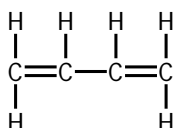


Scholar Advanced Higher Chemistry - Organic Chemistry

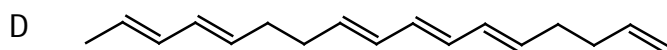
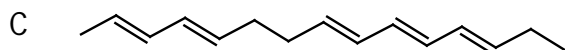
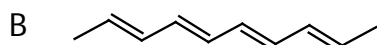
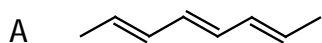
Please attempt the following questions in preparation for the online tutorial on Tuesday 20th February.

- Which of the following best describes the bonding in alkanes?
 - sp^2 hybridisation of the carbon atoms giving sigma bonds only.
 - sp^2 hybridisation of the carbon atoms giving sigma and pi bonds.
 - sp^3 hybridisation of the carbon atoms giving sigma bonds only.
 - sp^3 hybridisation of the carbon atoms giving sigma and pi bonds.
- Which of the following is present in propene?
 - sp^2 hybridisation only
 - sp^2 and sp hybridisation
 - sp^3 and sp hybridisation
 - sp^2 and sp^3 hybridisation
- Explain what happens when an sp^3 hybrid orbital is formed in a carbon atom.
- Which of the following shows the correct number of sigma and pi bonds in buta-1,3-diene?

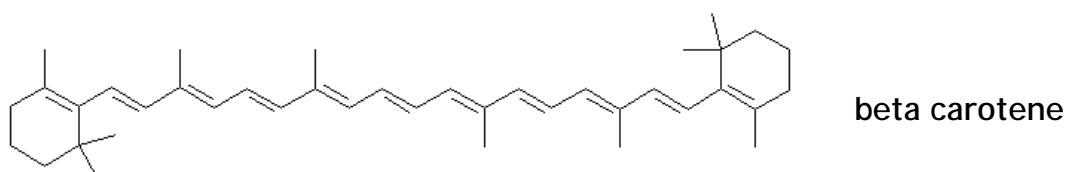
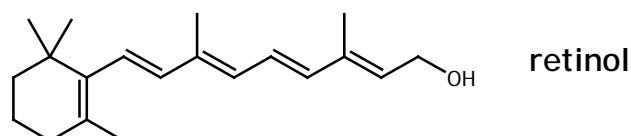


	Sigma bonds	Pi bonds
A	7	4
B	7	2
C	9	4
D	9	2

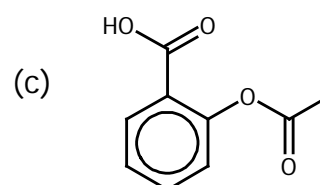
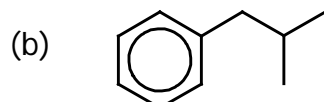
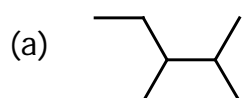
5. Explain what happens when
- a sigma bond is formed,
 - a pi bond is formed.
6. Which of the following has the greatest degree of conjugation?



7. The structures of retinol and beta carotene are shown below. Explain fully why retinol is yellow and beta carotene is orange



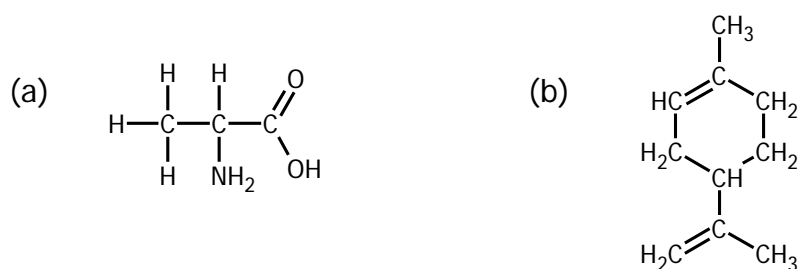
8. State the molecular formula of each of the following.



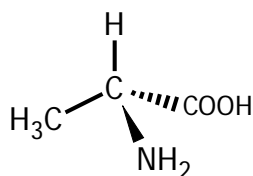
9. Which of the following compounds does not exhibit geometric isomerism?

- A but-1-ene
- B but-2-ene
- C 1,2-dichloroethene
- D 1,2-dichlorocyclopentane

10. Circle the chiral carbon atom in each of the following compounds.



11. Draw the optical isomer of the following molecule.



12. State the definition of the following terms.

- (a) Agonist
- (b) Antagonist
- (c) Active structural fragment
- (d) Receptor