

Total number of printed pages-7

63 (FY)SEM-5/MAJ/CHMMAJ3024

2025

CHEMISTRY

(Major)

Paper : CHMMAJ3024

(Organic Chemistry-2)

Full Marks : 50

Pass Marks : 20

Time : Two hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct answer from the following : 1×5=5

(a) Which reagent is used to prepare alkyl isocyanides from alkyl halides ?

(i) KCN

(ii) AgCN

(iii) NaCN

(iv) NH₃

- (b) Which product forms when aniline reacts with bromine water?
- (i) Monobromoaniline
 - (ii) 2,4,6-tribromoaniline
 - (iii) Bromobenzene
 - (iv) *P*-bromoaniline only
- (c) Which of the following is not a five membered ring?
- (i) Pyridine
 - (ii) Pyrrole
 - (iii) Furan
 - (iv) Thiophene
- (d) Skraup synthesis is used to prepare
- (i) Pyridine
 - (ii) Isoquinoline
 - (iii) Quinoline
 - (iv) Indole

(e) The group that is necessary for a coloured compound to act as a dye is known as—

- (i) Chromogen
- (ii) Chromophore
- (iii) Auxochrome
- (iv) Hypsochromic

2. Answer the following questions : **(any five)**

2×5=10

- (a) Write *one* method of preparation of nitromethane. Write the reaction involved.
- (b) Write *one* chemical reaction to distinguish between CH_3CN and CH_3NC .
- (c) Out of pyrrole and furan, which is more aromatic? Explain.
- (d) Aniline is weaker base than ethylamine and ammonia. Explain.

(e) Write *one* method of preparation of pyrrole.

(f) Give an example of azo dye with structure.

(g) What is meant by the term R_f value? On what factors does the R_f value of a compound depend? $1+1=2$

3. Answer the following questions : **(any five)**
 $5 \times 5 = 25$

(a) Distinguish between a primary, secondary and tertiary amine using Hinsberg's method.

(b) How is benzene diazonium chloride prepared in the laboratory? Starting from benzene diazonium chloride, how will you obtain (i) benzene (ii) phenol (iii) chlorobenzene.

(c) Write a short note 'Fisher indol synthesis'.

(d) How will you convert the following :

1×5=5

- (i) Pyrrole to 2-nitropyrrole
- (ii) Furan to furan-2-sulphonic acid
- (iii) Thiophene to 2-benzoylthiophene
- (iv) Pyridine to piperidine
- (v) Pyridine to 2-aminopyridine

Write the reactions involved.

(e) (i) What is leuco base? How can it be converted into a dye? 2½

(ii) How will you synthesize alizarin from anthraquinone? 2½

(f) (i) Give the structural formula of the following : 2+2=4

Fluorescein and Congo Red

(ii) Give an example of edible dye.

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(g) What is pinacol-pinacolone rearrangement? Explain its mechanism.

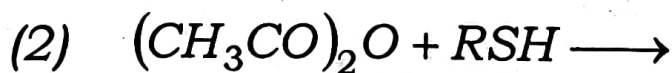
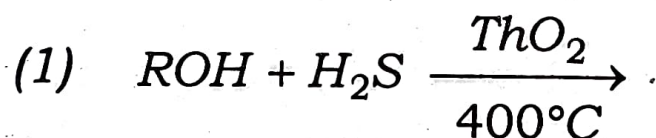
2+3=5

(h) What is Baeyer-Villiger rearrangement?
Write its mechanism. 2+3=5

4. Answer the following questions : **(any one)**
10

(a) (i) Explain the electrophilic aromatic substitution reaction of pyrrole with examples. 5

(ii) Complete the following reactions :
1×3=3



(iii) Pyridine is basic. Explain. 2

(b) Write short notes on the following :
(any two) 5×2=10

(i) Hofmann rearrangement

- (ii) Beckmann rearrangement
 - (iii) Carbylamine reaction
 - (iv) Fries rearrangement
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