

SVKM'S NMIMS

Shobhaben Pratapbhai Patel / School of Pharmacy & Technology Management

Programme: B. Pharm / B. Pharm + MBA

Year: II

Semester: III

Academic Year: 2019-20

Marks: 75

Subject: Pharmaceutical Organic Chemistry II - Theory

Time: 10.00 am to 1.00 pm

Date: 18 November 2019

Duration: 3 hrs.

FINAL EXAMINATION

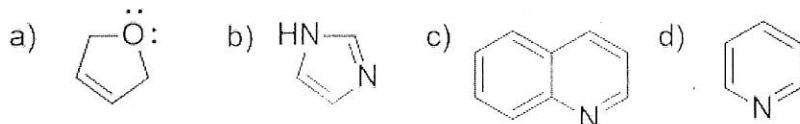
Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover of the Answer Book, which is provided for their use.

- 1) Question No. 1 is compulsory. (20 questions of 1 mark each)
- 2) Question No. 2 will have 3 questions, 10 marks each. (answer any 2 out of 3)
- 3) Question No. 3 will have 9 questions, 5 marks each. (answer any 7 out of 9)
- 4) Candidates are requested to attempt all questions as specified above.
- 5) Answer to new question to be started on fresh page.
- 5) Figures in brackets on the right-hand side indicate full marks.
- 6) Assume Suitable data if necessary.


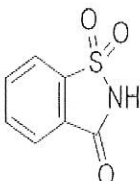
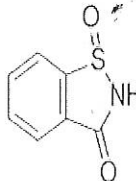
Compulsory

- 1 a Which of the following statements is incorrect: Aromatic compounds - 1
- a) have  $4n$   $\pi$ -electrons
  - b) are planar
  - c) are generally less reactive than similarly substituted alkenes
  - d) are cyclic

- 1 b Which of the following compounds is not aromatic? 1



- 1 c Friedel Crafts reactions need following catalyst - 1

- a) Lewis acid b) Lewis base c) acid halide d)  $\text{POCl}_3$
- 1 d In electrophilic aromatic substitution reaction, methoxy group acts as: 1
- a) Ortho/para directing and deactivating  
 b) Ortho/para directing and activating  
 c) Meta directing and activating  
 d) Meta directing and deactivating
- 1 e Identify correct structure of Saccharin: 1
- a)  b)  c)  d) None of above
- 1 f An electron-withdrawing group will: 1
- a) Increase the acidity of phenol  
 b) Decrease the acidity of phenol  
 c) Increase the basicity of phenol  
 d) Decrease the basicity of phenol
- 1 g The correct order of acidity of the following is: 1
- a) Benzyl alcohol < phenol < p-hydroxybenzoic acid  
 b) Benzyl alcohol > phenol > p-hydroxybenzoic acid  
 c) phenol < Benzyl alcohol < p-hydroxybenzoic acid  
 d) phenol > Benzyl alcohol > p-hydroxybenzoic acid
- 1 h In the laboratory, aniline can be prepared by: 1
- a) Oxidation of nitrobenzene  
 b) Reduction of nitrobenzene  
 c) Oxidation of toluene  
 d) Reduction of toluene
- 1 i Aniline can be distinguished from ethylamine as: 1
- a) Ethylamine forms diazonium salt with nitrous acid while aniline does not  
 b) Aniline forms diazonium salt with nitrous acid while ethylamine does not  
 c) Ethylamine forms diazonium salt with nitric acid while aniline does not  
 d) Aniline forms diazonium salt with nitric acid while ethylamine does not

- 1 j -COOH group is deactivating because: 1  
 a) It withdraws electrons from ring by resonance.  
 b) It donates electrons to ring by resonance.  
 c) It withdraws electrons from ring by hyperconjugation.  
 d) It donates electrons to ring by hyperconjugation.
- 1 k Hydrogenation of oleic acid gives\_\_\_\_\_. 1  
 a) myristic acid b) butyric acid c) stearic acid d) palmitic acid
- 1 l Reaction which leads to formation of soaps from oils is\_\_\_\_. 1  
 a) Alkaline hydrolysis b) hydrolysis  
 c) alkaline electrolysis d) oxidation
- 1 m Reaction involved in the hardening of the oils is\_\_\_\_. 1  
 a) hydrolysis b) Saponification  
 c) hydrogenation d) Oxidation
- 1 n The degree of unsaturation of lipids can be measured by 1  
 a) Reichert Meissl value b) acid value c) iodine value d) saponification value
- 1 o All carbon atoms in naphthalene are: 1  
 a)  $sp^3$  hybridized b)  $sp^2$  hybridized  
 c)  $sp$  hybridized d) None of the above
- 1 p Which of the following can be used as a moth repellent? 1  
 a) Anthracene b) Naphthalene c) Phenanthrene d)  
 Diphenylmethane
- 1 q Which of the following has least ring strain? 1  
 a) cyclopentane b) cyclobutane c) cyclohexane d) cyclopropane
- 1 r Ethene can be converted to cyclopropane by reacting it with \_\_\_\_\_ in presence of 1  
 diethyl ether.  
 a)  $I_2CH_2-Zn(Cu)$  b)  $CH_2-ZnI_2$  c)  $Zn-CH_2I$  d)  $I Zn-CH_2$
- 1 s Phenanthrene is 1  
 a) A Planer molecule b) Has tetrahedral carbons  
 c) A heterocyclic compound d) Both (b) and (c)
- 1 t Which of the following disubstituted cyclohexane can have the most stable 1

conformation?

- a) 1,1-diethylcyclohexane    b) trans-1,3-diethylcyclohexane  
c) cis-1,2-diethylcyclohexane    d) cis-1,3-diethylcyclohexane

Q 2

2 a Give reactions involved in the synthesis of following compounds starting from benzene - 10

1. *p*-Toluenesulfonic acid
2. *m*-Chlorobenzoic acid
3. *p*-Bromoaniline
4. *m*-Nitrophenol
5. *m*-Dibromobenzene

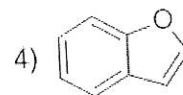
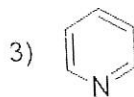
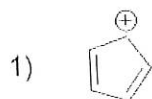
2 b Discuss the acidity of phenols. What is the effect of electron-withdrawing groups and electron-donating groups on acidity of phenols? Explain with suitable examples. 10

2 c Give the following methods of preparation of phenanthrene: 10

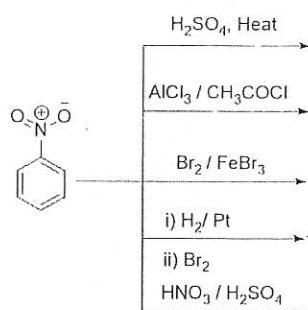
- (i) Haworth synthesis
- (ii) Pschorr synthesis

Q 3

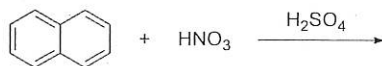
3 a What are aromatic compounds? Give rules of aromaticity and denote following compounds accordingly 5



3 b Complete the following reactions: 5



- 3 c Q.1 What happens when: 5
- a) Aniline is treated with bromine water?
- b) Aniline is treated with nitrous acid at 0-5<sup>0</sup>C?
- 3 d What happens when: 5
- a) Aniline is treated with conc. H<sub>2</sub>SO<sub>4</sub> and then heated at 180<sup>0</sup>C?
- b) Aniline is treated with chloroform and alcoholic KOH?
- 3 e Explain terms i) hardening of oils and ii) drying oils in detail with suitable example(s). 5
- 3 f What is the importance of studying Acetyl value and Reichert Meissl value? Explain each term in detail. 5
- 3 g Complete the following reaction and explain with mechanism: 5



- 3 h Explain Sachse Mohr's theory in detail. Comment on stability of monosubstituted cyclohexane. 5
- 3 i Give any three methods of preparation of cycloalkanes and give any two reactions of cyclopropane. 5