

04

THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF BASIC SCIENCES



BACHELOR OF PHARMACY HONOURS - LEVEL 04 - 2018/19
BSU4340- PHARMACEUTICAL CHEMISTRY III
NBT 02

DATE: 03rd JANUARY 2019

DURATION: 1.5 HOURS

TIME: 11.00 a.m. – 12.30 p.m.

REGISTRATION NO:

1. This question paper consists of 12 pages with 20 Multiple Choice Questions (Part A) and 04 Short Answer Questions (Part B).
2. Please fill the address sheet. (See last page)

IMPORTANT INSTRUCTIONS TO CANDIDATES

- Write your Registration Number in the space provided.
- Answer **ALL** questions.
- **Multiple Choice Questions (Part A):** Indicate answers in the answer sheet provided by placing a cross (X) in **INK** in the relevant cage.
- Answers in pencil will **NOT** be marked.
- **Short Answer Questions (Part B):** Write answers within the space provided.
- Do not remove any page/part of this question paper from the examination hall.
- Mobile phones and the electronic equipment are **NOT** allowed. Leave them outside.

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REGISTRATION NO:

ANSWER SHEET FOR PART A

Q. No.	(a)	(b)	(c)	(d)
1.1				
1.2				
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NBT 02

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Part A – Multiple Choice Questions

(40 marks)

1. Choose the most suitable answer and indicate with a 'X' in the answer sheet provided.

1. When considering electrophilic aromatic substitution reactions, the phenols are described as,

- a) *Ortho/para* directing and deactivating
- b) *Ortho/para* directing and activating
- c) *Meta* directing and activating
- d) *Meta* directing and deactivating

2. When phenol is treated with excess of bromine water, it gives

- a) *m*-bromophenol
- b) *o*- and *p*-bromophenol
- c) 2,4-dibromophenol
- d) 2,4,6-tribromophenol

3. Phenol can be obtained by heating an aqueous solution of

- a) aniline
- b) benzene diazonium chloride
- c) benzoic acid
- d) benzyl alcohol

4. What is the IUPAC name of the following compound?

- a) 3-bromo-2-nitrophenol
- b) 2-bromo-6-hydroxynitrobenzene
- c) 2-nitro-3-hydroxybromobenzene
- d) 1-hydroxy-2-nitro-3-bromobenzene



5. Aryl ethers are more volatile than phenols. This is due to

- a) dipolar character of ethers
- b) phenols having resonance structures
- c) intermolecular hydrogen-bonding in phenols
- d) intermolecular hydrogen-bonding in ethers



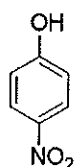
6. The major product obtained on interaction of phenol with sodium hydroxide and carbon dioxide is

- a) salicylaldehyde
- b) benzoic acid
- c) salicylic acid
- d) aniline

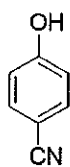
7. When Phenol is treated with CHCl_3 and NaOH , the product formed is:

- a) benzoic acid
- b) salicylaldehyde
- c) benzaldehyde
- d) salicylic acid

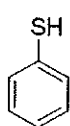
8. The pK_a of phenol is 10. Which one of the following compounds would you expect to be less acidic than phenol?



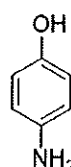
a)



b)

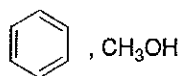


c)

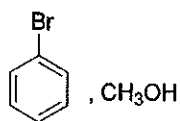


d)

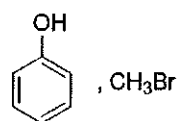
9. What will be the product/s of the following reaction?



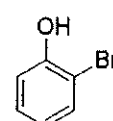
a)



b)



c)



d)



10. Identify the product when 2,4,6-tribromoaniline undergoes diazotization followed by attack of H_3PO_2 ?
- 2,4,6-tribromobenzene
 - Aniline
 - Bromobenzene
 - Benzene
11. Which one of the following compounds reacts with benzene diazonium chloride to form red/orange dye?
- Nitrophenol
 - Methanol
 - Phenol
 - Benzoic acid
12. Which one of the following heterocyclic compounds is not aromatic?
- Pyridine
 - Pyrrole
 - Furan
 - Piperidine
13. The 'N' atom in pyridine is
- sp^3 hybridized
 - sp^2 hybridized
 - sp hybridized
 - None of these
14. At which position of pyridine, electrophilic substitution reaction is most preferred?
- First
 - Second
 - Third
 - Fourth
15. Pyridine undergoes nucleophilic substitution with NaNH_2 at 100°C to give:
- 3-aminopyridine
 - 2-aminopyridine
 - 3,5-diaminopyridine
 - 2,5-diaminopyridine



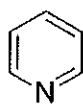
16. Which one of the following electrophilic substitution reactions is not possible in pyridine?

- a) Nitration
- b) Sulphonation
- c) Bromination
- d) Friedel craft reaction

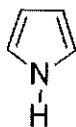
17. Which one of the following statements is incorrect?

- a) The reactivity of pyridine resembles that of a highly deactivated benzene
- b) Pyridine N-oxides are reactive towards both electrophilic and nucleophilic substitutions
- c) Pyridine undergoes electrophilic aromatic substitution easily
- d) Pyridine readily undergoes nucleophilic substitution reactions

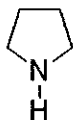
18. Which one of the following compounds is most basic?



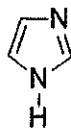
a)



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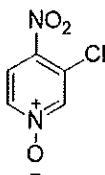
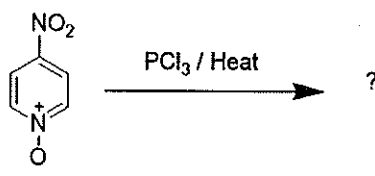


c)

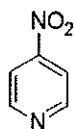


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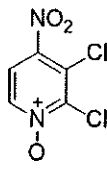
19. What will be the major product of the following reaction?



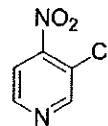
a)



b)



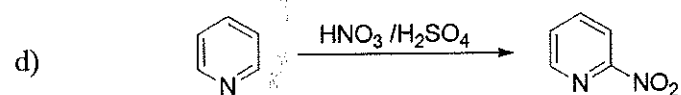
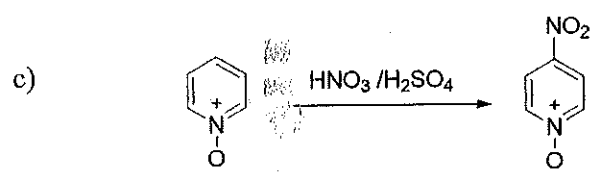
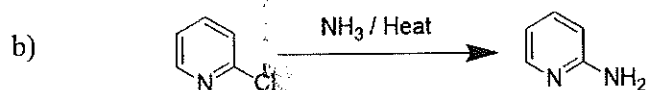
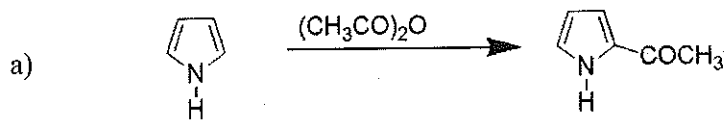
c)



d)



20. Which one of the following reactions shows an unlikely result?



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Part B –Short Answer Questions

(60 marks)

Write answers in the space provided.

1 a) Arrange the following compounds in the order of increasing pK_a values.

p-nitrophenol, 2,4-dinitrophenol, 2,4,6-trinitrophenol, phenol, 4-chlorophenol, *p*-cyanophenol. (06 marks)

b) Pyrrole is more reactive than benzene towards electrophilic substitution reactions.

Explain. (06 marks)

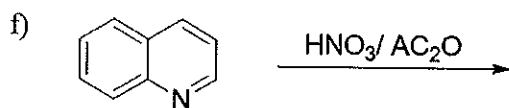
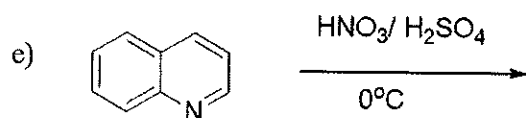
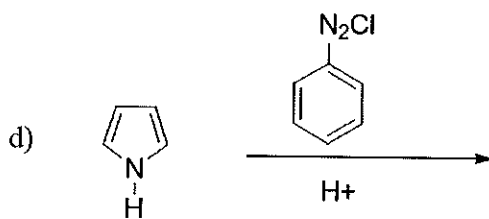
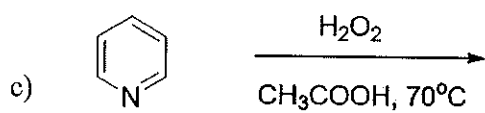
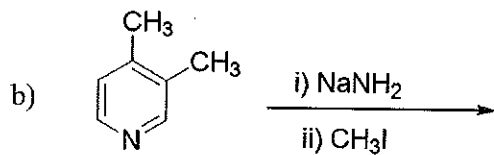
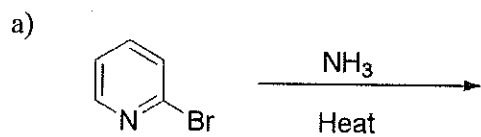


c) Explain why pyrrole is a weaker base than pyridine? (08 marks)

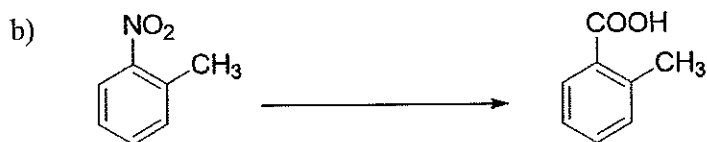
2. Explain how you would separate the cyclohexanol/phenol mixture in CH_2Cl_2 .
(12 marks)



3. Give the structures of the major product/s of the following reactions. (12 marks)



4. Giving necessary reagents and conditions, show how you would carry out the following multistep transformations. (16 marks)



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Name:.....

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