JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -1 EXAMINATIONS-2022
B.Tech-III Semester (BT)
COURSE CODE (CREDITS): 18B11BT314 (3)
COURSE NAME: GENERAL CHEMISTRY
COURSE INSTRUCTORS: DR. GOPAL SINGH BISHT
MAX. MARKS: 15
MAX. TIME: 1 Hours

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

Q1. Answer following short questions. [1x5=5][COI]
   a) HA has a pK_a of 15, while HB has pK_a of 6. Draw the equilibrium that would result upon mixing HB with NaA. Does the equilibrium favor formation of HA or of HB.
   b) How many stereoisomers are possible for n stereogenic centre?
   c) Explain flying wedge projection by taking one example.
   d) What is the difference between Specific rotation and optical rotation?
   e) Which property of enantiomers is used while separating them?

Q2. A bottle of sulphuric acid (Density 1.81 g/mL) is labeled as 80% by weight. What is the normality of the acid? What volume of acid has to be used to make 0.5 litre of 0.4 M H_2SO_4. [2.5][CO1]

Q3. Consider the chart below, which summarizes the results of the synthesis of S-product using different solvents. For each solvent, calculate the % S and % R product. Which solvent produces the optimal result? [2.5][COII]
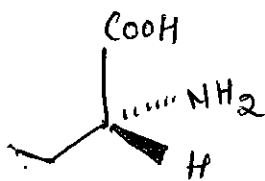
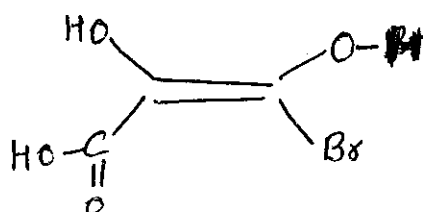| SOLVENT	% ee OF (S)-PRODUCT	% YIELD OF PRODUCT
Toluene	24	55
Tetrahydrofuran	48	33
CH_3CN	72	55
$CHCl_3$	30	40
CH_2Cl_2	46	44
Hexane	51	30

Q4. Consider the following reactions. [2][COV]
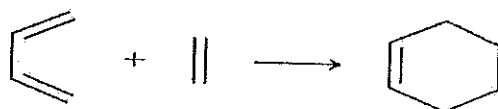
Predict whether an increase in temp will favor reactant or products. Justify your prediction.
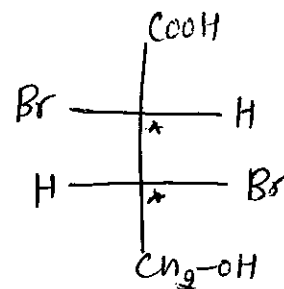
Q5. Assign R/S and E/Z to following compounds.[3][COII]

(a) [1]   (b) [1]   (c) [0.5+0.5]