[156]

SEAT No._____

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SARDAR PATEL UNIVERSITY

M.Sc. Semester-III (Organic Chemistry) Examination

Monday, 25th March 2019

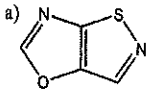
Heterocyclic Chemistry: PS03CORC23

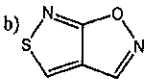
Time: 02:00 pm to 05:00 pm **Marks: [70]**

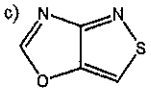
Note: Right hand figures indicate marks

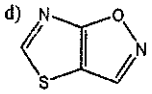
Q-1 Select the correct answer from the option given below. [08]

1. The correct structure of isothiazolo[5,4-d]oxazole is _____ .

a) 

b) 

c) 

d) 

2. Which of the following product is formed when indole undergoes Mannich reaction?

   a) 3-acetyl indole b) Tryptamine c) Skatol d) 3-formyl indole

3. Reaction of 2-methyl quinazoline with SeO_2 gives ___.

   a) 2-formyl quinazoline b) 1,2-dihydroquinazoline

   c) 2-methyl quinoline d) quinazoline-2-carboxylic acid

4. 1,4-benzodiazine is called _____

   a) Cinnoline b) Quinoxaline c) Quinozoline d) Phthalazine

5. Pyrimidine when heated with aq.hydrazine at 130^0C will give _____.

   a) Pyrazole b) Pyrazine c) Pyrrole d) Pyridazine

6. Reaction of pyridine-N-oxide with PhMgBr/THF at 40^0C gives _____.

   a) 2-phenyl pyridine b) 2-phenyl PNO c) 3-phenyl pyridine d) None

7. 2,4,6-trimethyl pyrylium salt on reaction with NaCN gives _____ .

   a) 1-cyano-2,3-dimethyl benzene b) 1-cyano-2,4-dimethyl benzene

   a) 1-cyano-2,5-dimethyl benzene a) 1-cyano-3,3-dimethyl benzene

8. Catalytic reduction of α-pyrone gives _____ .

   a) δ-lactone b) β-lactone c) ν-lactone d) β-lactum

Q-2 Answer the following (Any Seven). [14]

1. Write the synthesis of Tryptamine by Grandberg method.
2. Draw the correct possible structure of the following.

   1)Pyrano[2,3-c]pyrrole 2) Imidazo[4,5-c]pyrrazole
3. Discuss the deoxygenation reaction of quinoline-N-oxide.
4. Give the synthesis of phthalazine.

(P.T.O.)

5. Discuss the Chichibabin reaction of pyridine with suitable mechanism.

6. Why pyridine is weak base than aliphatic amines?

7. Explain the cycloaddition reaction of 1,2,4,5-tetrazine with alkyne.

8. Explain Pechmann reaction for the synthesis 7-hydroxy-4-methyl coumarin.

9. "Imidazole is stronger base than pyrrole" Explain

Q-3 [A] Discuss the Fisher indole synthesis and Reissert synthesis for indole. **[06]**

[B] Explain the synthesis and electrophilic substitution reactions of Benzo[b]thiophene. **[06]**

OR

[B] **Answer the following.** **[06]**

1) Discuss the reactions of benzo[b]furan with carbene, oxidizing agent and reducing agent.
2) Write the ring expansion reactions of indole.

Q-4 [A] Explain the Skruap synthesis of quinoline and discuss electrophilic substitution reactions of quinoline and isoquinoline. **[06]**

[B] Answer the following. **[06]**

1) Give the synthesis of cinnoline and quinazoline starting from methyl anthranilate and anthranilic acid.
2) Explain the Bischler –Napieralski synthesis of isoquinoline.

OR

[B] Discuss the cyanine dye of benzo[b]pyridine. **[06]**

Q-5 [A] Describe the electrophilic substitution reactions of substituted pyridine. **[06]**

[B] Give at least two syntheses for each pyridazine, pyrimidine and pyrazine. **[06]**

OR

[B] Write the synthesis of S-triazine. Explain the reactions of S-triazine with R-NH_2, NH_2NH_2, $PhNHNH_2$ and substituted alkyne. **[06]**

Q-6 [A] Write the synthesis of pyrylium salt. Discuss its reactions with NH_2NH_2, Wittig reagent and reducing agent. **[06]**

[B] **Answer the following.** **[06]**

1) Describe synthesis of coumarin. Explain the reactions of coumarin with Grignard reagent and hv/EtOH.
2) Write the synthesis of Flavone. Explain the reaction of Flavone and strong base with mechanism.

OR

[B] **Answer the following.** **[06]**

1) Discuss the reactivity of 1,2-azole and 1,3-azole.
2) Explain the reactions of α-pyrone and ν-pyrone with NH_3, $PhNHNH_2$, NaOH and NaCN.