KANDI RAJ COLLEGE

Internal Assessment-2021
B.Sc (Hons) 5th Sem.
Sub: Chemistry

Paper- CHEM-H-CC-T-11 (Iorganic)

Answer any five questions : 5x2=10

1) $VO(acac)_2$ has magnetic moment 1.7B.M but $V(acac)_2$ is 2.8 B.M (acac=acetyl acetonate anion)-explain.
2) Predict whether Co_3O_4 is normal spinel or inverse spinel.
3) Why Ce(III) $4f^1$ ion is colourless, whereas Ti^{3+}solutions ($3d^1$) is purple?
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) "Geometry of octahedral Cu(II) complexes are distorted" –explain.
7) Draw the d-orbital splitting pattern of the complex having TBP geometry.
8) State, with equation what happen when $K_4[Fe(CN)_6]$ is heated 50% nitric acid solution, the solution cooled, filtered and filtrate is neutralised with Na_2CO_3.

Paper- CHEMH-CC-T-12 (Physical)

Answer any five questions: 5x2 = 10

1. What is meant by fundamental absorption and overtones for an anharmonic oscillator?
2. What are Stokes' and anti – Stokes' lines in Raman Spectra?
3. If $\beta = 9.273x10^{-24}$ JT^{-1} and assuming g = 2.0, β_Z = 0.33T, find appropriate value of electron spin frequency
4. What is Larmor precession?
5. What is meant by electrical double layer and zeta potential?
6. Write down BET equation for multilayer adsorption.
7. For decomposition reaction of acetone

$$(CH_3)_2C0 + h\gamma \rightarrow C_6H_6 + CO$$

quantum yield is 0.2. A sample of acetone absorbs radiation at 280nm at the rate of 7.5x10-3 Js-1. Calculate rate of formation of CO.

Paper- CHEM-H-DSE-T-1B (Industrial Chemistry)

Answer any five questions- 5x2=10

1) What is bio-fertilizer?
2) Write the composition of Portland cement?
3) Give two example of colouring agent for colouring glass?
4) What is the basic difference between primary and secondary batteries?
5) Give an example of ferrous and non-ferrous alloys?

6) What is difference between homogeneous and heterogeneous catalyst?
7) What do you mean setting of cement?

Paper- CHEM-H-DSE-T-2C (Green Chemistry)

1.Answer any five from following questions- 5x2=10

a) How % of atom economy is calculated ? Explain with help of an example.
b) Give an example of ionic solvent. How an ionic solvent is used to make a reaction greener ?
c) Give an example of biocatalysis and homogeneous catalysis in green chemistry ?
d) What are the advantages of microwave heating over conventional heating ?
e) What is E-factor ? Why pyridine can not be considered as green solvent?
f) Give an example where water acts as green solvent ?
g) What are biofuels ? Why it is beteer to use biofuel over fossil fuel?