C. U. SHAH UNIVERSITY

Winter Examination-2022

Subject Name: Thermal Physics and Statistical Mechanics

Subject Code: 4SC03TPS1 Branch: B.Sc. (Chemistry, Mathematics)

Semester: 3 Date: 25/11/2022 Time: 11:00 To 02:00 Marks: 70

Instructions:

a)b)

a)

b)

0-4

- (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)	What is Phase space?	01
	b)	Define Internal energy.	01
	c)	Give the statement of the First Law of Thermodynamics.	01
	d)	Boson particle follows which Statistics?	01
	e)	Define Temperature.	01
	f)	What is Macroscopic state?	01
	g)	Define Entropy.	01
	h)	State the Second Law of Thermodynamics based on Entropy.	01
	i)	Give classification of Quantum Statistics.	01
	j)	Define: Heat energy.	01
	k)	Give one comparison of three statistics.	01
	1)	Define Microscopic State.	01
	m) What do you mean by thermodynamic probability?	01
	n)	Define Gibbs energy.	01
Atter	npt any	y four questions from Q-2 to Q-8	
Q-2		Attempt all questions	(14)
	a)	Derive Mayer's formula.	07
	b)	Explain Tds equations.	07
Q-3		Attempt all questions	(14)

Explain in detail: Works-done during an adiabatic process.

Derive Maxwell's Law of Distribution of velocity and give its

Explain Temperature-Entropy diagram.

Explain Bose Einstein Distribution Law.

Attempt all questions

experimental verification.



07

07

(14)

07

07

Q-5	Attempt all questions	(14)
a)	Write a short note on Clausius- Clapeyron relation.	06
b)	Explain briefly Gibb's Enthalpy.	03
c)	Explain: Stirling's approximation.	05
Q-6	Attempt all questions	(14)
a)	Write a short note on Reversible and Irreversible Process.	04
b)	Explain Macroscopic and Microscopic states in detail.	05
c)	Write a short note on the Third Law of Thermodynamics.	05
Q-7		(14)
	Derive Maxwell's relation for thermodynamics.	
Q-8		(14)
-	What is Carnot cycle? Explain in detail.	

