

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Third Semester B.Tech Degree (S,FE) Examination December 2020 (2015 Scheme)

Course Code: CH207**Course Name: CHEMISTRY FOR PROCESS ENGINEERING- I**

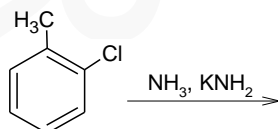
Max. Marks: 100

Duration: 3 Hours

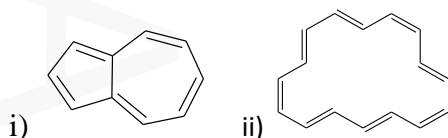
PART A*Answer any two full questions, each carries 15 marks.*

Marks

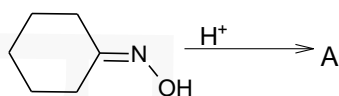
- 1 a) Predict the products of the following reaction. Explain the mechanism of the reaction. (4)



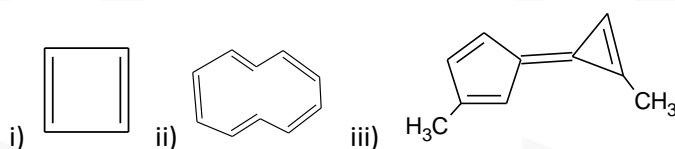
- b) Comment on the aromaticity of the following compounds. (3)



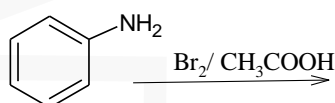
- c) How NBS and OsO_4 are useful for preparing selective compounds. (4)
- d) Write the mechanism of the following reaction. Identify the product and give the name of the reaction. (4)



- 2 a) What structural modifications make the following compounds aromatic? (4)

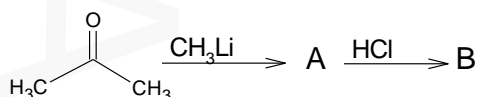


- b) Complete the reaction with mechanism. Why aniline highly reactive with bromine? (4)

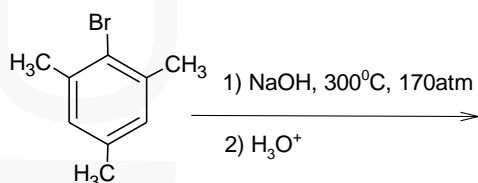


c) How carbenes are generated? Give the classification of carbene and write one example for cyclopropanation. (5)

d) Complete the reaction sequence (2)



3 a) What is the product of the reaction? Justify your answer. (3)



b) Compare the aromaticity and basicity of pyrrole and pyridine. (4)

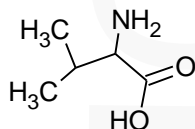
c) KMnO₄ can be mixed with benzene in the presence of a special reagent to produce purple benzene. Identify the reagent and explain the chemistry. (4)

d) Describe SN¹ reaction with an example. Explain the stereochemistry of this reaction. (4)

PART B

Answer any two full questions, each carries 15 marks.

4 a) An organic compound A on treatment with a mixture of NH₄Cl and KCN gives B which on hydrolysis with acid gives an amino acid having the following structure. Identify A and B. (3)



b) Explain the terms isoelectric point and zwitter ion with example. (4)

c) Describe the types of detergents. Explain the cleansing action of detergent. (5)

d) Give the structure and synthesis of sorbital? What is its use? (3)

5 a) Draw the conformation of α-glucose and β-glucose. Compare the stability of these saccharides. (4)

b) Write stepwise reactions of glucose with phenyl hydrazine. Why phenyl hydrazine react only with adjacent functional groups of glucose? (4)

c) Give the classification of bio-polymers with suitable examples. (4)

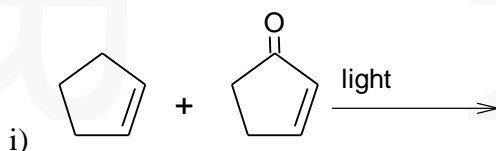
d) Describe the structure and use of malathion and transfluthrin. (3)

- 6 a) Explain the classification of protein based on the functions. (5)
 b) Write any three identification tests for proteins. (3)
 c) Correlate the colour of the molecule and chemical structure. Give any two examples. (4)
 d) Describe the synthesis and applications of polylactide. (3)

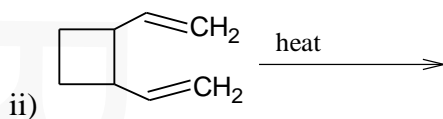
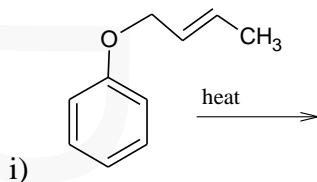
PART C

Answer any two full questions, each carries 20 marks.

- 7 a) What are the factors affecting enzyme activity? (5)
 b) Describe the basic steps of drug discovery. (5)
 c) What is photosensitization? Explain the biochemistry of photosynthesis. (5)
 d) Complete the following reactions (5)



- 8 a) Give the classification of lipids. (7)
 b) Draw the structure of vitamin A and explain its function. (3)
 c) Give the mechanism of the following reactions (5)



- d) Draw Jablonski diagram and explain various electronic transitions including fluorescence and phosphorescence. (5)
- 9 a) What are prodrugs? Give any two examples. (4)
 b) Draw the structures of soluble and insoluble parts of starch in water. Why starch produce blue colour with I₂? (6)
 c) Explain the following i) Grothus Draper law ii) quantum yield (4)
 d) Describe the photochemistry of i) oxidation of luminal and ii) bioluminescence (6)
