

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**THIRD SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018**

**Course Code: CH207**

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

Max. Marks: 100

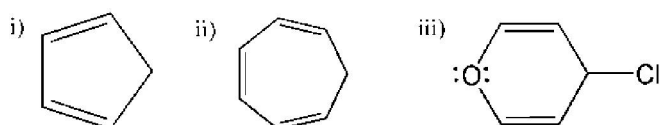
Duration: 3 Hours

**PART A**

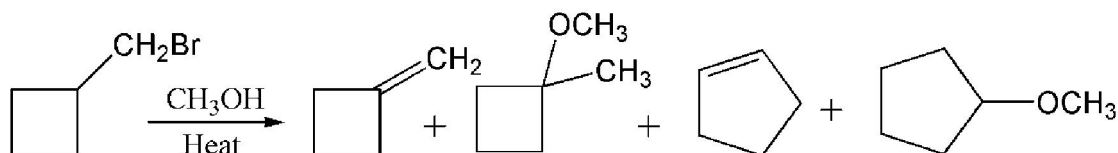
*Answer any two full questions, each carries 15 marks.*

Marks

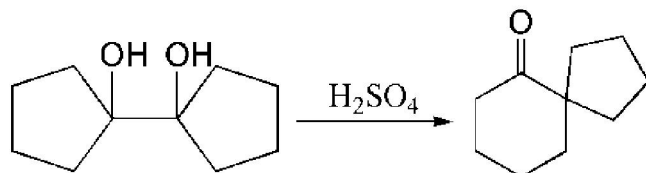
- 1 a) How would you convert the following compounds to aromatic compounds? (3)



- b) Draw all the resonance forms for the sigma complexes corresponding to the sulphonation of benzoic acid at ortho, meta and para positions. Explain the directing effect of  $-\text{COOH}$  group. (6)
- c) Propose a mechanism and show the expected products when 2,4-dimethylchlorobenzene is treated with NaOH at  $350^\circ\text{C}$ . (6)
- 2 a) When the following compound is heated in methanol, several products are formed. (8)  
 Propose mechanisms to account for the four products shown.



- b) What are crown ethers? Mention three examples. (5)
- c) What are annulenes? Draw the structure and explain the aromaticity of [14]-annulene. (2)
- 3 a) Identify the following name reaction and explain the complete mechanism. (5)

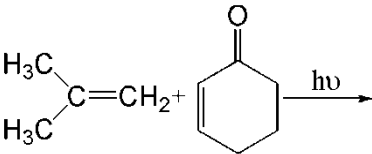


- b) Draw the mechanism for the reaction of methylcyclopentane with  $\text{Br}_2$  under irradiation with light. Predict the major product. (6)
- c) What is the product obtained when  $\text{CH}_3\text{Li}$  is treated with cyclohexanone followed by hydrolysis? (2)
- d) What are carbenes? How are they classified? (2)

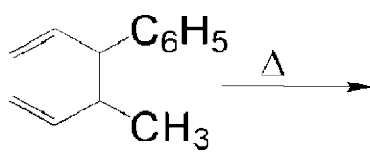
**PART B***Answer any two full questions, each carries 15 marks.*

- 4 a) Explain the Ruff's degradation of D-Glucose and D-mannose. (6)  
 b) Explain the term anomer and epimer with an example. (5)  
 c) What are auxochromes and chromophores? (4)
- 5 a) Explain the synthesis and uses of Congo red and Fluorescein dyes. (5)  
 b) What are reducing and non reducing sugars? Explain with structures. (5)  
 c) What are zwitter ions? (2)  
 d) What are biodegradable polymers? Give two examples. (3)
- 6 a) Explain the synthesis and use of parrosaniline. (5)  
 b) Explain the following, i) Gabriel phthalimide synthesis ii) Denaturation of proteins with an example. (5)  
 c) Explain the cleansing action of soap. (3)  
 d) What is saccharine and draw its structure? (2)

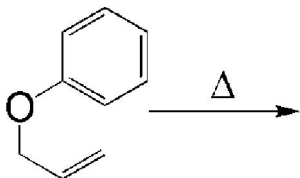
**PART C***Answer any two full questions, each carries 20 marks.*

- 7 a) Differentiate between starch and cellulose based on the structure, function and its reactivity towards acid. (10)  
 b) What is holoenzyme and apoenzyme? (5)  
 c)  (3)  
 d) What is photosensitization? Explain with an example. (2)
- 8 a) Explain the classification of enzymes based on their function. (6)  
 b) Explain the phenomenon of photosynthesis in plants. (4)  
 c) What is quenching? (5)  
 d) What is ascorbic acid? Explain the mechanism of antioxidant property of ascorbic acid? (5)
- 9 a) What are the key steps involved in the drug designing process? What is QSAR in drug designing? (10)  
 b) What are the products formed in the following reactions. Explain with the mechanism. (10)

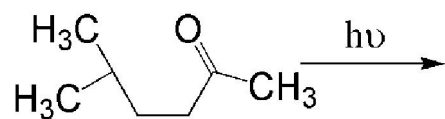
i)



ii)



iii)



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