

2023

Time : 3 hours

Full Marks : 60

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Answer any **five** questions in which

Q. No. 1 is compulsory.

1. Select the correct answer of the following :

1×12 = 12

(a) The reaction of aniline with chloroform under alkaline conditions leads to the formation of :

- (i) Phenyl cyanide
- ✓(ii) Phenyl isonitrile
- (iii) Phenyl cyanate
- (iv) None of these

(b) Which of the following compound will not undergo azo coupling reaction with benzene diazonium chloride ?

- (i) Aniline
- (ii) Phenol
- ✓(iii) Anisole
- (iv) None of these

(c) Reduction of aromatic nitro compounds using Fe and HCl gives :

- (i) Aromatic oxime
- (ii) Aromatic hydrocarbon
- ✓(iii) Aromatic Primary amine
- (iv) Aromatic amide

(d) Replacement of diazonium group by fluorine is known as :

- ✓(i) Gattermann reaction
- (ii) Sandmeyer reaction
- (iii) Balz-Schiemann reaction
- (iv) Etard reaction

(e) Which one of the following is the strongest base in aqueous solution ?

- (i) Trimethylamine
- (ii) Aniline
- ✓(iii) Dimethylamine
- (iv) Methylamine

(f) Which one of the following on reduction with lithium aluminium hydride yields a secondary amine ?

- ✓(i) Methyl isocyanide
- (ii) Acetamide
- (iii) Methyl cyanide
- (iv) Nitroethane

(g) Nitration of naphthalene molecule at room temperature gives :

- (i) 1-nitronaphthalene
- (ii) 2-nitronaphthalene
- ✓(iii) 4-nitronaphthalene
- (iv) 8-nitronaphthalene

(h) Friedel-Crafts acylation of phenanthrene gives :

- (i) 1-acetylphenanthrene
  - (ii) 4-acetylphenanthrene
  - (iii) 9-acetylphenanthrene
  - (iv) None of these
- (i) Which of the following is not a five membered ring ?
- (i) Pyrrole
  - (ii) Furan
  - ✓(iii) Pyridine
  - (iv) Thiophene
- (j) The electron of Nitrogen participating in the resonance in pyridine is present in which orbital ?
- (i) p-orbital
  - ✓(ii)  $sp^2$ -orbital
  - (iii)  $sp^3$ -orbital
  - (iv) sp-orbital

(k) What is the product when pyrrole reacts with  $\text{Br}_2$  in ethanol ?

(i) 2, 3-dibromopyrrole

✓(ii) 2, 5-dibromopyrrole

(iii) 2, 3, 4, 5-tetrabromopyrrole

(iv) None of these

(l) What will be the product if reaction with hydrogen gas in the presence of Raney nickel takes place ?

✓(i) Pyrimidine

(ii) Piperdine

(iii) Pyrylium salt

(iv) None of these

2. Discuss the general methods of preparation, physical and chemical properties of Aniline. 12

✓3. Discuss the effect of substituents and solvents on basicity of amines. Explain Hinsberg's method of separation of primary, secondary and tertiary amines. 6+6 = 12

4. Discuss, the mechanisms of coupling reactions of diazonium salts with Phenol and Aniline. Also, discuss the role of pH in these reactions.

12

5. Write short notes on any **two** of the following :

6×2 = 12

(a) Reduction reactions of Nitrobenzene

(b) Synthetic applications of diazonium salts

(c) Hoffmann's method of preparation of amines

(d) Reactions of Nitriles

✓6. Discuss the general methods of preparation, physical and chemical properties of Furan. 12

✓7. Write short notes on any **three** of the following :

4×3 = 12

✓(a) Paal-Knorr synthesis

✓(b) Fischer indole synthesis

✓(c) Skraup synthesis

(d) Bischler-Napieralski reaction

8. Discuss the structure elucidation and electrophilic reactions of Naphthalene. 12

9. Discuss the method of preparations and chemical reactions of Phenanthrene. 12

10. Write short notes on any two of the following :  
6×2 = 12

- (a) Structure of Pyrrole
- (b) Chemical properties of Pyridine
- (c) Classification of Heterocyclic compounds
- (d) Electrophilic reactions of Pyrrole



<https://www.jharkhandstudy.com>

Whatsapp @ 9300930012

Send your old paper & get 10/-

अपने पुराने पेपर्स भेजे और 10 रुपये पायें,

Paytm or Google Pay से

BL - 6/2 (600)

(7) KK(Sem-IV) — Chem  
(Core - 9)

<https://www.jharkhandstudy.com>