(Pages : 6) **L – 1603**

Reg. No. : .....

Name : .....

Sixth Semester B.Sc. Degree Examination, March 2021

First Degree Programme Under CBCSS

Chemistry

Core Course XI

CH 1642 : ORGANIC CHEMISTRY III

(2015 – 2016 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Answer **all** questions. Answer in one word to maximum two sentences. **Each** question carries **1** mark).

1. Provide the polymeric structure of PVC and Nylon 6,6.
2. What are auxochromes? Give one example.
3. Give the structures of phenolphthalism and indigo.
4. What are tautomers? Give examples.
5. Arrange the following in decreasing order of basicity in their vapour phase.

   NH_3, $CH_3 – NH_2$, $(CH3)_2$ NH, $(CH_3)_3$ N.
6. Predict the reduction products of nitrobenzene in alkaline medium.
7. Provide the structures of indole and isoquimoline.

P.T.O.

8. Predict the product when pyrrole is heated with solid KOH.

9. List the regions in the electromagnetic spectrum of radiation in the decreasing order of energy.

10. Arrange the following electronic transitions in the decreasing order of their energy. $\eta \rightarrow \pi^*, \eta \rightarrow a^*, \pi \rightarrow \pi^*$.

(10 × 1 = 10 Marks)

SECTION – B

(Short answer type. Answer **any eight** questions from the following. **Each** question carries **2** marks)

11. What are biodegradable polymers? Give examples.

12. What is Buna-S? Give its polymeric structure.

13. What are addition polymers? Give any one example.

14. How is Chloramine *T* prepared from *p*-toluene sulphoxyl chloride?

15. How is benzene sulphonic acid prepared? Mention one application.

16. Explain Sandmeyer's reaction.

17. What is aspirin? Mention its use. How is it prepared?

18. Explain the Kolbe synthesis of salicylic acid.

19. Write the structures of Purine and Pyrimidine. Explain their importance.

20. λ max of ethylene is 175 nm, where as that of 1,3-butadiene is 217nm. Account.

21. Explain why a polar solvent usually shifts the $\eta \rightarrow n^*$ transition to a shorter wave length.

22. What is Mchafferty rearrangement? Give an example.

(8 × 2 = 16 Marks)

SECTION – C

(Short essay type. Answer **any six** questions from the following. **Each** question carries **4** marks.

23. (a) What is Zeigler – Natta Catalyst? What is its importance in polymerisation?

    (b) Write a note on Bune - *N*.

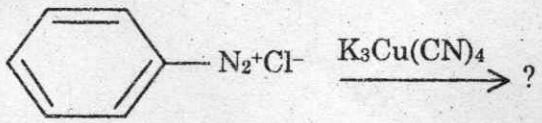
24. Explain the synthesis and applications of the following polymers.

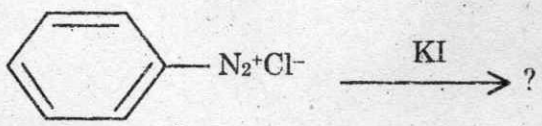
    (a) Polystyrene

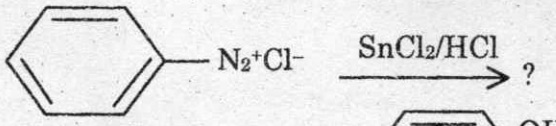
    (b) Urea-Formal dehyde resins

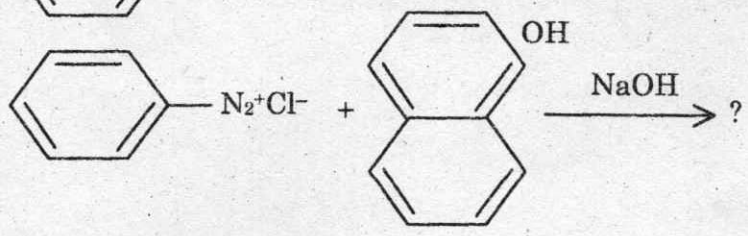
25. Outline the method of preparation and any three reactions of quaternary ammonium compounds.

26. Predict the products in the following reaction.

(a) 

(b) 

(c) 

(d) 

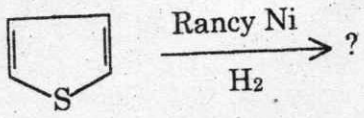
27. Write briefly on

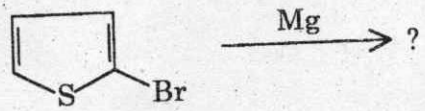
    (a) Sulphapyridene

    (b) Sulphaguanidine

28. (a) Give any two methods of preparation of thiophene

(b) Predict the products?

(i) 

(ii) 

29. Describe any two methods of synthesis of isoquinoline.

30. How would you Distinguish between the compounds in each pair by IR spectral studies?

(a) Phenol and cyclohexanol

(b) Acetone and autadehyde

31. Discuss the IR spectrum of autanilide.

(6 × 4 = 24 Marks)

SECTION – D

(Answer **any two** questions. **Each** question carries **15** marks)

32. Describe the synthesis of the following dyes.

(a) Congo red

(b) Fluoresein

(c) Alizarin

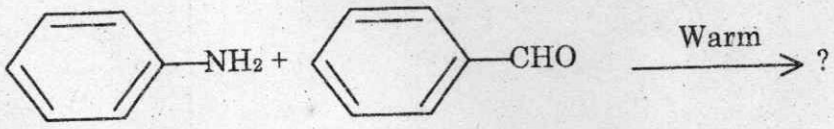
(d) Malachite green

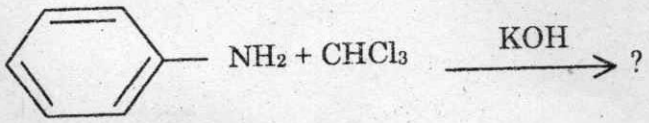
(e) Crystal violet.

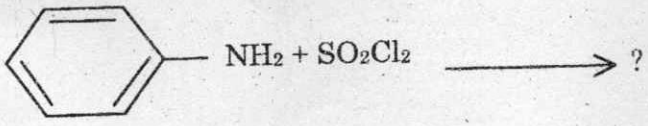
33. (a) Provide any three methods each for the preparation of nitrobenzene and aniline.

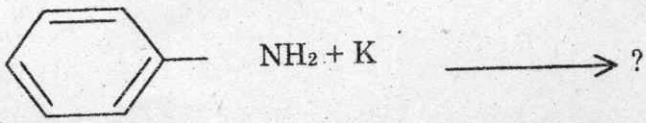
(b) Comment on the basicity of aniline

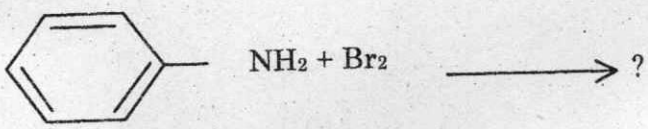
(c) Predict the products in the following reactions.

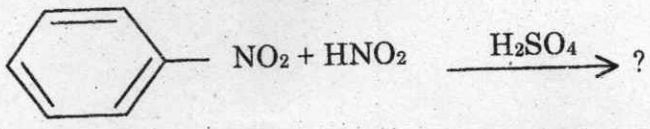
(i) 

(ii) 

(iii) 

(iv) 

(v) 

(vi) 

34. Discuss the preparation and reactions of Pyridine.

35. Describe the basic theory and application of mass spectrometry. Which are the possible fragmented peaks observed in the mass spectrum of ethyl benzene?

(2 × 15 = 30 Marks)
