



SHREE H. N. SHUKLA COLLEGE OF SCIENCE

(AFFILIATED TO SAURASHTRA UNIVERSITY)

Shree H.N. Shukla College Campus Nr. Lalpari lake, Behind old Marketing Yard,
Amargadh, Bhichari, Rajkot-360001, Ph. No-9727753360

T.Y. B.Sc. Chemistry C-502 Preliminary test

Name: _____

Roll No.: _____

[Time: 2.1/2 hours]

[Total Marks: 70]

Date: 21/10/2021

Instruction: 1. All questions are compulsory.
2. The right-side figure indicates full marks of the question.

Q. 1(A) Answer the following [1]

- 1) Write the structure of conyryne
- 2) Which name reaction gives Isoquinoline heterocyclic ring?
- 3) Decomposition of acid azide into isocyanate is known as _____ reaction.
- 4) Which type of heterocyclic ring present in coniine?

(B) Answer the following (any one) [2]

- 1) Give the synthesis of phenyl acetic acid from benzoic acid.
- 2) Explain Zeisel's method.

(C) Answer the following (any one) [3]

- 1) Explain Hofmann's degradation method.
- 2) Write chemical reaction and mechanism of favorskii re-arrangement.

(D) Answer the following (any one) [5]

- 1) Explain Arndt-Eistert reaction with mechanism and application.
- 2) Provide evidence about nicotine is a β -pyridyl- α -pyrrolidine alkaloids.

Q. 2(A) Answer the following [1]

- 1) D(-) Fructose + HCN
- 2) Write the structure of tartaric acid.
- 3) Write the structure of Naphthalene.
- 4) Define Mutarotation.



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(B) Answer the following (any one) [2]

- 1) Explain oxidation of Glucose by HNO_3
- 2) Explain chemical properties of Diphenyl methane.

(C) Answer the following (any one) [3]

- 1) Explain step-up reaction (killani reaction).
- 2) Explain synthesis of Naphthalene.

(D) Answer the following (any one) [5]

- 1) Discuss the reaction of D(-) Fructose reaction with Br_2 , NH_2OH , HNO_3 and PhNHNH_2
- 2) Explain the synthesis of Diphenyl.

Q. 3(A) Answer the following [1]

- 1) Write the structure of Ibuprofen.
- 2) Which conformer is more stable of cyclopentane.
- 3) In UV-Visible spectroscopy which detector used?
- 4) Define 'Spectroscopy'

(B) Answer the following (any one) [2]

- 1) Write the synthesis of Auramine-O.
- 2) Why β - carotene is coloured?

(C) Answer the following (any one) [3]

- 1) Write the synthesis of atenolol.
- 2) Discuss the chromophore and auxochrome.

(D) Answer the following (any one) [5]

- 1) Explain all four types of transition in UV-Visible spectroscopy.
- 2) Explain different conformation of cyclohexane.

Q. 4(A) Answer the following [1]

- 1) Give the point group of H_2O
- 2) Define point of inversion **OR** centre of symmetry(i).
- 3) Give one example of D_{2d} point group and its symmetry element.
- 4) Give one example with structure C_{3v} point group.



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(B) Answer the following (any one) [2]

- 1) Explain diagonal plane & also give its example.
- 2) In NH_3 prove that $C_3 * \sigma_{v_a} \neq \sigma_{v_c} * C_3$

(C) Answer the following (any one) [3]

- 1) Find out point group of trans H_2O_2 and construct multiplication table for its.
- 2) Discuss improper rotational axis with examples.

(D) Answer the following (any one) [5]

- 1) Discuss multiplication table for C_3V point group.
- 2) Discuss the symmetry element and point group of present molecule.
 - a) BF_3 (planar)
 - b) Benzene
 - c) Ethane

Q. 5(A) Answer the following [1]

- 1) Give the full name of FT-IR.
- 2) Give the range of IR region in cm^{-1}
- 3) Give the type of stretching vibration.
- 4) Write the name source used in IR spectrometer?

(B) Answer the following (any one) [2]

- 1) Explain finger print region.
- 2) Explain overtone and combination band in IR spectra.

(C) Answer the following (any one) [3]

- 1) Write short note on Fermi resonance.
- 2) Discuss the factor affecting the position of carbonyl group in IR spectroscopy.

(D) Answer the following (any one) [5]

- 1) M.F. : $\text{C}_{11}\text{H}_{12}$
IR : 3310, 3045, 2925, 2130, 1605, 1500, 1430, 1380, 1360, 1080 and 840 cm^{-1} .
- 2) M.F.: $\text{C}_8\text{H}_8\text{O}_2$
IR: 3030, 2980, 2750 & 2650, 1690, 1580, 1220 and 830 cm^{-1} .