QP Code: | Reg. No | | | | | | | | | | AR 22

GIET UNIVERSITY, GUNUPUR – 765022

M. Sc. (Second Semester) Examinations, July – 2023

22CHPC203 - Physical Chemistry –II (Chemistry)

Time: 3hrs | Maximum: 70 Marks

(The figures in the right hand margin indicate marks.)

PART – A (2 x 10 =20 Marks)

	Q.1. Answer ALL Questions	CO#	Blooms Level
a.	Calculate value of Gamma value for monoatomic and diatomic gas.	CO1	K4
b.	How partition function is unit less, prove it?	CO3	K2
c.	For a reaction both ΔH and ΔS are negative. Under what conditions does the reaction occur spontaneously?	CO1	K3
d.	Define secondary salt effect.	CO4	K2
e.	For a given first order reaction the reactant reduces to ¼ of its initial volume in 10 min. Calculate the rate constant.	CO2	K3
f.	State Gibb's Heltzmolt's equation in terms of enthalpy and internal energy.	CO2	K2
g.	What are Boltzon, Bosen and fermion particles?	CO3	K2
h.	What do you mean by electric conduction?	CO2	K2
i.	What is oscillatory reaction?	CO4	K2
j.	Distribute 3 particles among various energy level (3E E O) such that total energy remains constant i.e. 3E	CO3	K4

PART – B (10 x 5=50 Marks)

	Answer ***ANY FIVE*** the questions	Marks	CO#	Blooms Level
2.	Calculate the work done for adiabatic reversible process and irreversible process.	10	CO1	K4
3.	Maximising the thermodynamic probability of a macro state and involving LaGrange's undetermined multiplier. Derive the expression for Bose-Einsteinstatistics?	10	CO3	K3
4. a.	Derive an expression for Entropy production in chemical reaction.	8	CO4	K4
b.	Differentiate between equilibrium stationary state and non-equilibrium stationary state.	2	CO4	K2
5.a.	State Lindemann theory of unimolecular reaction and write its limitations?	7	CO5	K4
b.	For a reaction, $2A \rightarrow 3C + B$ If, $-d[A]/dt=K_1[A]^2$, $d[B]/dt=K_2[A]^2$ and $d[C]/dt=K_3[A]^2$,then find the relation between K_1,K_2 and K_3.	3	CO5	K4
6.	What do you meant by Fugacity and calculates the fugacity coefficient?	10	CO2	K3
7.	What is partition function and explain the properties of partition functions at low and high temperature?	10	CO3	K3
8.	Explain the collision theory of reaction rate.	10	CO5	K4

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