

Note: All questions are compulsory

1.	<p>a) The optical rotation of the R isomer of a compound X is $+15.2^\circ$. A mixture of R isomer and its enantiomer are placed in the polarimeter and the observed rotation is -5.1°. Calculate the enantiomeric excess (ee) and % composition of the mixture.</p>	[2]
	<p>b) 1.00 gram of compound A is dissolved in 20.0 mL ethanol. 5.00 mL of this solution is placed in a 20.0 cm polarimeter tube at 25°C. The observed rotation is 1.25° counter clockwise. Calculate the $[\alpha]$.</p>	[2]
	<p>c) Assign the suitable R/S or E/Z nomenclature at the appropriate centre for the following compounds A and B.</p> <div style="text-align: center;"> <p>A</p> <p>B</p> </div>	[2]
	<p>d) How do the compounds with same structures may have two distinct properties? Explain with the example.</p>	[2]
	<p>e) Mention the elements of symmetries. How these elements do help in deciding the chiral features of particular compound?</p>	[2]
	<p>f) What is the relation between following isomers A & B as well as C & D?</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>A</p> </div> <div style="text-align: center;"> <p>B</p> </div> <div style="text-align: center;"> <p>C</p> </div> <div style="text-align: center;"> <p>D</p> </div> </div>	[2]
2.	<p>Write a brief discussion on followings;</p> <p>a) Bottom up synthesis of the nanomaterials.</p> <p>b) Comment on the various societal application of the nanomaterials.</p>	[2]
3.	<p>Categorize the following compounds into simple salts, double salts and metal complex.</p>	[2]