

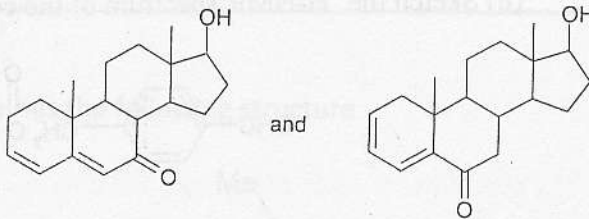


Eastern University Sri Lanka
Second Year Second Semester Examination in Science
2008/2009 (October 2010) - Repeat
CH 203 Spectroscopic Methods

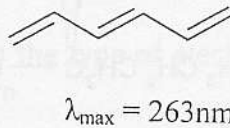
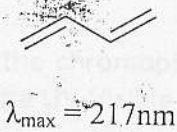
Time Allowed: ONE HOUR

Answer all the questions

1. (a) How would you differentiate the following isomeric pairs by UV-Visible Spectroscopy.



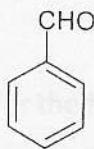
(b) Explain the following observation



30 marks

20 marks

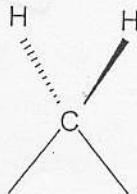
- (c) (i) IR spectrum of benzaldehyde shows absorption band at ν/cm^{-1} 3100, 2840, 2730, 1700, 1600, 750 and 690. Interpret the spectral data to the characteristic group vibrations of the molecule.



Benzaldehyde

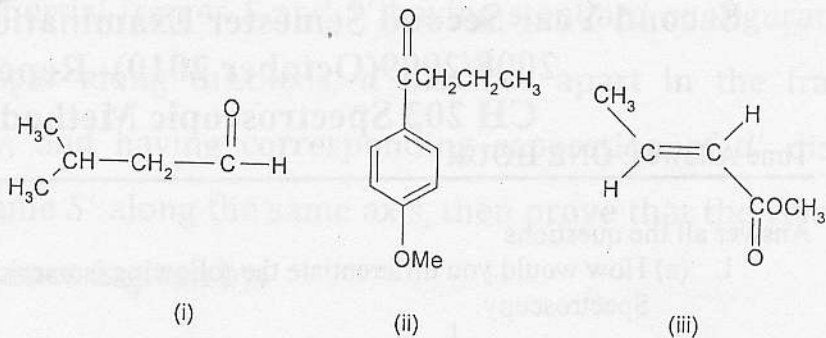
25 marks

- (ii) Draw the pictorial diagram to show the various vibrational modes for a CH_2 group



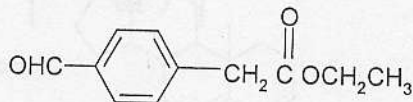
25 marks

2. (a) Give the number of $^1\text{H-NMR}$ signals that could be observed for the following compounds



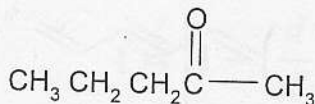
30 marks

(b) Sketch the $^1\text{H-NMR}$ spectrum of the compound shown below.



40 marks

(c) Explain the following observation (ie. Give the fragmentation mechanism)



2-pentanone m/z 86, 71, 58, 43 and 29

30 marks