

NAME: \_\_\_\_\_

ID #: \_\_\_\_\_

1. Give a structure which corresponds to the following IUPAC names. Make sure your drawing shows all required stereochemistry. Drawings which show only the carbon and other non-hydrogen atoms are satisfactory [12 points]

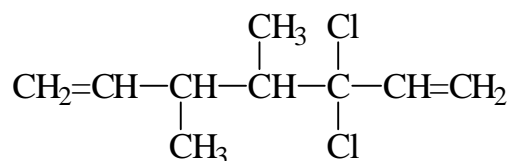
(a) trans 2,3-dichloro-6-methyl-3-octene

(b) 7-bromo-5,6,8-trimethylnon-7-en-1-yne

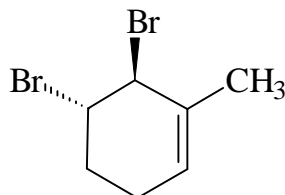
(c) trans 1-ethyl-3-isopropylcyclobutane

2. Give an acceptable IUPAC name (including stereochemical descriptors) for the following structures. [16 points]

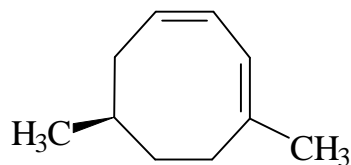
(a)



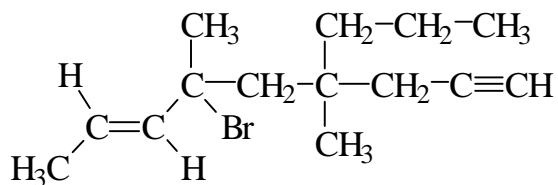
(b)



(c)



(d)



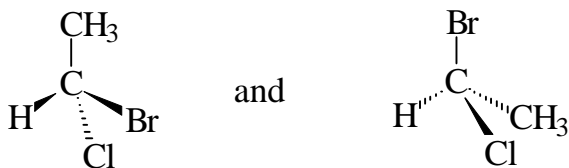
3.(a) Draw the NEWMAN projection of the less stable configuration of 1-methyl-4-isopropylcyclohexane in its less stable chair conformation. Label the substituents as being axial (a) or equatorial (e). [8 points]

(b) Draw the chair (NOT the Newman) drawing of the more stable chair conformation of trans 1-ethyl-2-isopropylcyclohexane. Label the substituents as being (a) or (e). [8 points]

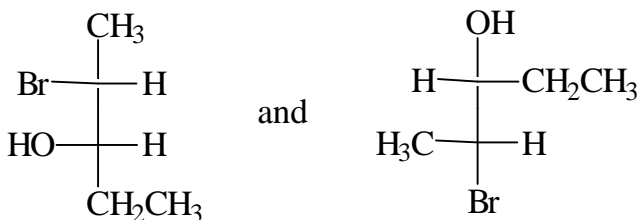
(c) Draw the Newman projection of 2-methylpentane in its least stable staggered conformation around the C2-C3 bond. [4 points]

4.(a) Choose the term from the following list (diastereomer, enantiomer, identical, positional isomer) which correctly describes the relationship between the following pairs of compounds. [16 points]

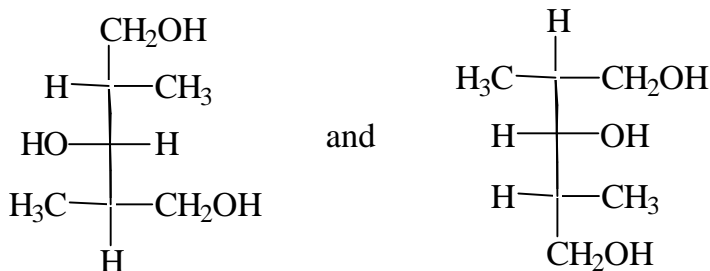
(i)



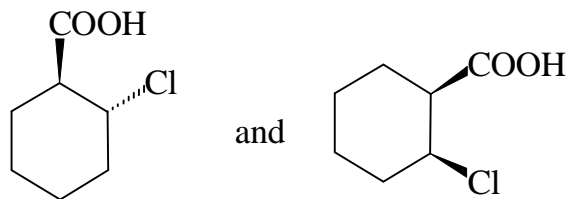
(ii)



(iii)

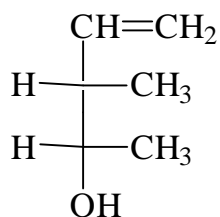


(iv)

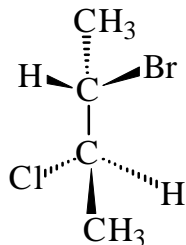


(b) Assign the proper stereochemical descriptor (R or S) to each of the chiral centres in the following structures. Indicate the priorities of the substituents. Also, provide the complete IUPAC name for the molecule shown in part (ii)

(i)



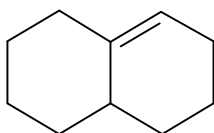
(ii)



(c) Draw the Fischer projection which correctly represents the molecule (2R, 4R) 2-bromo-4-methylhexane [5 points]

(d) Give the correct stereochemical designator (E or Z) for the following compounds. [4 points]


(i)




CC1=CCCCC1Cl

first one    second one    both    neither    (circle your answer)

(e) If one diastereomer of a molecule is optically active, then all diastereomers of the same molecule must be optically active.



**I**



**II**

11

none of these