CAREER ENDEAVOUR
Best Institute for IIT-JAM, NET & GATE

CSIR-UGC-NET/JRF | GATE CHEMISTRY

TEST : STEREOCHEMISTRY

Time : 45 Minutes **Date : 06-03-2020**

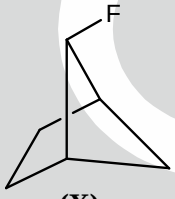
M.M. : 40

INSTRUCTION:

1. **There are two parts. Part-A contains 10 objective type questions, each question carry 2 marks and Part-B contains 05 objective type questions, each question carry 4 marks.**
2. **There is negative marking, @ 25% will be deducted for each wrong answer.**
3. **Attempt all the questions, use of calculator is not allowed.**

PART - A

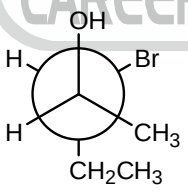
1. The correct IUPAC name for the bicyclic compound (X) is



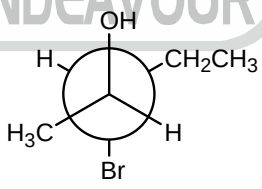
(X)

(a) 2-fluorobicyclic [2.2.1]hexane (b) 2-fluorobicyclo[2.1.1]hexane
(c) 5-fluorobicyclo[2.1.1]hexane (d) 6-fluorobicyclo[2.1.1.]hexane

2. The correct relationship between the compound (X) and (Y) is



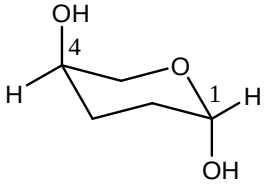
(X)



(Y)

(a) Conformers (b) Constitutional isomers
(c) Diastereomers (d) Enantiomers

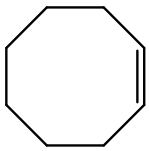
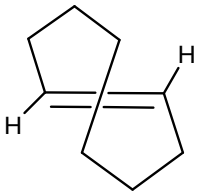
3. The correct assignment of chirality at C1 and C4 of the following

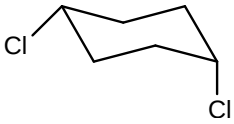
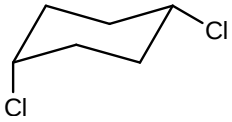


(a) 1S, 4R (b) 1R, 4R (c) 1S, 4S (d) 1R, 4S

4. Among the following compounds identify the chiral pair

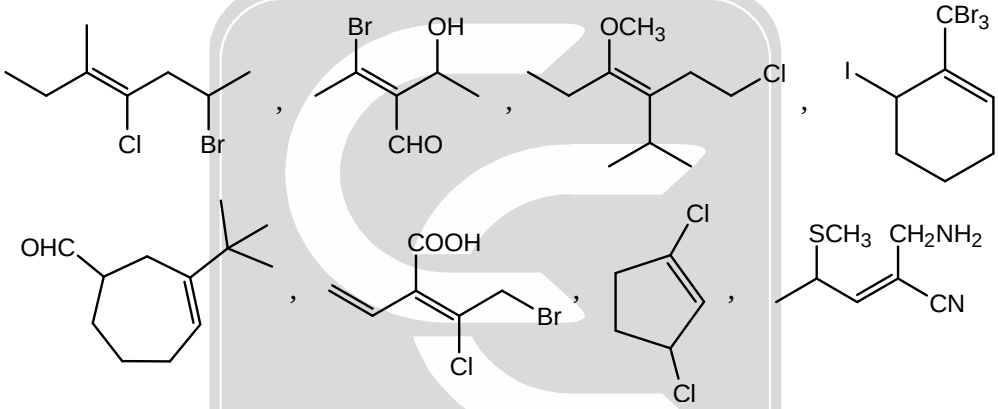
(a) $ClHC{=}C{=}C{=}CHCl$, $ClHC{=}C{=}C{=}CCl_2$

(b)  and 

(c)  and 

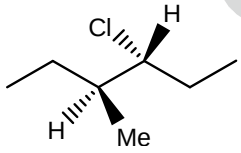
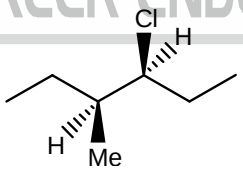
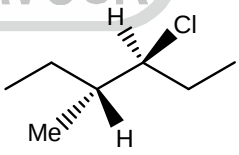
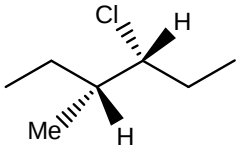
(d)  and 

5. The total number of molecules having E-configuration

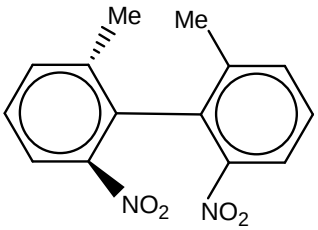
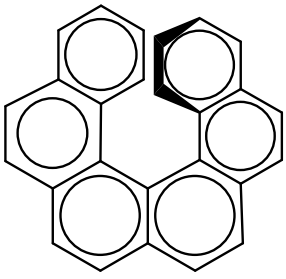


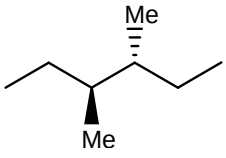
(a) 5 (b) 6 (c) 4 (d) 2

6. Among the following, identify the compound 3(S), 4(S)-3-chloro-4-methylhexane

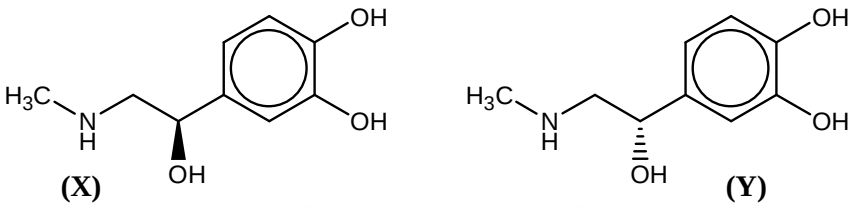
(a)  (b)  (c)  (d) 

7. Which of the following molecule is achiral

(a)  (b) 

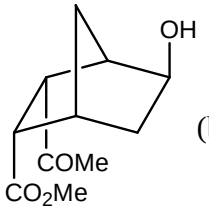
(c) $MeHC{=}C{=}CHMe$ (d) 

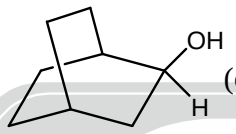
8. The specific rotation of compound (X) is $[\alpha] = +53.3$, then what would be the specific rotation of compound (Y)

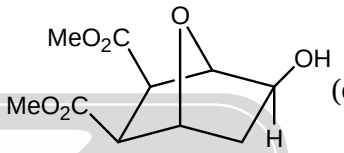


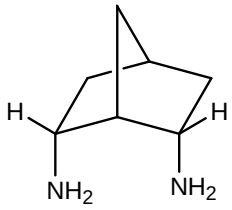
(a) +53.3º (b) –62.5º (c) –53.3º (d) can't determined.

9. Which of the following molecule is achiral

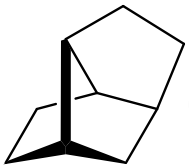
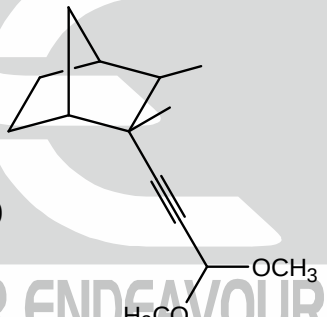
(a) 

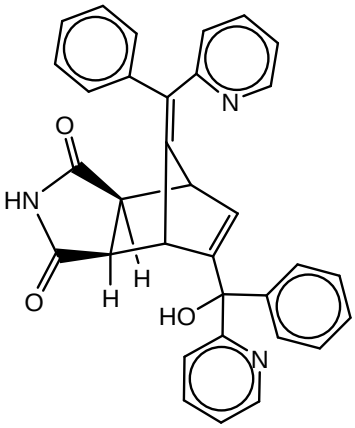
(b) 

(c) 

(d) 

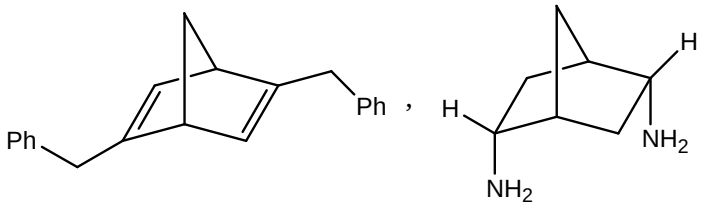
10. Among the following identify the meso compound.

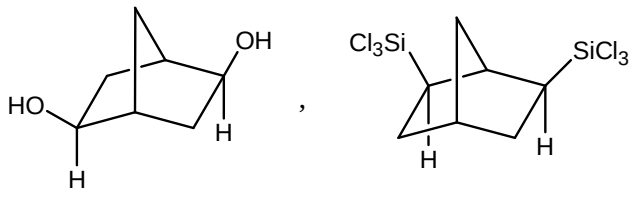
(a) 
(b) 
(c) 

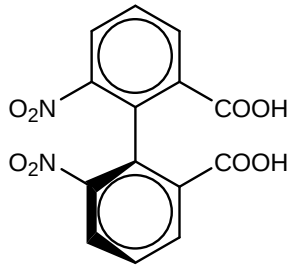
(d) 

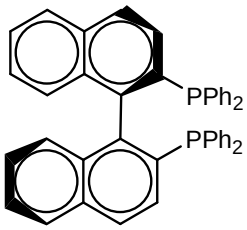
PART - B

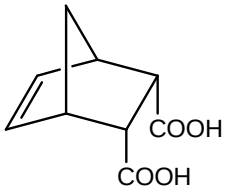
11. Identify the achiral pair in the following molecule.

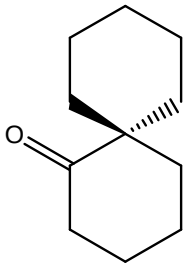
(a) 

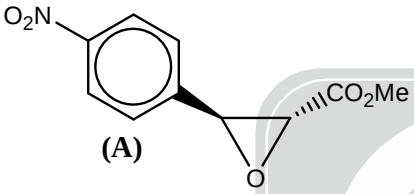
(b) 

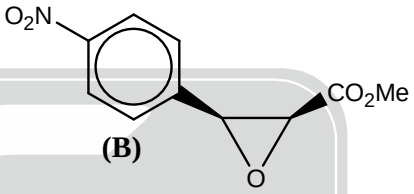
(c) 

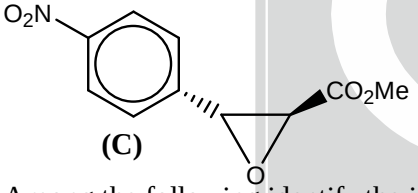
,


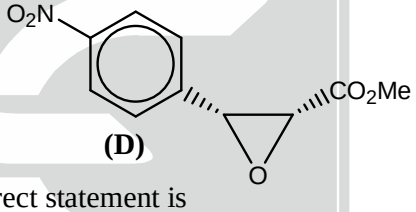
(d) 

,


12. 

(A)


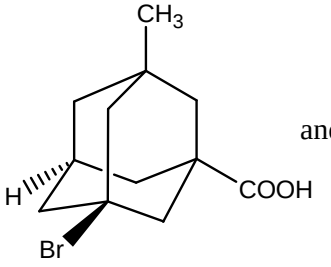
(B)


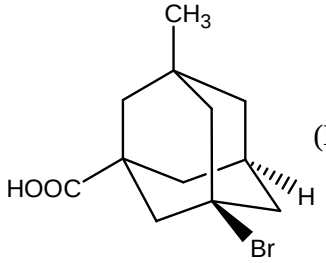
(C)


(D)

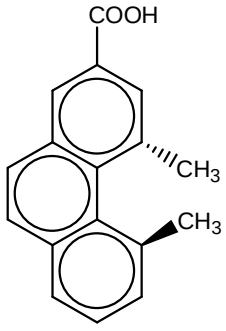
Among the following identify the incorrect statement is
(a) (A) and (C) are enantiomer whereas (B) and (C) are diastereomers.
(b) (A) and (C) & (B) and (C) are diastereomers
(c) (A) and (B) & (C) and (D) are diastereomers
(d) (A) and (C) are diastereomers whereas (B) and (D) are enantiomers.

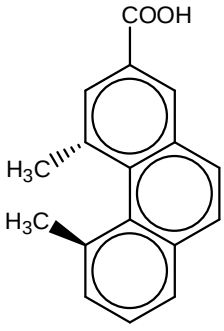
13. Identify the correct statement

(a) 

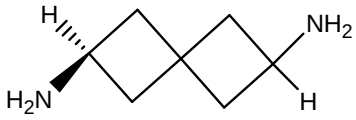
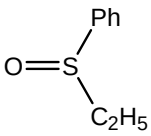
and


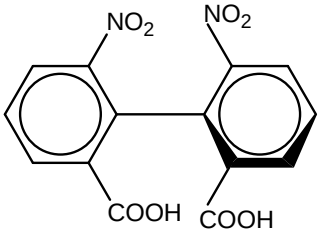
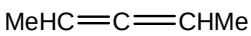
(Diastereomeric pair)

(b) 

and


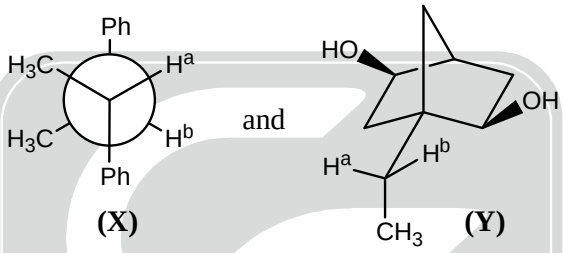
(Enantiomeric pair)

(c)  and  (Optically inactive)

(d)  and 

(Example of planar chirality)

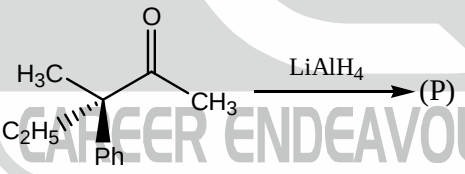
14. In the following compounds (X) and (Y), the stereochemical descriptor for H_a and H_b are respectively

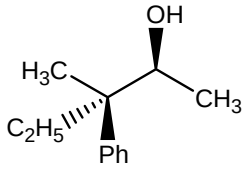
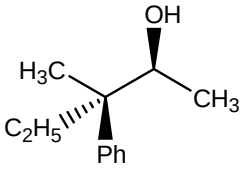


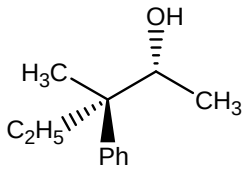
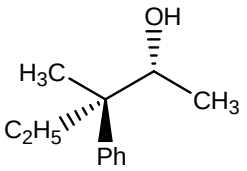
(a) Homotopic, enantiotopic (b) Diastereotopic, enantiotopic

(c) Homotopic, Diastereotopic (d) Enantiotopic, Diastereotopic

15. The major product (P) formed in the following reaction is



(a)  by Re face attack (b)  by Si face attack

(c)  by Re face attack (d)  by Si face attack