7121 (1)

Reg. No. | | | | | | | | | |

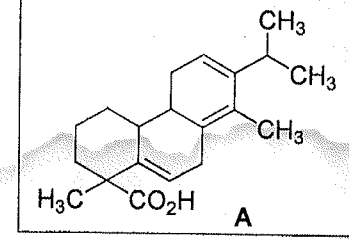
THE OPEN UNIVERSITY OF SRI LANKA
B.Sc. Degree Programme and Stand Alone Courses in Science - 2012/2013
CMU2221/CME4221 - Organic Chemistry 1

CONTINUOUS ASSESSMENT TEST 1

Ques. No.	Max.	Marks
1	12	
2	30	
3	24	
4	16	
5	18	
Total	100	

Date: Saturday, 23rd February 2013 **Time:** 11.00 a.m.– 12.30 p.m.

1. Predict the λ_{max} of the following compound **A**, using Woodward-Fieser rules for dienes.



A

Basic value for Heteroannular diene	= 214 nm	
Basic value for Homoannular diene	= 253 nm	
Increments for,		
Double bond extending conjugation	= +30 nm	
Alkyl substituent or ring residue	= +05 nm	
Exocyclic double bond	= +05 nm	
	λ_{max}	

(12 Marks)

2. The compound **B** with the molecular formula $C_9H_{10}O$, gave an orange coloured precipitate with Brady's reagent. It showed a strong IR absorption at ν_{max} 1725 cm^{-1}. Its ^1H NMR spectrum showed following signals.

δ ppm 1.2 triplet (3H) 2.2 quartet (2H) 7.4 two doublets (2H each) 10.2 singlet (IH)

Elucidate the structure of **B** and assign δ values to the protons in it.

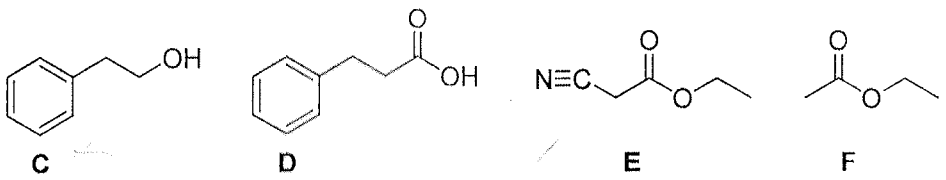
Structure elucidation of **B**:

Structure and assignment of δ values:

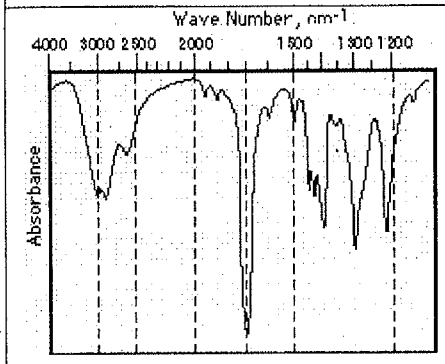
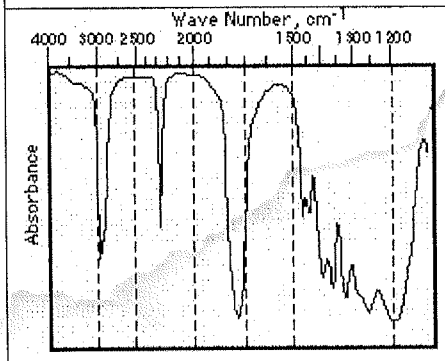
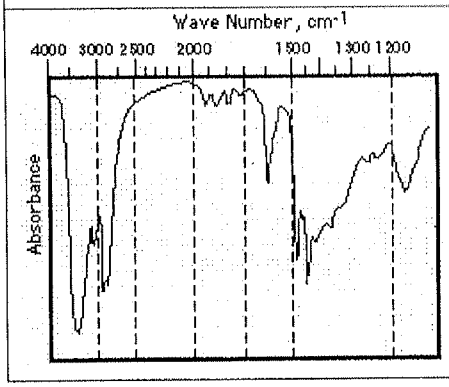
(30 marks)

Reg. No. | | | | | | | | | |

3. IR spectra given in the table belong to **THREE** of the following compounds labelled as **C, D, E** and **F**. Giving reasons select the correct compound responsible for each spectrum.

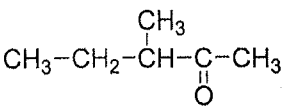


C **D** **E** **F**

IR spectrum	Compound	Reasons
		....
		....
		....

(24 marks)

4. Draw the fragmentation pattern and the structures of ions responsible for the peaks at m/z 43 and 72 in the EI mass spectrum of compound **G**.



G

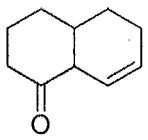
(16 marks)

(3)

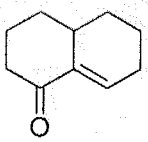
Reg. No. | | | | | | | | | |

5. Give **ONE** major difference that you could observe in the **spectra** of each pair of compounds listed below.

(i) IR spectra of



and



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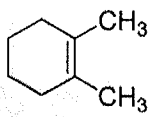
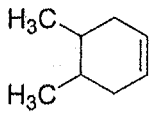
(ii) ^{1}H NMR spectra of



and



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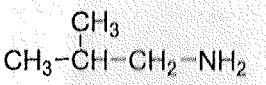
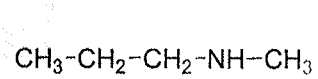
(iii) Mass spectra of



and



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(18 marks)