Seat No.

SH - 293

Total No. of Pages : 3

M.Sc. (Part - II) (Semester - III) Examination, January - 2023

ANALYTICAL CHEMISTRY (CBCS)

ACH 3.2 : Organo Analytical Chemistry (Paper - X)

Sub. Code : 80490/85285

Day and Date : Saturday, 07 - 01 - 2023 Total Marks : 80

Time : 02.30 p.m. to 05.30 p.m.

Instructions :
1) Question No.1 is compulsory.
2) Answer any two questions from each section.
3) Answers to the all the questions should written in the same answr book.
4) Figures to the right indicate marks.

Q1) Answer the following in one sentence. [16]

a) What is the wave number range for 'Functional Group Region' in the range of in IR spectroscopy?

b) Most intense peak in the mass spectrum is called as _____.

c) Where does the hormone progesterone play important role?

d) Which colour is produced by Creatinine with picric acid?

e) What is EPA?

f) Which insecticides used to control mosquitos and variety of insects?

g) Which amongst the following have higher carbonyl stretching frequency?

CH_3-$CONH_2$ and CH_3COOCH_3

h) State any two sources of impurities in drugs.

i) Which Vitamin helps in blood clotting?

j) What are the basic ingredients of KF reagents?

k) Define non aqueous titrations.

l) Which of the following isomer of pentadiene show the longest wavelength of UV absorption?

$CH_2=CHCH=CHCH_3$, $CH_2=CHCH_2CH=CH_2$

m) Which anticoagulants are used for whole blood samples?

n) Which method is used to estimate Bilirubin in serum?

o) Which method is used to estimate halogen in drug sample?

p) Give the full form of BHC.

SECTION - I

Q2) a) What are the sources of impurities in pharmaceutical raw materials? Write the limit test for impurities like Fe and Se in drugs. [8]

b) Explain the analysis of sulfa drug using sodium nitrite titration. [8]

Q3) a) Deduce the structure from the given data: [8]

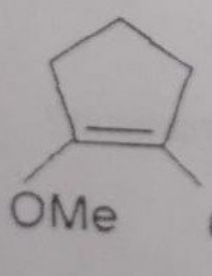
An organic compound A($C_4H_8O_2$) has following data.

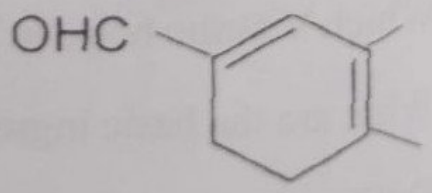
IR 1745cm -1

^{1}HNMR – δ 1.1(t, 3H), 2.8(q, 2H), 3.8(s, 3H)

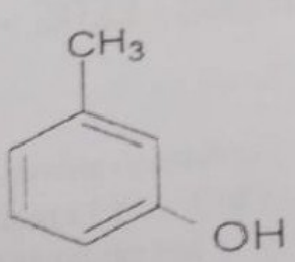
How many isomers with the same functional group will observe? Write the structures of isomers and draw the NMR spectrum of the isomers.

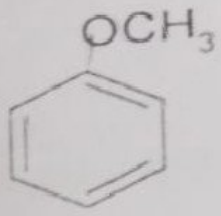
b) i) Using Woodward- Fieser rules calculate λ max for the following compound. [4]





ii) How will you distinguish the following pair of compounds using IR-spectroscopy. [4]





Q4) a) How the serum calcium is estimated and what are clinical interpretations? [8]

b) Give the estimation of blood chloride and its clinical interpretations. [8]

SECTION - II

Q5) a) State the importance of phosphate in blood and describe a method for its estimation. [8]

b) How sodium and calcium are estimated from serum? [8]

Q6) a) Explain the mode of action of snake venom and cyanide as poison. [8]

b) Explain the sample dissolution and classification of poison in forensic analysis. [8]

Q7) **Write notes on following: (any four)** [16]

a) Classification of pesticides.

b) Mc-Lafferty rearrangement.

c) Advantages of non-aqueous titrations.

d) Analysis of hormones.

e) Sample collection and preservation of blood sample.

f) Ideal characteristic of pesticides.

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