



**Shree H.N.Shukla Group of
Colleges**
B . Sc. (Sem-VI) (CBCS) (Unit Test-I)

C-602: Organic and Spectroscopy

Time: 1.5 hours

Date:10/04/2021

Total Marks: 30

Instructions

1. All Question are compulsory.
2. Figure to the right indicate the full marks of Questions.

Q.1 (A) Answer the Following. **[01]**

- (i) Write structure of Tyrosine.
- (ii) What is Zwitter ion?
- (iii) Those α -amino acid supplied by the diet are called as _____
- (iv) Which reagent used for the synthesis of polypeptide in Bergmann Method?
- (v) Give the example of protein which contain Iron (Fe).

(B) Answer the Following (any one). **[02]**

- (i) Describe Denaturation of protein
- (ii) Prove that Thyroxine contain one $-OH$ and one $-NH_2$ group.

(C) Answer the Following (any one). **[03]**

- (i) Explain Gabriel phthalimide synthesis of α -amino acid.
- (ii) Explain Isoelectric point (P^I).

(D) Answer the Following (any one). [05]

- (i) Give the reaction due to both the amino (-NH₂) and carboxylic (-COOH) group in α-amino acid.
(ii) Prove the structure of Thyroxine.

Q.2 (A) Answer the Following. [01]

- (i) What is full form of NMR and TMS.
(ii) Which isotope of Carbon is NMR active?
(iii) Give Number of signal in the compound given below.
CH₃-CH=CH₂
(iv) Calculate DBE for given molecular formula C₈H₈O₂
(v) Write the examples of nuclei, which possess spin value(I)=1/2

(B) Answer the Following (any one). [02]

- (i) Define: geminal and vicinal coupling.
(ii) Why TMS used as reference in NMR spectroscopy.

(C) Answer the Following (any one). [03]

- (i) Explain shielding and deshielding effect.
(ii) Determine the molecular structure from the following data:

M.F. : C₈H₈O₂

IR : 3400_(br), 2950, 2530, 1715, 1300, 1060, 810 cm⁻¹

NMR :

No. of Signal	No. of protons	Multiplicity	Chemical shift(δ _{ppm})
a	3H	s	2.01
b	1H	s	10.75
c	4H	m	7.15

(D) Answer the Following (any one).

[05]

(i) Determine the molecular structure from the following data:

M.F. $C_9H_{10}O_2$

IR : 3030, 2930, 1670, 1598, 1258, 1021, 833 cm^{-1}

NMR :

No. of Signal	No. of protons	Multiplicity	Chemical shift(δ_{ppm})
a	3H	s	2.50
b	3H	s	3.90
c	4H	complex	7.83

(ii) Write a short note on Deuterium labelling.