

Seat No.: **MARCH - 2022 (Summer session) Examination**

Subject Code: 81565

(विद्यार्थी को OMR पर लिखना / Student should fill this code on OMR sheet)

Subject Name: Master of Science\_81565\_61431/74455/81565 - Stereochemistry\_05.08.2022\_4.00 PM

Date: 05-08-2022

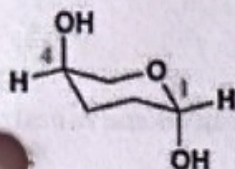
Time: 16:00:00 to 17:00:00

QP Code: 9666QP

Total Marks : 50 Each Question 2 Marks, Total 25 Ques, Duration 1 Hr

**1. Question**

1) Which is the correct assignment of chirality at C1 and C4 of the following molecule?



A) 1S, 4R

B) 1S, 4S

C) 1R, 4S

D) 1R, 4S

a. A

b. B

c. C

d. D

**2. Question**

2) The half-chair conformation of cyclopentane has a ----- of symmetry.

A) C<sub>2</sub> center B) C<sub>2</sub> axisC) C<sub>2</sub> plane D) C<sub>2</sub> point

a. A

b. B

c. C

d. D

**3. Question**

3) Biphenyls are chiral not due to the presence of a stereocenter but a -----.

A) stereoaxis

B) asymmetric carbon

C) chiral carbon

D) none of above

a. A

b. B

c. C

d. D

**4. Question**



4) Optical purity is defined as the \_\_\_\_\_.

- A) Ratio of rotation of pure enantiomer to rotation of mixture
- B) Ratio of rotation of mixture to rotation of pure enantiomer
- C) Product of rotation of mixture and rotation of pure enantiomer
- D) Sum of rotation of mixture and rotation of pure enantiomer

a. A  
c. C

b. B  
d. D

5. Question

5) The regioselectivity and stereospecificity in the hydroboration-oxidation of an alkene is best described as \_\_\_\_\_.

- A) Markovnikov orientation with syn-addition.
- B) Markovnikov orientation with anti-addition.
- C) Anti-Markovnikov orientation with syn-addition.
- D) Anti-Markovnikov orientation with anti-addition.

a. A  
c. C

b. B  
d. D

6. Question

6) Trans decalin in which two rings are fused through, ..... bond.

- A) a,e
- B) c,e
- C) a,a
- D) None of these

a. A  
c. C

b. B  
d. D

7. Question

7) Cyclononane exists in ----- main sets of conformations.

- A) one
- B) two
- C) three
- D) four

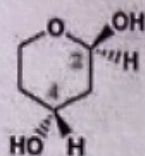
a. A  
c. C

b. B  
d. D

8. Question



8) Which is the correct assignment of chirality at C2 and C4 of the following molecule?



- A) 2S,4S      B) 2S,4R  
C) 2R,4R      D) 2R,4S

1. A

2. C

b. B

d. D

3. C

9) The ----- states that a bridged bicyclic compound cannot have a double bond at a bridgehead position unless one of the rings contains at least eight carbon atoms.

- A) I-Strain      B) Bredt's rule  
C) Octant rule      D) axial rule

1. A

2. C

b. B

d. D

10. Question

10) The replacement of both double bonds in an allene by ring systems gives a -----.

- A) biphenyls      B) cumulated double bonds  
C) spiran      D) chiral center

1. A

2. C

b. B

d. D

1. Question

11) In cis and trans decalin which form of decalin is more stable?

- A) cis      B) trans  
C) both a and b      D) none of above

1. A

2. C

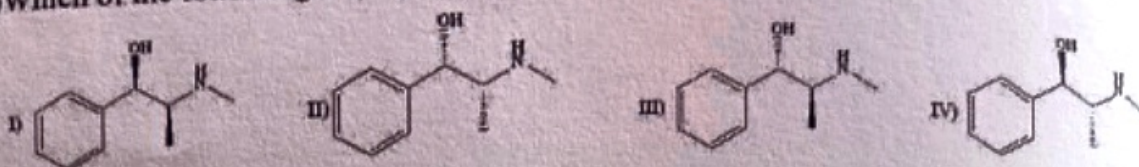
b. B

d. D

2. Question



12) Which of the following is (1S,2R)-Ephedrine.



A) I      B) II

C) III     D) IV

a. A  
c. C

b. B  
d. D

13. Question

13) In the crystal, both benzene rings of biphenyl lie in the-----.

A) different plane

B) same plane

C) perpendicular

D) both a and b

a. A  
c. C

b. B  
d. D

14. Question

14) What is the IUPAC name of following compound.



A) bicyclo[1.1.0]butane

B) bicyclo[2.2.2]octane

C) bicyclo[2.2.1]heptane

D) tricyclo [1.1.1] heptane

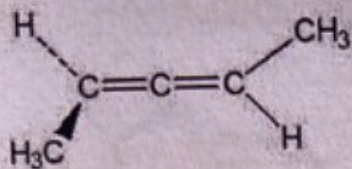
a. A  
c. C

b. B  
d. D

15. Question



15) Assign the R, S configuration to following compound.



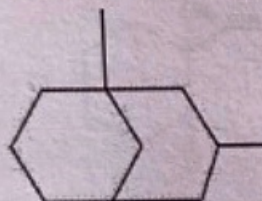
- A) R                      B) S  
C) R,S                    D) None of above

b. B

d. D

6. Question

What is the IUPAC name of following compound.



- A) 1,3-dimethylbicyclo[1.1.0]butane                      B) 1,3-dimethylbicyclo[2.2.2]octane  
C) 1,3-dimethylbicyclo[3.3.1]nonane                    D) 1,3-dimethyltricyclo [1.1.1] heptane

b. B

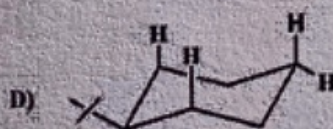
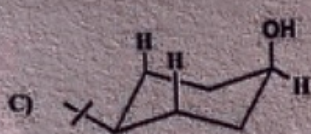
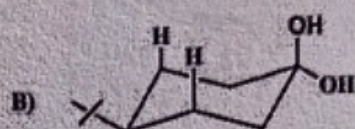
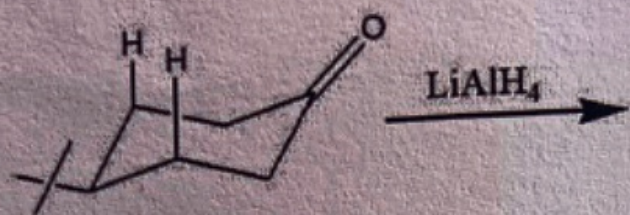
d. D

7. Question

161



17) predict the major product with stereochemistry of following reaction.



a. A

b. B

c. C

d. D

18. Question

18) What is meant by a reaction going in 50% enantiomeric excess?

A) The product contains 50% of one enantiomer and 50% of the other enantiomer.

B) The product contains 50% of one enantiomer and 50% of other products.

C) The product contains an enantiomer which is 50% pure.

D) The product contains 45% of one enantiomer and 55% of the other enantiomer.

a. A

b. B

c. C

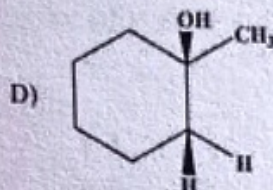
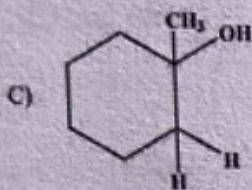
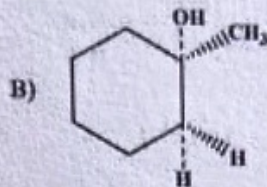
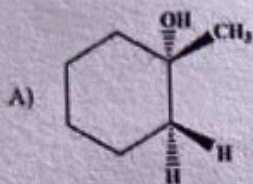
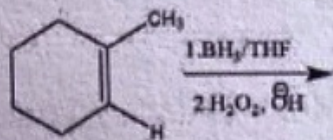
d. D

19. Question

161



19) predict the product with stereochemistry of following reaction.

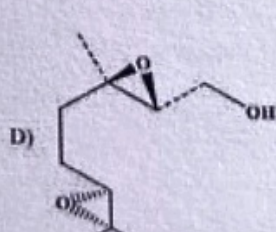
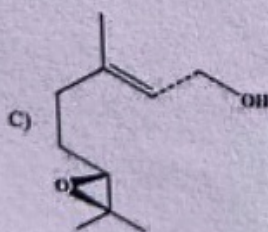
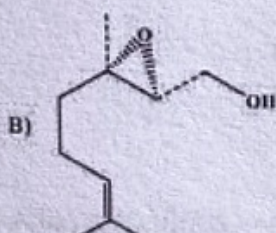
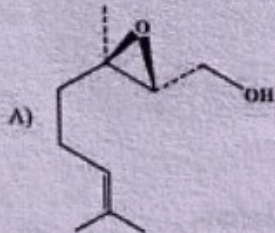
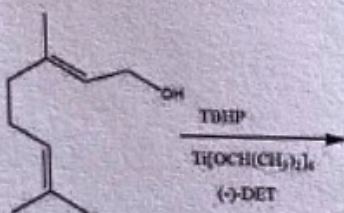


a. A  
c. C

b. B  
d. D

20. Question

20) predict the product with stereochemistry of following reaction.



a. A

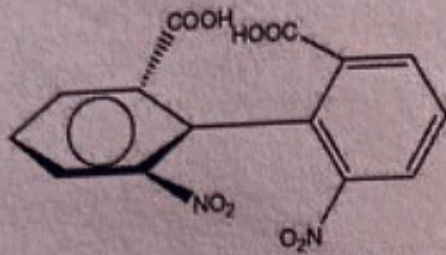
b. B



c. C

## 21. Question

21) Assign the R, S configuration to following compound.



- A) R            B) S  
C) R,S        D) None of above

a. A

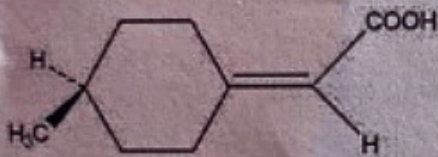
b. B

c. C

d. D

## 22. Question

22) Assign the R, S configuration to following compound.



- A) S            B) R  
C) R,S        D) None of above

a. A

b. B

c. C

d. D

## 23. Question

23) Perhydrophenanthrene contains ----- equivalent pairs of chiral centers.

- A) three    B) one  
C) four    D) two

a. A

b. B

c. C

d. D

## 24. Question



24) When there is an axial halogen next to the keto group of a cyclohexanone moiety and if the halogen appears at the observers left the compound will show a strong -----cotton effect.

- A) Negative                      B) positive  
C) both a and b                D) none of above

1. A                                              b. B  
2. C                                              d. D

15. Question

25) The combination of circular dichroism and circular birefringence known as the -----.

- A) sign effect                      B) cotton effect  
C) axil effect                        D) none of above

1. A                                              b. B  
2. C                                              d. D