Kandi Raj College
CHEMISTRY DEPARTMENT
B.Sc. 5th Semester Hons. Internal Assessment Examination

Paper- CHEMHT-12(Physical Chemistry)

Answer any five

$2 \times 5 = 10$

1. Adsorption has to be exothermic – Comment.
2. What are the factors on which the optical density of a solution depends?
3. Find out at which J values intensity of spectral lines will be maximum in the Microwave Spectroscopy.
4. Explain how Heisenberg's Uncertainty Principle can explain width of spectral lines.
5. How surface tension of a liquid changes with concentration of the solution?
6. State Grothuss-Draper law and Stark-Einstein law.
7. What is quantum yield? Will the quantum yield be greater than 1 for any chain reaction?

Paper- CHEMHT-11 (Iorganic)

Answer any five questions $5 \times 2 = 10$

1. $Cu(CH_3COO)_2.2H_2O$ is diamagnetic although it is d^1 electronic system-explain?
2. Predict whether Fe_3O_4 is normal spinel or inverse spinel.
3. How periodic positions of a metal ion influence the crystal field splitting parameters?
4. Justify the trend in LMCT energies: $CrO_4^{2-} < MoO_4^{2-} < WO_4^{2-}$
5. Why $La(OH)_3$ is more basic than $Lu(OH)_3$?
6. The mean paring energy (p) $[Cr(H2O)6]$ is found to be $23500 cm^{-1}$. The magnitude Dq_o is $13900 cm^{-1}$. Calculate the CFSE for this complex ion corresponding to high spin and low spin state – explain?
7. Draw the d-orbital splitting pattern of the complex having TBP geometry.
8. What happen 30% solution of H_2O_2 is added to an acidic solution of K_2CrO_4.

Paper- CHEMHTDSE-1B (Industrial Chemistry)

$2 \times 5 = 10$

Answer any five questions

1) What are the essential qualities of fertilizer?
2) What is the raw material used in the manufacture of cements?
3) What is Annealing?
4) What is the basic difference between primary and secondary batteries?
5) Write the general properties of alloys?
6) What is difference between homogeneous and heterogeneous catalyst?
7) Give an example of two organic and inorganic explosion compounds?

Paper-CHEMHTDSE-2C(GREEN CHEMISTRY)

Any five from the following questions: $2 \times 5 = 10$

a. Define "Green Chemistry" with proper explanation.
b. Define "Atom Economy". How would you calculate the atom Economy of multistep process?
c. What is biodiesel? Give example.
d. What is supercritical fluid? Name two commonly used supercritical fluid.
e. What is ionic liquid? Give examples.
f. Give the examples of microwave assisted oxidation and decarboxylation reaction.
g. What is biocatalysis? Give example.
h. Give one example of ultrasonic reaction with proper chemical equation.
i. What are the limitations of microwave chemistry?
j. What is "E-factor" of a chemical process?