Sanjay Ghodawat University, Kolhapur

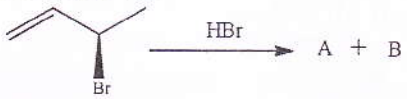
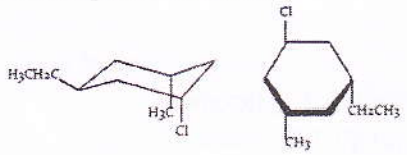
2018-19

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

2019 SYMSC	School of Science	Department of Chemistry
CHS 604	Stereochemistry	Semester – Even (IV)
Thursday, 23-05-2019	End Semester Examination	Time: 3 hrs, Max Marks: 100
PRN:	Seat No:	Section A Marks out of 20:
Junior Supervisor Signature	Student Signature	(2.30 to 3.00 pm)

Section A

Instructions: 1) All Questions are compulsory.
2) For MCQs mark/tic (√) for correct answer. No marks for multiple tics (√).
3) Section A should submitted to Jr Supervisor immediately after first ½ hour.

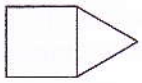
Q.1	Multiple choice questions.	Marks 20	level	CO
1	In the following Markownikov addition reaction, the products A and B are -  a) Homomers b) Eantiomers c) Diastereomers d) Regioisomers		L2	1
2	The first person to separate a racemic mixture into individual eantiomers is - a) J.H.Van't Hoff b) L.Pasteur c) H. E. Fischer d) F. Wohler		L1	1
3	Considering the following reaction, among a-c, the correct statements are -  i) The Carbonyl group has eantiotopic faces ii)The hydride attack is re-facial iii) It is a diastereoselective reduction a) i and ii only b) i and iii only c) ii and iii only d) i, ii and iii		L4	1
4	What is the stereochemical relationship between the following two molecules? 		L3	2

a) Geometrical isomers b) Enantiomers
c) Diastereomers d) Identical

5 Reaction of (±) 2,3-dibromobutane is slower than meso in which the two methyl groups are - L2 2
a) Skew b) Anti
c) Gauche d) Partially eclipsed

6 The most stable conformation of eight membered ring is – L1 2
a) Chair b) Boat
c) Half Chair d) Crown

7 The correct name of the given compound is – L1 3



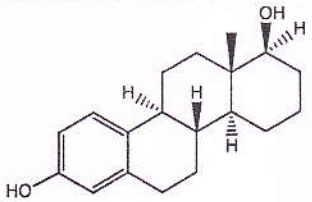
a) Bicyclo[1,2,0] pentane b) Bicyclo[2,1,0] pentane
c) Bicyclo[1,2,0] butane d) Bicyclo[1,2,0] propane

8 Perhydrophenanthrene belongs to ------- type of molecule. L1 3
a) ABBA b) ABAB
c) BABA d) All of these

9 ORD stands for - L1 3
a) Optical rotatory dichorism
b) Optical rotatory dispersion
c) Optical rotatory direction
d) None of these

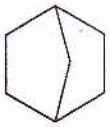
10 Two cyclohexane rings in Cis decalin are fused by -------- bonds. L2 3
a) a,e b) e,e
c) a,a d) None of the above

11 How many stereoisomers are possible for estradiol which has the following structure ? L3 3



a) 5 b) 32
c) 16 d) 10

12 The name for following bicyclic ring is – L2 3

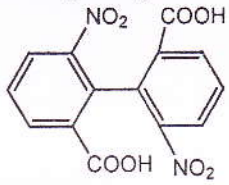


a) Bicyclo[2,1,2] heptane b) Bicyclo[2,2,1] hexane
c) Bicyclo[2,2,1] hepatane d) Bicyclo[2,1,2] hexane

13 The position of axial C-H bonds in the chair conformation is L2 3
a) Eclipsed b) Staggered
c) Skew d) Any of these

14 Allenes contains ------- double bonds. L1 4
a) Non alternant b) Cumulated
c) Conjugated d) None of these

15 The following compound is : L2 4



a) Achiral b) Chiral
c) Non-chiral d) None of these

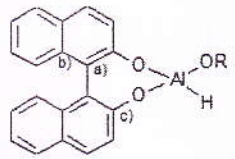
16 In --------- state, the one ring in one plane and another ring in another plane in case of biphenyl compounds. L1 4
a) Crystalline b) Liquid or gas
c) Solid d) None of the above

17 The system in which two rings with common carbon atom are – L1 4
a) Fused b) bridged
c) Isolated d) Spiranes

18 Which of the following has zero dipole moment ? L1 4
a) Eantiomer b) Diastereomer
c) Cis isomer d) Trans isomer

19 The properly substituted allenes contains ----- L3 4
a) C_2 axis of symmetry
b) Two fold axis of symmetry
c) Three fold of axis of symmetry
d) Both a and b

20 In the following chiral reducing agent, there is - L3 4



a) Asymmetric centre at the position labelled a)
b) No asymmetric centre present
c) Asymmetric centre at the position labelled c)
d) Asymmetric centre at the position labelled b)

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(3.00 to 5.30 pm)

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Section B

			Marks	level	CO
Q.2		**Attempt the following (any Two)**	12		
	a)	Describe stereoselective reactions with suitable examples.	06	L2	1
	b)	Explain the method of chiral synthesis using Wilkinson's catalyst.	06	L2	1
	c)	Describe asymmetric synthesis with reference to Felkin-Ahn model and Cram's rule.	06	L3	1
Q.3		**Attempt the following (any Two)**	12		
	a)	State and explain Curtin-Hammett principle.	06	L2	2
	b)	Describe the stereochemistry of anti-elimination reactions.	06	L2	2
	c)	Explain the role of ring size and the nature of ring substitution on the stability of ring.	06	L3	2
Q.4	a)	**Attempt the following (any Two)**	12		
	i)	State and explain the octant rule with suitable example.		L3	3
	ii)	Draw the conformations of perhydrophenanthrene and explain its stability.		L4	3
	iii)	What are fused ring systems? Give its nomenclature with suitable examples.		L2	3
	b)	**Attempt the following (any Four)**	16		
	i)	Describe the types of ORD curves.		L3	3
	ii)	Explain Axial haloketone rule.		L2	3

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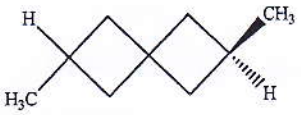
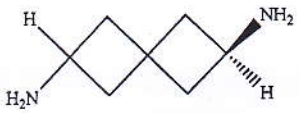
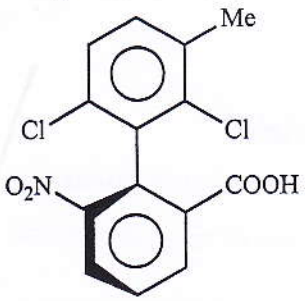
	iii)	Write a note on Conformations of Decalin.	L5	3
	iv)	Explain the stereochemistry of bridged head ring systems.	L3	3
	v)	What do you mean by Alder rule? Comment on stereochemical restriction in bridged ring systems.	L4	3

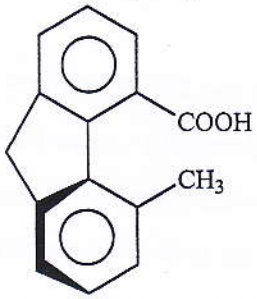
Q.5	**a)**	**Attempt the following (any Two)**	**16**		
	i)	Explain the physical methods used to determine the configuration of diastereoisomers (geometrical isomers).		L1	4
	ii)	Discuss optical activity and configuration in Allenes.		L1	4
	iii)	Describe the concept of Atropisomerism in Biphenyls.		L2	4
	b)	**Attempt the following (any Three)**	**12**		
	i)	Explain chirality in Spiranes with suitable examples.		L2	4
	ii)	Assign R/S nomenclature in the given Spiranes.		L3	4





iii) Assign R/S nomenclature in the following biphenyls. L3 4





iv) Comment on optical activity in biphenyls. L1 4

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