	Utech
Name:	(4)
Roll No.:	To Design by Exercising and Explored
Invigilator's Signature:	

PHARMACEUTICAL CHEMISTRY (Organic Chemistry)

Time Allotted: 3 Hours Full Marks: 70

The figures in the margin indicate full marks.

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

GROUP - A

(Multiple Choice Type Questions)

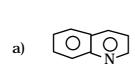
1. Choose the correct alternatives for any *ten* of the following :

 $10 \times 1 = 10$

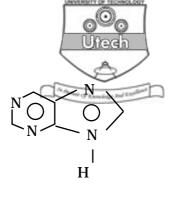
- i) In electrophilic aromatic substitution reaction, which of the following is deactivating but o-/p- directing?
 - a) NH₂
 - b) OH
 - c) Cl
 - d) NO₂.

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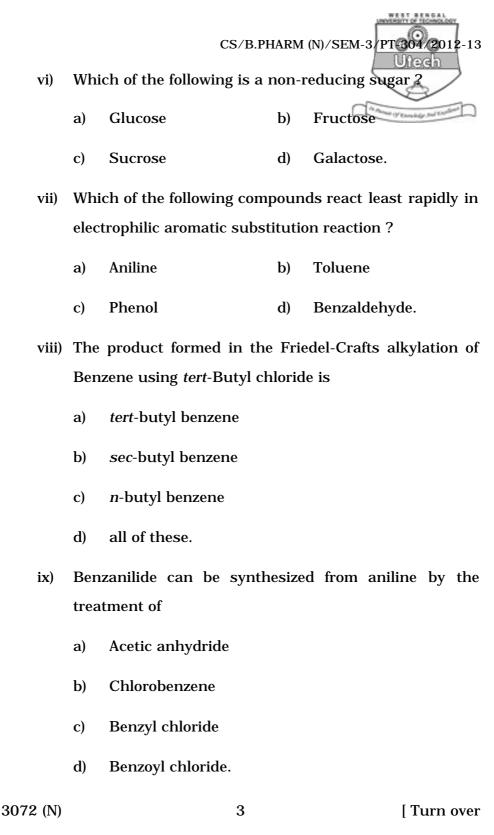




- iii) Which one of the following will be the most acidic compound?
 - a) o-Cresol
- b) *p*-Cresol
- c) *m*-nitrophenol
- d) *p*-itrophenol.
- iv) When aniline is reduced in the presence of tin and hydrochloric acid, it forms
 - a) Primary amine
 - b) Secondary amine
 - c) Tertiary amine
 - d) All of these.
- v) Isoquinoline is a
 - a) [5, 5] heterocyclic compound
 - b) [5, 6] heterocyclic compound
 - c) [6, 6] homocyclic compound
 - d) [6, 6] heterocyclic compound.

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- x) Phenol and its derivatives are used
 - a) in alcoholic beverages
 - b) as moth repellant
 - c) as anaesthetic
 - d) in antiseptic.
- xi) When napthalene is treated with succinic anhydride it forms
 - a) Napthol
 - b) Phenanthrene
 - c) Anthracene
 - d) None of these.
- xii) The reaction in which aniline is treated with glycerol to form quinoline is known as
 - a) Skraup synthesis
 - b) Bischler-Nepieralski synthesis
 - c) Killiani-Fischer synthesis
 - d) None of these.
- xiii) When thiophene undergoes Friedel-Craft Acylation reaction, it forms
 - a) 2-acetyl thiophene
 - b) 4-acetyl thiophene
 - c) 6-acetyl thiophene
 - d) all of these.

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GROUP - B

(Short Answer Type Questions)

Answer any three of the following.

 $3 \times 5 = 15$

- 2. How pyridine can be converted to (a) pyridine-2-sulphonic acid, (b) piperidine? $2\frac{1}{2} + 2\frac{1}{2}$
- 3. How can you reduce chain length of monosaccharides? Explain your answer with suitable example.
- 4. Write down the different reduction reactions of nitrobenzene.
- 5. Write a short note on osazone reaction.
- 6. Explain why Pyrrole is less basic than pyridine.
- 7. Explain the mechanism of Nitration of Benzene.

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

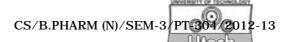
- 8. a) Define and classify carbohydrate with appropriate example.
 - b) Show the following reactions of monosaccharides:
 - i) Effect of HNO 3
 - ii) Effect of sulphuric acid
 - iii) Effect of reducing agents
 - iv) Conversion into epimers.
 - c) Write a short note on mutarotation and anomeric structures of glucose. 3+8+4

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- 9. a) Why benzene ring undergoes electrophillic aromatic substitution? Explain briefly.
 - b) Show the mechanism of nitration and sulphonation reaction of aromatic compounds.
 - c) What are the effects of activating and deactivating groups on electrophilic aromatic substitution reactions?

 Explain with necessary examples.
 - d) Write down the differences between $S_N 1$ and $S_N 2$ reactions. 2 + 5 + 5 + 3
- 10. Write briefly about any three of the following : 3×5
 - a) Paal-Knorr reaction
 - b) Fischer-Indole synthesis
 - c) Skraup's synthesis
 - d) Bischler-Bapieralski reaction
 - e) Pyridine synthesis.
- 11. What is polynuclear aromatic hydrocarbon? How will you separate naphthalene from coal tar? What is chloramine-T and Alizarin? What is Bucherer reaction? Explain the reduction of nitrobenzene. 1 + 3 + 3 + 4 + 4

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- 12. a) Discuss on the Hantzsch-Widman nomenclature for heterocyclic compounds.
 - b) Write a short note on nomenclature of the fused ring heterocyclic compounds.
 - c) Draw the structures with proper numbering any five:
 - i) Isoquinoline
- ii) Cinnoline
- iii) Furan
- iv) Imidazole
- v) Pyrazine
- vi) Indole.
- 5 + 5 + 5

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