JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2025

B.Tech-III Semester (CE)

COURSE CODE (CREDITS):25BIICE314 MAX. MARKS: 25

COURSE NAME: CHEMISTRY

COURSE INSTRUCTORS: Dr. Gopal Singh Bisht MAX. TIME: 1 Hour 30 Min

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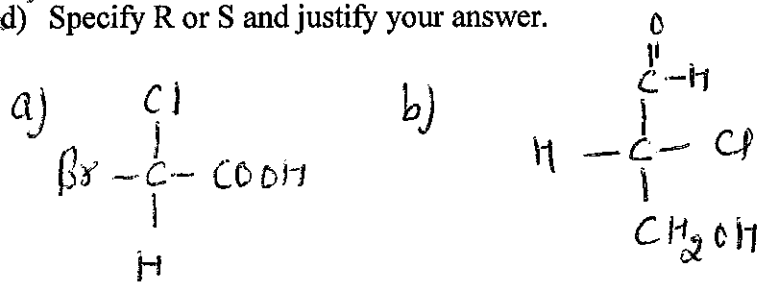
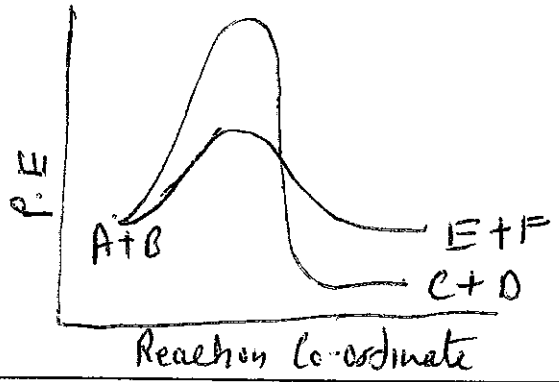
Note: *(a) All questions are compulsory.*

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.No	Question	CO	Marks
Q1	a) Compare and contrast the reaction mechanism of E1 and E2 elimination reactions. b) Consider the following substitution reactions.  1) Determine whether this reaction proceeds via an S_N1 or S_N2 process. 2) Explain the mechanism of this reaction. 3) What is the rate equation of this reaction? Would the reaction occur at a faster rate if the concentration of cyanide were doubled? 4) Draw an energy diagram of the reaction above.	COII	[2] [4]
Q2	a) A sample of a pure liquid in a 10 cm tube is placed in polarimeter and a reading of +45° is made. How could you establish that observed rotation is really +45° and not -315° ? That it is +45° not +405°. Justify your answer. b) Correctly draw stereochemical structure for all the possible stereoisomer of the 1,2-dibromobutane. Identify pair of enantiomers and meso compound. c) Explain why optical activity of racemic mixture is zero. Compare enantiomers with diastereoisomers. d) Specify R or S and justify your answer. 	COII	[2x4]

Q3	Analyze the following energy diagram showing two possible pathways for the reaction between A and B. Indentify thermodynamically favored and kinetically favored product. Explain their formation.  	CO1	[3]
Q4	a) Explain experimental evidence that water has highest density at 4^0 C. b) How will you prepare 200 mL of 0.5 N sulphuric acid solution from a stock of conc. sulphuric acid solution having sp. gr. 1.84 and purity 98%. Write all the steps (consider safety protocol)	COIII	[1] [3]
Q5	a) Compare metallic conduction with electrolytic conduction b) Calculate $\Lambda°$ for a weak electrolyte NH_4OH from the $\Lambda°$ values for these strong electrolytes: NH_4Cl: 149.7; NaCl: 126.5 and NaOH: 248.10 c) Analyze variation in conductance behavior of weak electrolytes.	COIV	[1] [1] [2]