Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

THIRD SEMESTER B.TECH DEGREE EXAMINATION(S), May 2019

Course Code: CH207

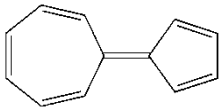
Course Name: CHEMISTRY FOR PROCESS ENGINEERING- I

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks. Marks

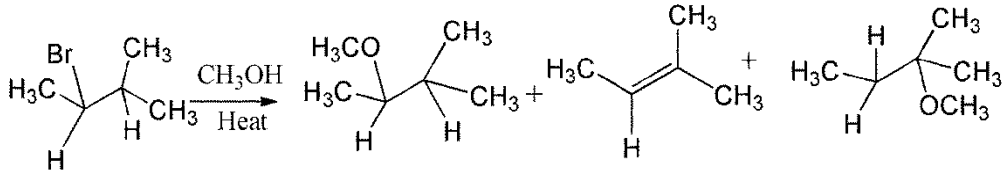
1 a) Why the following compound has larger dipole moment? (3)



b) Draw all the resonance forms for the sigma complexes corresponding to the acetylation of aniline at ortho, meta and para positions. Explain the directing effect of $-NH_2$ group. (6)

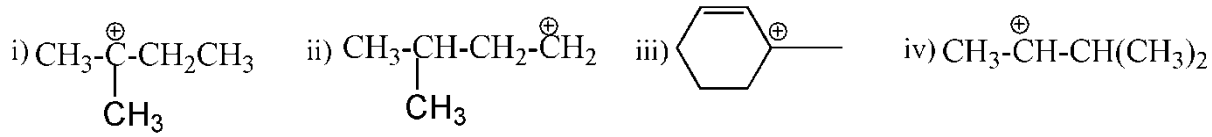
c) Propose a mechanism and show the expected products when 2,4 dinitrochlorobenzene is treated with $NaOCH_3$. (6)

2 a) Propose the mechanism to account for the formation of the following products. (6)

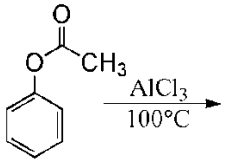


b) Explain the aromaticity of pyrrole and pyridine and compare their basicity. (6)

c) What are carbocations? Arrange the following carbocations in the decreasing order of stability. (3)

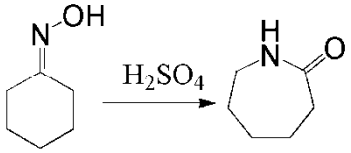


3 a) Identify the following reaction and illustrate it with the help of mechanism. (6)



b) What is NBS? Mention its application in synthetic organic chemistry with an example. (4)

c) Identify and explain the following reaction with the help of a detailed mechanism. (5)



PART B

Answer any two full questions, each carries 15marks.

4 a) Explain the Strecker reaction for the synthesis of amino acids. (3)

b) Describe any three tests for the identification of proteins. (6)

c) Draw the conformations of α-glucose and β-glucose. Compare the stability with suitable explanation. (4)

d) Illustrate the saponification of fats with a suitable example. (2)

5 a) What are epimers? Give two examples. (4)

b) How can you convert D-arabinose to glucose and mannose? (5)

c) Explain the synthesis and uses of fluorescein dyes. (4)

d) What are artificial sweeteners? Give two examples. (2)

6 a) Predict the products formed when glucose is treated with the following reagents? (5)

i) $NaBH_4$ ii) Br_2 in H_2O iii) conc. HNO_3 iv) $[Ag(NH_3)_2]^+OH^-$ v) Excess phenyl hydrazine, H^+

b) What are biodegradable polymers? Explain the structure and applications of polylactide and polyglycolide. (5)

c) Write a note on the structure of proteins. (5)

PART C

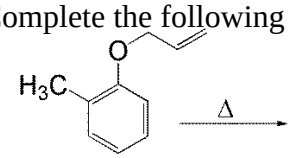
Answer any two full questions, each carries20 marks.

7 a) Explain the phenomenon of fluorescence and phosphorescence with the help of Jablonski diagram. (10)

b) What are the factors affecting the enzyme activity. (5)

c) Explain the reaction mechanism for the synthesis of paracetamol. (5)

8 a) Complete the following reaction. (6)



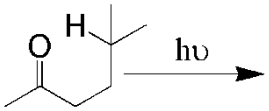
b) Explain the chemistry of the bioluminescence in fire fly. (6)

c) Draw the structure of Nicotinic acid. Mention any two biological applications. (2)

d) What are lipids? How are they classified? Mention any two functions. (6)

9 a) What are prodrugs? Name any two and mention their uses. (6)

b) Predict the possible products of the following reaction with the complete mechanism. (6)



c) Define the terms and mention one example for each. (i) Apoenzyme (ii) Antipyretics (iii) Chemiluminescence (iv) Coenzyme. (8)

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