UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program :Seventh Semester – 2020

Paper: Organic Chemistry (Sp. Theory-II)

Course Code: CHEM-410 Part – I (Compulsory) Time: 15Min. Marks: 10

Roll No. in Fig. .....

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Signature of Supdt.:

Attempt this Paper on this Question Sheet only.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the right answer cutting and overwriting is not allowed. (10x1=10)

I) Which of the following is most reactive in aromatic electrophilic substitution?
a) Toluene
b) Fluorobenzene
c) Nitrobenzene
d) Phenol

II) Which of the following statements is incorrect regarding aromatic compounds?
a) They are planer
b) Have 4n π-electrons
c) They are cyclic
d) They are less reactive than similarly substituted alkenes.

III) Which of the following is NOT associated with electrophilic aromatic substitution reaction of benzene?
a) The formation of nitrobenzene
b) The formation of benzyne
c) The formation of bromobenzene
d) The formation of benzene sulfonic acid

IV) Select the correct statement from the following options.
a) S_N2 reaction follows second order kinetics
b) No intermediate is involved in S_N2 mechanism
c) S_N2 reactions are one-step reaction
d) All of the above mentioned

V) The reactivity order of alkyl halides in S_N2 is
a) $CH_3X > 1° > 2° > 3°$
b) $CH_3X > 2° > 1° > 3°$
c) $CH_3X > 3° > 1° > 2°$
d) $CH_3X > 3° > 2° > 1°$

VI) Which of the following statement is incorrect regarding E1 reaction?

a) It follows first order kinetics
b) Intermediate is involved
c) It is two step reaction
d) Tertiary alkyl halide is favorable substrate

VII) Which intermediate is formed in Hoffman rearrangement?

a) Carbene
b) Ketene
c) Isocyanate
d) Carbanion

VIII) Among following which is most reactive towards electrophilic substitution?

a) 

b) 

c) 

d) 

IX) Which has highest migrating aptitude in Baeyer-Villiger rearrangements?

a) 3° alkyl
b) 2° alkyl
c) 1° alkyl
d) methyl

X) Which of the following statement is CORRECT?

a) Pyrrole has less aromatic character than furan.
b) Pyrrole is a strong base.
c) Pyridine is a tertiary amine.
d) Pyridine is isoelectronic with benzene.

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B.S. 4 Years Program :Seventh Semester – 2020

Roll No. ……………

Paper: Organic Chemistry (Sp. Theory-II) **Time: 2 Hrs. 45 Min. Marks: 50**
Course Code: CHEM-410 **Part – II**

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Give short answers of the following: **(5x4=20)**

I) Compare the relative reactivities of benzene and pyridine towards electrophiles with examples?

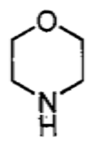
II) Why acylation is favourable over alkylation in Friedel Craft reaction?

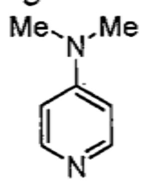
III) Describe Curtius rearrangement with mechanism and example.

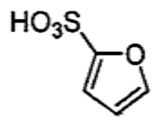
IV) Arrange and explain following in ascending order of their migration aptitude in Pinacol-pinacolone rearrangement:

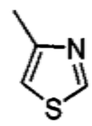
H, Me, Ph,

V) Name the following heterocyclic compounds.



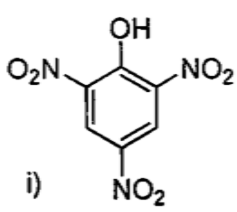


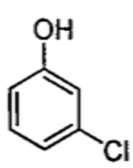


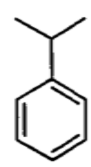


Q.3. Answers the following questions. **(15x2=30)**

I) How would you synthesize following using benzene. Write complete mechanism of each step involve. (9)

i) 

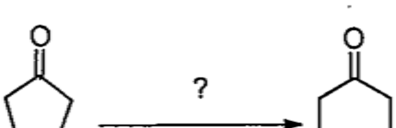
ii) 

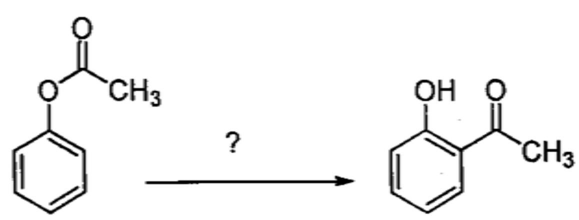
iii) 

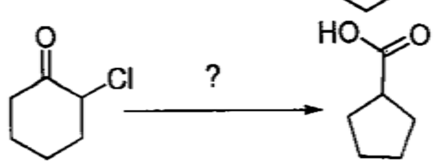
II) Draw the reactions of Furan with the following and write complete mechanisms. [6]

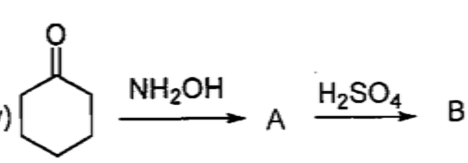
i) Br_2 ii) $POCl_3$, DMF iii) HNO_3, $(Ac)_2O$

Q. No. 4. Complete the following reactions and draw their mechanisms? **[3 x 5 = 15]**

i) 

ii) 

iii) 

iv) 

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