

2020

B.Sc. Part (III) (1+1+1) Chemistry Honours Practical (CEMA) CU Examination

Shibpur Dinobundhoo Institution (College)

Paper-VIB (CHP 34a)

Full Marks-25

1. (a) Assign with explanation, the given peaks in the $^1\text{H-NMR}$ spectrum and in the IR spectrum of the given organic compound: Marked **S (Spectra given)**

Write the answer in a tabular form of any one of the following compounds (**S₁ or S₂**)
[8+12]

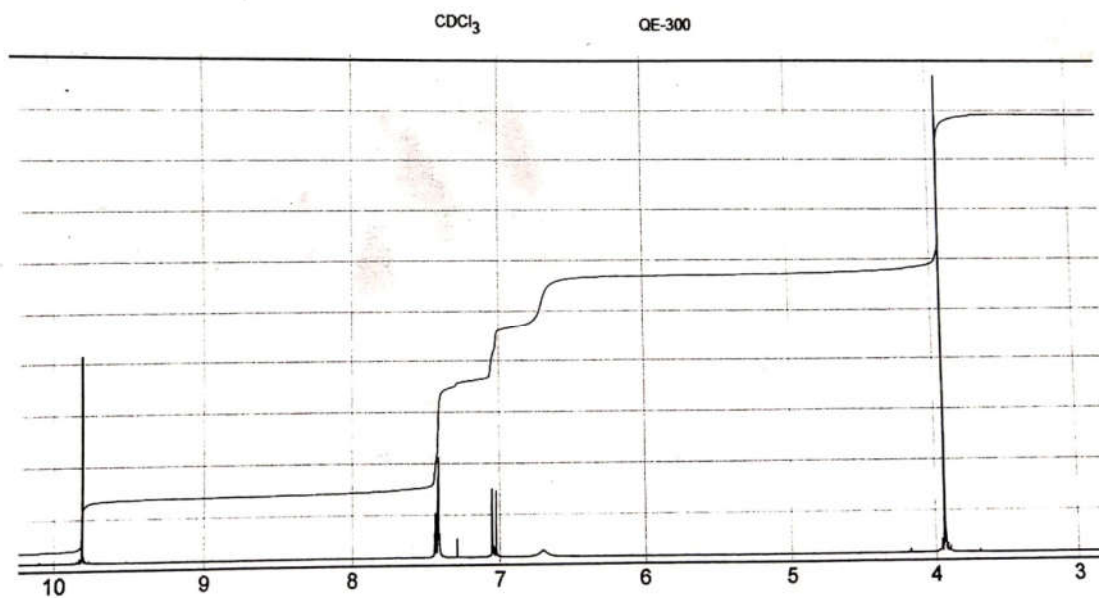
S₁: Vanillin [IR peaks: 3550, 2850, 1700 and 1600 cm^{-1} ; $^1\text{H-NMR}$ Peaks: δ : 9.8, 7.05, 6.7 and 3.85 ppm]

S₂: Salicylamide [IR peaks: 2900, 1680, 1600, 1580 cm^{-1} ; $^1\text{H-NMR}$ Peaks: δ : 13.4, 8.42, 7.85 and 7.4 ppm] [2 \times 4=8]; [3 \times 4]=12

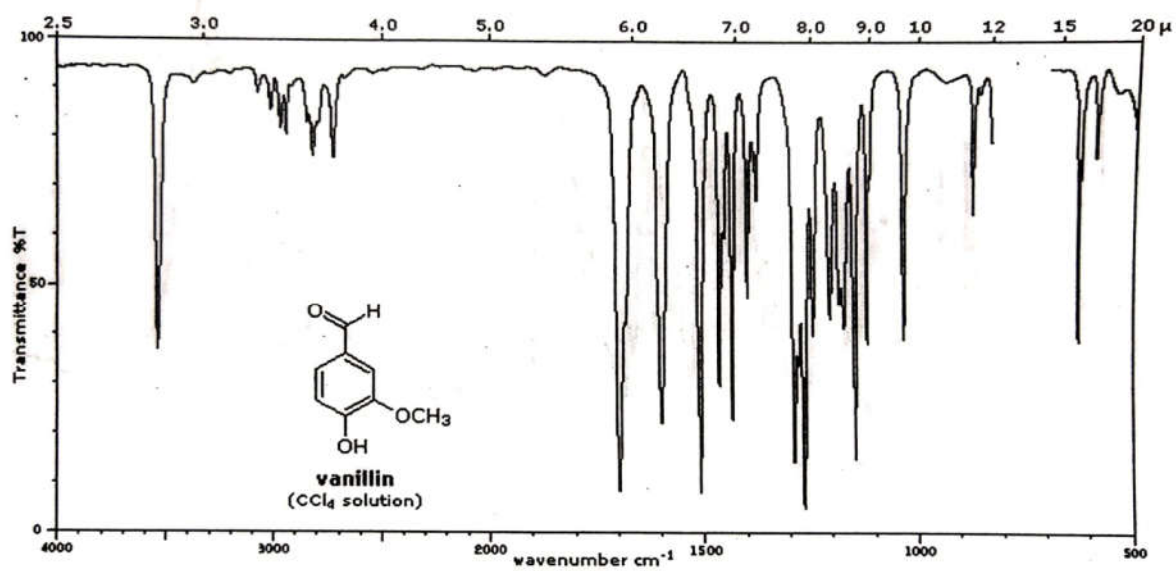
(b) Laboratory note book/Internal assessment

[5]

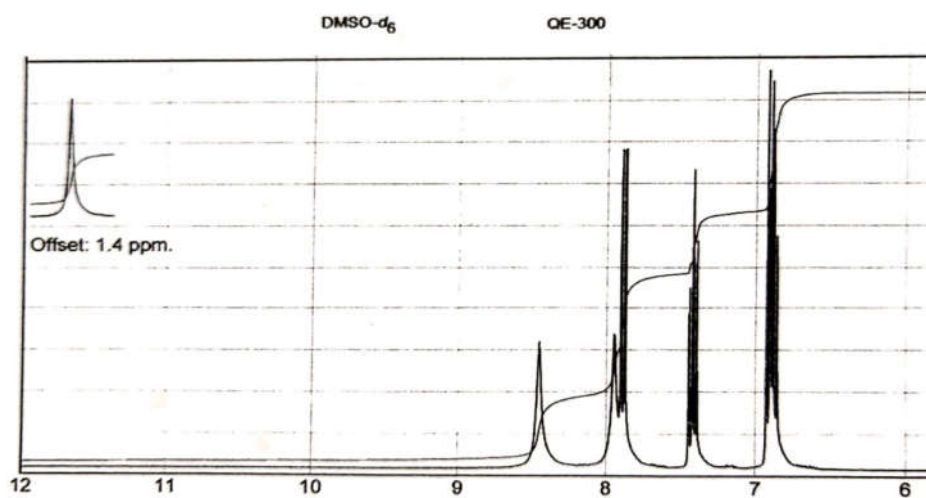
¹H-NMR Spectra of Vanillin (S₁)



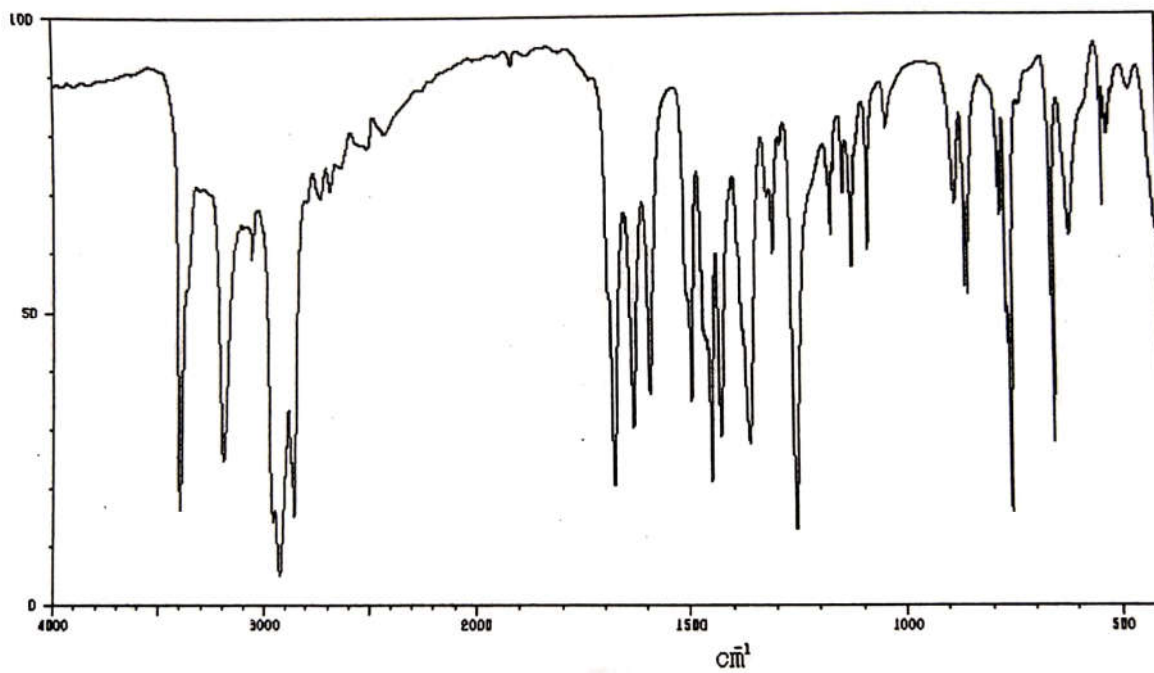
IR Spectra of Vanillin (S₁)



$^1\text{H-NMR}$ Spectra of Salicylamide (S_2)



IR Spectra of Salicylamide (S_2)



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Paper-VIIIA (CHP 34b)
Full Marks-50

1. Write a systematic qualitative analysis of **any one** of the given organic compound (**O₁ to O₆**) with Special reference to the following points:

O₁: β-Naphthol, O₂: Benzophenone, O₃: P-Chlorobenzoic acid, O₄: P-Nitrophenol, O₅: P-Nitroaniline and O₆: Aniline hydrochloride

(a) Write the presence or absence of the special elements (N, Cl, S) of chosen organic compound (Lassaigne's test). [3]

(b) Write solubility and solubility classification of the chosen organic compound (solvent to be used: H₂O, 5% HCl, 5% NaHCO₃ and 5% NaOH). [(0.5×4=2)+2]=4

(c) Write the following functional group(s) test by systematic way:
Aromatic amino (-NH₂), Aromatic nitro (-NO₂), Amido (-CONH₂), Phenolic (-OH),
Carboxylic acid (-COOH), Carbonyl (>C=O). [3×6]=18

2. Laboratory quiz test. [15]

3. Laboratory note book/Internal assessment [10]

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Paper VIII A

Lab Quiz, Full Marks-15

Answer all the questions:

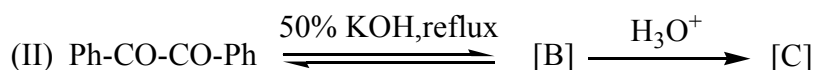
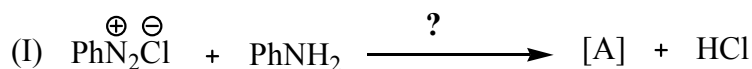
Q1. Write down the chemical formula of sodium nitroprusside.

Sodium nitroprusside solution is added to the sodium fusion extract of an organic compound containing S. Write down the observation and reactions involved. [0.5+0.5+1]=2

Q2. What will be observation when *p*-toluidine is treated with Brady's reagent? Explain. [0.5+1.5]=2

Q3. Identify [A], [B] and [C] along with the missing reagents and conditions.

[0.5+0.5+0.5+0.5]=2



Q4. An aqueous alcoholic solution of *p*-nitrophenol gives slow effervescence with NaHCO₃ solution, though the compound lacks any carboxylic acid group. Explain. [2]

Q5. Identify with explanation which of the following aromatic compounds can afford azo-dye with alkaline β-naphthol. *P*-nitro aniline and *p*-hydroxy benzyl amine [0.5+1.5] =2

Q6. Write the name of the products with mechanism:

(i) Reaction of acetanilide with KBr and KBrO₃ in acetic acid. [0.5+2.0]=2.5

(ii) Reaction of vanillin with aqueous semicarbazide hydrochloride in presence of sodium acetate. [0.5+2.0]=2.5