

SARDAR PATEL INS. OF SCI & TECH. MAHAVIDHYALAY, GORAKHPUR
Pre University Examination-2019 - 2020

Time: 3 hours

M. M: - 50

B.Sc - I
Subject : Chemistry
Paper - III (Organic Chemistry)

- Note: (i) Attempt five questions in all.
(ii) Question No.1 is compulsory.
(iii) Select two questions from each section.
(iv) All question carry equal marks.

Q-1 Answer the following question in about 200 words. Do any five from the following question.

- (a) The position - 3 of indole is active for electrophilic substitutions explain.
(b) In Fries rearrangement the ortho product is obtained at higher temperature why?
(c) Name the most useful polyamide which is obtained by the reaction of adipic acid and 1, 6 - hexamethylene tetramine. Give reaction also.
(d) Write down the product of the reaction:
$$\begin{array}{c} \text{R-CH-COOH} \\ | \\ \text{NH}_2 \end{array} \longrightarrow$$

(e) Write all the possible resonating structure for phenanthrene and anthracene.
(f) Discuss the colour and constitution of dyes on the basis of electronic concept.
(g) What are conditions for E₁ CB reaction? Discuss its mechanism and give two examples.

Section A

Q-2 Explain with examples the cationic and anionic mechanism of addition polymerization.

OR

Give the synthesis and uses of any two the following:

- (a) Congo red.
(b) Malachite green.
(c) Phenolphthalein.

Q-3 Define molecular rearrangement and describes any two of the following:

- (a) Pinacol- Pinacolone rearrangement.
(b) Benzil- benzilic rearrangement
(c) Claisen- Smith reaction

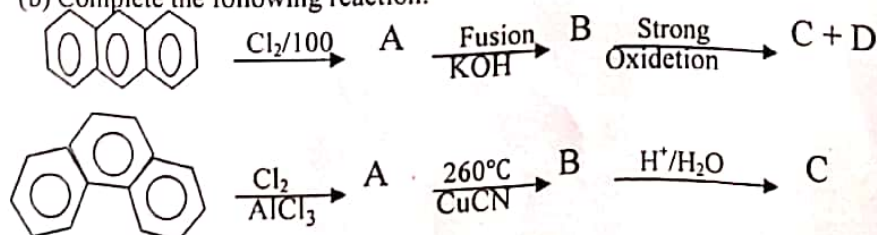
OR

Give two methods of generation of benzyne and explain its structure

- Q-4 (a) Describe the Skraup synthesis of quinoline.
(b) How will you convert the following?
(i) Quinoline to Decahydro quinoline.
(ii) Isoquinoline to 1- amino, isoquinoline.

Q-5 (a) Describe the Haworth Synthesis of phenanthrene.

(b) Complete the following reaction:



Section B

Q- 6 (a) Discuss the primary, secondary and tertiary structure of proteins.
(b) What are amino acids? Give the classification and synthesis of amino acid.

Q- 7 (a) Give the synthesis of glycylglycine.
(b) What are nylons? Give a method for the preparation of nylon.
(c) Define chromophores and auxochromes with at least one example.

Q- 8 (a) Give two methods for generation of carbene and nitrene.
(b) Explain the following:
Orientation in elimination reaction.
(c) Give the mechanism of acid catalysed dehydration of alcohols.

(d) Write Fischer's Indole synthesis and give its mechanism.

Q- 9 Write short notes on any two of the following:

(a) Carcinogenic hydrocarbon

(b) Singlet and triplets state of carbene.

(c) Protein denaturation /renaturation.

(d) Geometry of peptidelinkage

(e) Differentiate E^2 and E^1 CB reaction in respect of:

1. Nature of the attacking base
2. Features of the reacting molecule
3. Reaction pathways(mechanism)