Kandi Raj College

Internal Examination-2022

2nd Semester, Chemistry Hons, Paper CC – 3

Answer any 5 questions 5x2=10

1. Prove that $C_P - C_v = \alpha^2 TV/\beta$, α = Coefficient of Thermal Expansion, β = Coefficient of Isothermal Compressibility
2. State and prove Clausius Inequality.
3. Rate constant of a reaction is found to be doubled when temperature is raised from 27 ^{0}C to 37 ^{0}C. Find out Activation Energy.
4. Show in Lineweaver Burk Plot in enzyme catalysis Slope/Intercept = K_M, Michaelis Constant.
5. Calculate the equilibrium constant for the redox reaction between Sn(s) and Pb(II) ion. Given E^o_{red} (Pb^{2+}/Pb)=-0.126v and E^o_{red} (Sn^{2+}/Sn)=-0.126v.
6. Calculate the working potential of diphenyl ammine indicator. Given $E^o_{red}(In_{ox}/In_{red})$=0.77v
7. What is Disproportionation reaction. Give an example.
8. Why addition of Phosphoric acid is essential in the titration of Fe(II) with dichromate solution in presence of BDS indicator.

KANDI RAJ COLLEGE

U.G. 2nd Semester Internal Examination-2022

CHEMISTRY HONOURS

Paper: CHEMHT-4

Full marks: 10 **Time: 1 hour**

1) Answer any five questions from the following: **2x5=10**

i) Explain the nature of stereoisomerism exhibited by the compounds of the formula abC=(C=)$_n$Cab where n=1 and 2.

ii) Write the stereostructure of the alcohol obtained by the attack of hydride on 2-butanone from its Si-face.

iii) Draw the conformational energy diagram for n-butane for rotation around C_2-C_3 bond. Show all the conformations.

iv)What is activation energy of a chemical reaction? Draw the energy profile diagram for a single step reaction.

v) What is meant by primary kinetic isotope effect? Give Example.

vi) Guanidine (H_2N-C(=NH)-NH_2) is a very strong base. Explain.

vii) Draw the energy profile diagram of S_N1 reaction considering a suitable example.

viii) Benzyl chloride ($PhCH_2Cl$) is more reactive than Ethyl chloride (CH_3CH_2Cl) both in S_N1 and S_N2 conditions. Explain.

ix) Between CH_3-CH_2-CH_2-Cl and CH_3-O-CH_2-Cl, which would react faster in S_N1 reaction? Explain.

x) E2 and E1cB reactions are kinetically indistinguishable. Explain.

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Full marks - 10

যেকোনো ৫ টি প্রশ্নের উত্তর দাও:- (5×2=10)

1. বিক্রিয়ার ক্রম ও আণবিকতার পার্থক্য লেখ।
2. কেলাস জালক কাকে বলে?
3. অজৈব বেনজিন কি? এর গঠন সংকেত লেখ।
4. শুষ্ক বরফ কি? এর ব্যবহার লেখ।
5. নাইট্রোজেনের একটি অক্সোঅ্যাসিডের নাম ও সংকেত লেখ।
6. তরলের ক্ষেত্রে তাপমাত্রার সাথে সান্দ্রতার সম্পর্ক লেখ।
7. গ্যাসের গড় মুক্তপথ তাপমাত্রার সাথে কিরূপে পরিবর্তিত হয় তা লেখ।