

**D-6338**

**M.Sc. (III<sup>rd</sup> 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 :

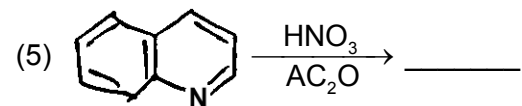
(1) \_\_\_\_\_ heterocycles are a class of compounds having seven membered ring containing sulphur.

(2) Lead is denoted by \_\_\_\_\_ in heterocyclic compounds.

(3)  $\text{CH}_2 \begin{array}{l} \nearrow \text{CH}_2\text{Br} \\ \searrow \text{CH}_2\text{Br} \end{array} + \text{Na}_2\text{S} \longrightarrow \text{_____}$ .

**(2)**

(4) By Hantzsch synthesis \_\_\_\_\_ can be prepared.



Choose the correct answer :

(6) The name of compound having molecular formula  $\text{C}_7\text{H}_7\text{N}$  is \_\_\_\_\_ :

- (a) Azepine
- (b) Thiepine
- (c) Oxepine
- (d) None of these

(7) IUPAC name of furan is :

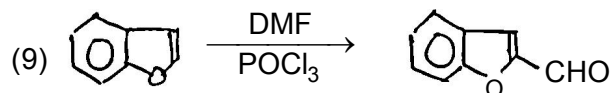
- (a) Cyclopenta oxa diene
- (b) Oxa diene cyclopentane
- (c) Oxa cyclopenta 2, 4-diene
- (d) None of these

(3)

(8) Von Pechmann method is used for preparation

of :

- (a)  $\alpha$ -pyrone
- (b)  $\gamma$ -pyrone
- (c) Pyrilium salt
- (d) None of these



Above reaction is known as :

- (a) Indole synthesis
- (b) Skraup synthesis
- (c) Vilsmeier Haack reaction
- (d) Chichibabin reaction

(10) Which compound shows acidic behaviour ?

- (a) Furan
- (b) Pyrrole

(4)

(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  $\alpha$ -pyrone on reduction

with :

- (a)  $\text{CHBr}_3$
- (b) N-Bromosuccinamide
- (c)  $\text{Br}_2$
- (d) None of these

#### SECTION - B

**Note** : Attempt any five questions. Each question carries

2 marks. (Word limit 25-30 words). **5×2=10**

**(5)**

- 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 Vilsmeier 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 ?

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**P.T.O.**

**(6)**

- (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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**(7)**

- (3) Discuss the tautomerism in heterocycles.
- (4) What are cycloaddition reactions ? Discuss different types of cycloaddition reactions.

