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D-6338

M.Sc. (III[rd] Semester) Examination, 2020

CHEMISTRY

(Heterocyclic Chemistry)

Time Allowed : Three Hours

Maximum Marks : 70

Minimum Pass Marks : 25

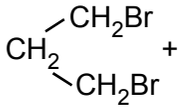
SECTION - A

Note : Attempt any ten questions. Each question carries one mark. **1×10=10**

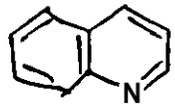
Q. 1. Fill in the blanks :

(1) _____ heterocycles are a class of compounds having seven membered ring containing sulphur.

(2) Lead is denoted by _____ in heterocyclic compounds.

(3)  + Na_2S ⟶ _____.

(4) By Hantzsch synthesis _____ can be prepared.

(5)  $\xrightarrow[AC_2O]{HNO_3}$ _____.

Choose the correct answer :

(6) The name of compound having molecular formula C_7H_7N is _____ :

(a) Azepine

(b) Thiepine

(c) Oxepine

(d) None of these

(7) IUPAC name of furan is :

(a) Cyclopenta oxa diene

(b) Oxa diene cyclopentane

(c) Oxa cyclopenta 2, 4-diene

(d) None of these

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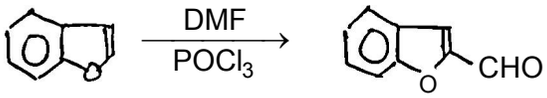
(8) Von Pechmann method is used for preparation of :

(a) α-pyrone

(b) γ-pyrone

(c) Pyrilium salt

(d) None of these

(9) 

Above reaction is known as :

(a) Indole synthesis

(b) Skraup synthesis

(c) Vilsmeir Haack reaction

(d) Chichibabin reaction

(10) Which compound shows acidic behaviour ?

(a) Furan

(b) Pyrrole

(c) Pyridine

(d) Quinoline

(11) On sulphonation pyridine gives :

(a) Pyridine 2-sulphonic acid

(b) Pyridine 3-sulphonic acid

(c) Pyridine 4-sulphonic acid

(d) None of these

(12) 2-pyrone gives 3-bromo α-pyrone on reduction with :

(a) $CHBr_3$

(b) N-Bromosuccinamide

(c) Br_2

(d) None of these

SECTION - B

Note : Attempt any five questions. Each question carries 2 marks. (Word limit 25-30 words). **5×2=10**

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Q. 2. (1) What is vertical resonance energy ?

(2) How is aziridine prepared by 1, 3-dipolar cycloaddition ?

(3) Pyrroles, thiophenes and furans are more reactive than benzene. Why ?

(4) What is Knorr Pyrrole synthesis ?

(5) What are heterocyclic compounds ?

(6) What is Vilsmeir Haack reaction ?

(7) Explain halogenation of Benzothiophene.

SECTION - C

Note : Attempt any five questions. Each question carries 4 marks. (Word limit 250 words) **5×4=20**

Q. 3. (1) Write synthesis and reactions of pyrimidine.

(2) What do you understand by delocalisation energy ?

(3) Describe medical applications of Benzofused five membered heterocycle.

(4) Discuss the chemistry of seven membered ring containing two nitrogen atom.

(5) How pyrrole derivatives can be synthesised ?

(6) Discuss the oxidation, reduction and photochemical reactions of Benzothiophene and Benzofuran.

(7) Explain chemical reactions of Quinoline.

SECTION - D

Note : Attempt any three questions. Each question carries 10 marks. (Word limit more than 500 words). **3×10=30**

Q. 4. (1) Write an explanatory notes on pyrones.

(2) What are thiranes ? Discuss their synthesis and properties.

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(3) Discuss the tautomerism in heterocycles.

(4) What are cycloaddition reactions ? Discuss different types of cycloaddition reactions.

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