No. of Printed Pages : 3

RCH-002

Ph.D. IN CHEMISTRY
(PHDCHEM)

Term-End Examination

00434

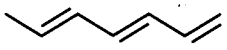
June, 2018

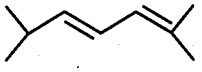
RCH-002 : ANALYTICAL TECHNIQUES IN CHEMISTRY – I

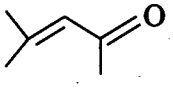
Time : 3 hours *Maximum Marks : 100*

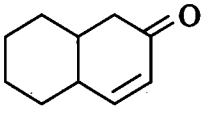
Note : *Answer **all** the questions.*

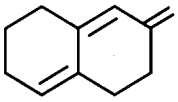
1. (a) Using Woodward-Fieser Rules, predict the λ_{max} values for the following compounds : *10*

(i) 

(ii) 

(iii) 

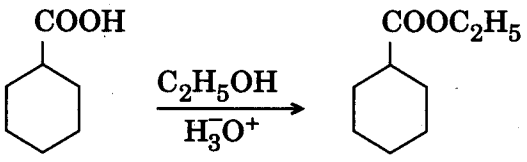
(iv) 

(v) 

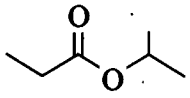
(b) Describe the effect of polar solvents on the $\pi \rightarrow \pi^*$ and $n \rightarrow \pi^*$ transitions. *10*

2. (a) Briefly explain the factors which affect the intensity and shape of IR signals in IR spectra. *10*

(b) How are IR spectra used to confirm that the following conversion has taken place ? *10*

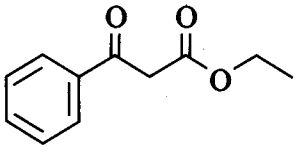


3. (a) Draw the expected proton NMR spectrum for the following compound : *10*



(b) What is DEPT ? How is it useful in structural elucidation of organic compounds ? *10*

4. Write the possible MS fragmentation pattern for the following compound : *10*



5. On the basis of spectra given below, deduce the structure of the unknown compound with molecular formula $C_{18}H_{20}$. *30*