

JHARGRAM RAJ COLLEGE
UG INTERNAL EXAMINATION 2024
CHEMISTRY HONOURS

TIME: 2 HRS

F.M: 40

Paper-CC 8 (Physical)

Attend any five

1. Find the degeneracy of a Rigid Rotor system having energy, where terms are of usual significance.
2. What do you mean by spherical harmonics?
3. What do you mean by the temperature coefficient of EMF? Write down its expression.
4. "Eutectic mixture is a physical mixture. It is not a true compound." Explain.
5. Write down the expression for the Gibbs phase rule for a reactive system.
6. What is the unit of depression of freezing point (cryoscopic) constant?

5x2=10

Paper-CC 9 (Inorganic)

Attend any five

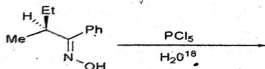
1. How many geometrical isomer possible for $[\text{Co}(\text{en})_3]\text{Cl}_3$.
2. Identify the primary as well as secondary valency in $\text{K}_4[\text{Fe}(\text{CN})_6]^{2-}$.
3. Write the bond angle order of the following and explain. H_2O , Cl_2O , F_2O .
4. N_3^- is a pseudo-halide. Explain.
5. Why Borazine is called "Inorganic Benzene"?
6. Write a short note on polthiazile?

5x2=10

Paper-CC 10 (Organic)

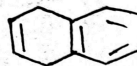
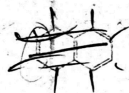
Attend any five

1. What will be the major product when (S)-benzoin is treated with LiAlH_4 ?
2. Write down the product of the following reaction and show the plausible mechanism.



3. Either $\text{Ph}_2\text{C}(\text{OH})\text{C}(\text{OH})\text{Me}_2$ or $\text{PhMeC}(\text{OH})\text{C}(\text{OH})\text{MePh}$ on treatment with concentrated H_2SO_4 give same ketone. Explain mechanistically.
4. What will be the major product formed when 3-methyl-2-butanone is treated with CF_3COOOH ? Give the mechanism of the reaction.
5. Why excess diazomethane is used in Erdt Ester synthesis?

6. Find out the number of NMR signals and splitting pattern of the following compound.



5x2=10

Paper-SEC 2 (Pesticides)

1. How do you synthesise DDT from Chloro benzene? Write down the use of DDT and Gammexene. 3+2
2. What do you mean by pesticides and give one example.