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**N.B.**: (1) All Questions are compulsory.

(2) Figures to the right indicate full marks.

1. (a) Discuss mechanism and application of Claisen condensation.

OR

(a) Explain the mechanism of pinacol pinacolone rearrangement with suitable example.

Attempt any three of the following:-

- (b) Write structure of the following
  - (i) 1,2-hexadiene
  - (ii) 2-methylthiole

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- (iii) bicyclo [2.2.1] heptane
- (iv) 2-bromospiro[2.3]hexane
- (v) 2, 2'-diphenyldicarboxylic acid
- (c) Explain specificity of the following reagents with suitable examples 5
  - (i) LiA1H<sub>4</sub> (ii) NBS
- (d) (I) Give one method of preparation of ethyl lithium. What is the action of (i) CH<sub>2</sub>CHO (ii) CO<sub>2</sub> on ethyl lithium?
  - (II) Complete the following reactions.

(6H5C CH3 Br CH2 COSH5/Zn) 9 H20/H+ ?

- (e) Explain E, mechanism. Discuss Saytzeff rule with suitable example.
- 2. (a) (I) Assign E/Z notations to the following compounds and justify your answer.

(II) Comment on optical activity of allenes.

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(II) Define topicity. Give an example of enantiotopic ligand. Attempt any three of the following:-(b) What is action of following on thiophene. SO<sub>2</sub>Cl<sub>2</sub> at room temp. (II) Draw resonance structures of furan. (c) Give synthesis of following Paracetamol (ii) Bifenox-I (d) (I) Draw boat and chair conformations of cyclohexane and comment on their relative stabilities. (II) Complete the following reaction and discuss its stereo chemistry. 1=6 C=C/C645 + H2 Pt (I) 'Pyridine is stronger base than pyrrole' Explain. (II) Give Hantzch synthesis for pyridine. An organic compound has molecular formula C<sub>5</sub>H<sub>10</sub>O. It's I.R. spectrum 3. (a) gives peak at  $1720 \text{cm}^{-1}$ . It's PMR spectrum gives signals at  $\delta$  0.9ppm (t) 6H, δ 2.4 PPM(q)4H. Determine it's index of hydrogen deficiency. Assign the structure to the compound. OR

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OR

symmetry.

**QP Code: 75332** (I) With suitable example explain the term- An alternating axis of 3 2 3 2 5 3 2 3 2 5 (I) Define the term monomer. Give preparation and one use of teflon. 2 3 What are the advantages of I.R. spectroscopy? 2 (II) Give the number of PMR signals and splitting pattern of What is the importance of base peak and molecular ion peak in 3 (II) Discuss the importance of D<sub>2</sub>O exchange in PMR Spectroscopy. 2

[TURN OVER]

(I)

(a)

(b)

(c)

(II) Explain atactic polymers.

CH,-O-CH,

polymerization.

Attempt any three of the following:-

mass spectrometry?

(I) What is diene polymerization? Explain 1, 2 & 1, 4 addition

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	(II)Draw the structure of polymer obtained by polymerization of adipic acid + hexamethylenediamine. Give one use of it.	2
(a)		_
(e)	(I) Discuss Norrish type I photochemical cleavage of ketones.	3
	(II) What is photosensitization? Give one example.	2
4. (a)	(I) Draw Haworth formula for $\beta$ -D-glucopyranose.	3
	(II) Give the acetylation reaction of D(-) fructose.	2
	OR	
(a)	(I) Explain Karrer's work in structure determination of nicotine.	3
	(II) Draw the structure of camphore and give its commercial importance.	2
	Attempt any three of the following:-	
(b)	<ul> <li>(I) Explain Merrifield's solid phase peptide synthesis to prepare a dipeptide.</li> </ul>	3
	<ul> <li>(II) Explain: (a) Zwitter ion (b) isoelectric point</li> <li>w.r.t α-amino acids.</li> </ul>	2
(c)	(I) How will you prepare phenylalanine using Erlenmeyer azlactone	3
(-)	synthesis?	J
	(II) What are fats and oils? How do they differ?	2
(d)	(I) How will you convert D(+) glucose into D(-) fructose?	3
(-)	(II) Give the classification of carbohydrates.	2
(e)	(I) Give analytical evidence to prove that citral is an acyclic monoterpenoid	3
( )	having an isopropylidene group.	
	(II) What are the differences between vitamins and hormones?	2
5. (a)	Discuss effect of temperature on sulphonation of naphthalene.	3
	OR	
(a)	Explain mechanism of acetal formation	3
(b)	What is Simmons Smith reaction?	2
(c)	Explain in brief phase transfer catalyst	3
	OR	
(c)	What are the factors affecting Walden inversion?	3
(d)	Explain the term 'Linear synthesis'.	2
(e)	Give biomedical uses of synthetic polymers.	3
(f)	What is the action of periodic acid on D(+) glucose?	3
(g)	Explain the term (i) Chromophore (ii) Auxochrome.	2
	OR	
(g)	Distinguish between addition and condensation polymerization.	2
(h)	How will you convert citral into geraniol and nerol?	2
	OR	
(h)	What is trans-esterification?	2