

(Pages : 6)

P – 2520

Reg. No. :

Name :

Fifth Semester B.Sc. Degree Examination, December 2022

First Degree Programme under CBCSS

Chemistry

Core Course VII

CH 1543 : ORGANIC CHEMISTRY II

(2020 Admission)

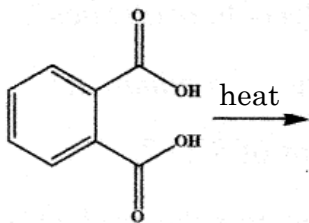
Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions. Each question carries 1 mark.

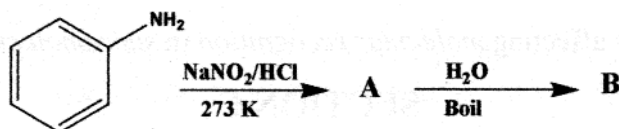
1. Which alcohol would give *acetophenone* on oxidation?
2. Give the structure of *18-crown-6*.
3. What is the product obtained in the following reaction?



4. Which among the following is more acidic — acetic acid and chloroacetic acid? Why?

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- What is *Hinsberg reagent*?
- Identify the products A and B.



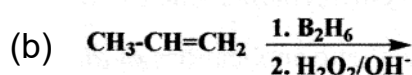
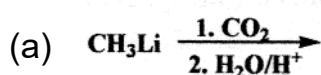
- Give the aldol condensation product of acetaldehyde.
- Give the structure of the product formed when butan-2-ol is heated with acidic dichromate.
- What is the product obtained on acidic hydrolysis of *starch*?
- Write the *keto-enol* tautomers of *acetoacetic ester*.

(10 × 1 = 10 Marks)

SECTION – B

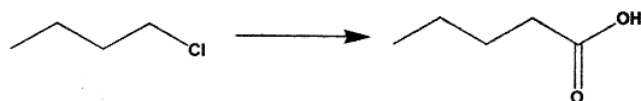
Answer any **eight** questions. Each question carries **2** marks.

- How will you prepare *1-methoxypropane*?
- Predict the product of the following:

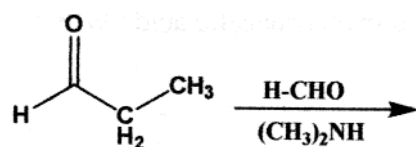


- How will you convert *cyclohexanone* into *cyclohexanone hydrazone*?
- What happens when *acetophenone* is heated with *iodine* and NaOH?
- Give the products obtained when sucrose undergoes hydrolysis in presence of the enzyme *invertase*.
- Name three industrially important derivatives of cellulose.
- Explain the principle of microwave assisted synthesis.

18. How will you prepare acetic acid from *acetoacetic ester*?
19. What are *Gilman reagents*? Give an example.
20. How can you do the following conversion?



21. Which acid would you expect to be stronger: acetic acid or *chloroacetic acid*? Why?
22. How will you convert *ethylene glycol* to *oxalic acid*?
23. How will you do *allylic* and *benzylic bromination*?
24. What are the synthetic applications of SeO_2 ?
25. Identify the following reaction and give the product:



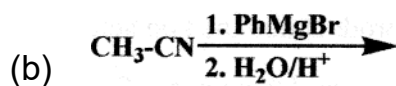
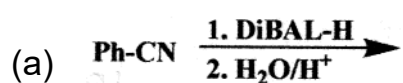
26. What are the factors affecting *molecular recognition* in *supramolecular chemistry*?

(8 × 2 = 16 Marks)

SECTION – C

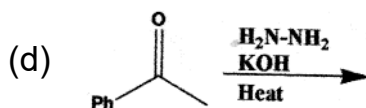
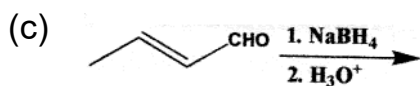
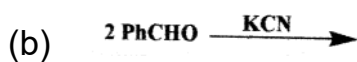
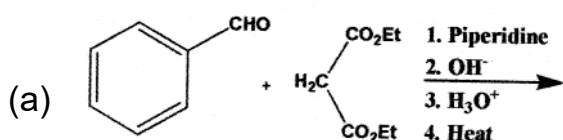
Answer any **six** questions. Each question carries **4** marks.

27. Identify the products in the following:



28. How will you synthesize *citric acid* by *Reformatsky* reaction?

29. Suggest one method each for the synthesis of *propan-1-ol* and *propan-2-ol* from *propene*.
30. What is meant by atom *economy*? Explain using suitable examples.
31. Explain how *fructose* can be converted to *glucose*.
32. Show how *3-methylpentan-2-one* can be obtained from *ethylacetoacetate*?
33. Discuss the synthetic applications of *diazomethane*.
34. Discuss the mechanism of *benzidine rearrangement*.
35. Explain, with equations the steps for the conversion of
 (a) *ethyl magnesium bromide* to *pentan-2-ol*;
 (b) *diethyl zinc* to *butanone*.
36. Illustrate the synthesis of cinnamic acid from *benzaldehyde* using *Perkin's reaction*.
37. Explain the *Ziesel's* method of estimation of methoxy group.
38. Give the products of the following:



(6 × 4 = 24 Marks)

SECTION – D

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

39. Illustrate the mechanisms of the following:
- Pinacol-pinacolone rearrangement,
 - Riemer-Tiemann reaction,
 - Claisen rearrangement
 - Beckmann rearrangement.
40. (a) Describe the 12 *principles of green chemistry*.
- (b) With suitable examples explain the synthetic applications of *phase transfer catalysis*.
41. (a) What is Hofmann *elimination*? Give an example and discuss its mechanism.
- (b) Discuss the *Hinsberg method* for the separation of three kinds of amines.
- (c) How will you do the following transformations?
- Benzaldehyde to α -hydroxyphenyl acetic acid,
 - Toluene to, *m*-nitrobenzoic acid and
 - Propanoic acid to lactic acid.
42. (a) Write a note on *mutarotation* in *glucose*.
- (b) Explain the action of phenyl hydrazine on
- glucose* and
 - fructose*; and
- (c) Discuss how chain shortening can be introduced among aldoses.

43. (a) Explain the reduction of *nitrobenzene* under different conditions.
- (b) How will you convert *propanoic acid* to *acetic acid*?
44. (a) Discuss the *Lucas test* for the distinction of primary, secondary and tertiary alcohols;
- (b) Explain the following with suitable mechanisms
- (i) *Cannizzaro reaction*;
- (ii) *Fehling's test*;
- (iii) *Kolbe's electrolysis*.

(2 × 15 = 30 Marks)
