GALGOTIAS UNIVERSITY

ADMISSION NUMBER												

School of Basic Sciences

Master of Science in Chemistry
Mid Term Examination - May 2024

Duration : 90 Minutes
Max Marks : 50

Sem II - C1PK201T - Organic Spectroscopy

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1) Summarize the characteristic band region of C-H str and N-H str in heteroaromatic compounds. K2 (2)

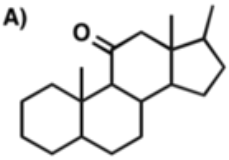
2) Show the difference between red and blue shift in UV-vis spectroscopy. K1 (3)

3) Illustrate the major factors influence the position of absorption frequencies in IR. K2 (4)

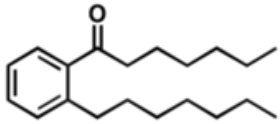
4) Explain the following factors which influence vibrational frequencies in IR. (i) Electronic effects (ii) Hydrogen bonding K2 (6)

5) A compound has the formula C20H32O with λmax = 275 nm. Subjecting the compound to hydrogenation with Pd/C and H2 or NaBH4 or LAH led to no change in λmax. Identify. the possible structure? K3 (6)

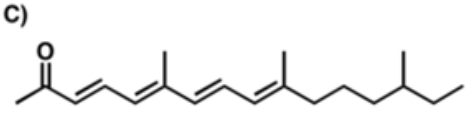
A)



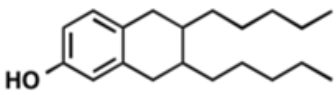
B)



C)



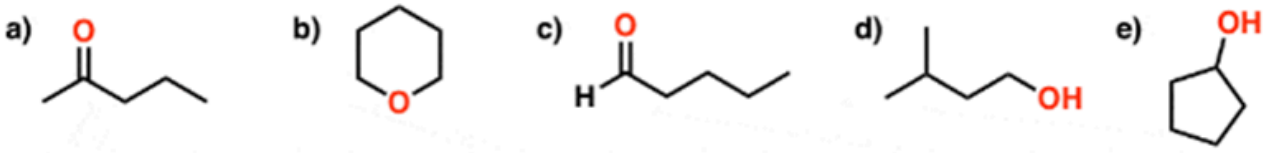
D)

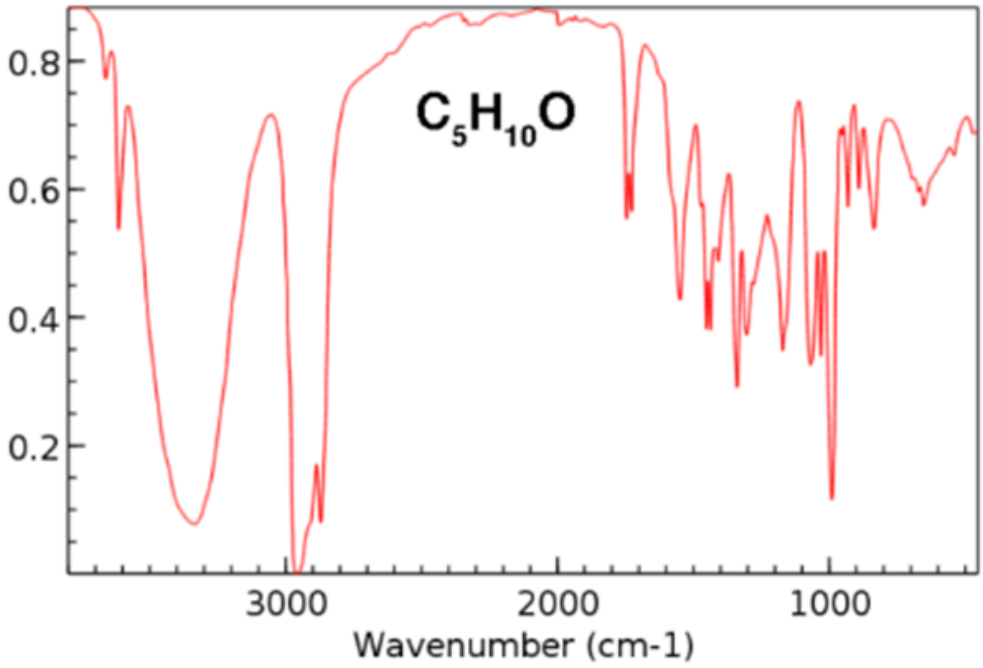


6) Identify the various types of stretching and bending vibrations which arises in alcohols, ethers, phenols and amines in their IR spectrum. K3 (9)

7) Compare the effect of strain steric effect in biphenyls and chromophore distortion. K4 (8)

8) Unknown molecule with molecular formula $C_5H_{10}O$. Analyse Which of these five molecules is it most likely to be? K4 (12)





OR

Unknown molecule with molecular formula $C_6H_{12}O$. Analyse Which of these five molecules is it most likely to be? K4 (12)

Which of these molecules best corresponds to the IR spectrum below?