



I Semester M.Sc. Examination, January 2017  
(Semester Scheme) (NS)  
(2010-11 Scheme)  
CHEMISTRY  
C-102 : Organic Chemistry – I

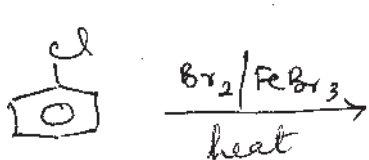
Time : 3 Hours

Max. Marks : 80

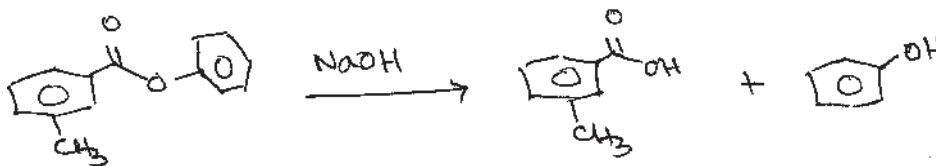
**Instruction :** Answer question number 1 and any five of the remaining.

1. Answer any ten of the following : (10×2 =20)

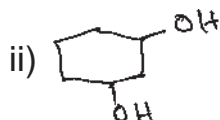
- a) What is Huckel's rule ? Explain the rule using tropene as an example.  
b) Draw the potential energy diagram for the following reaction.



- c) Explain how isotope labeling is used to determine the mechanism of the following reaction.

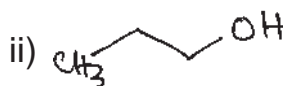
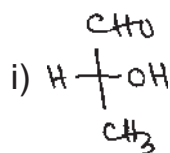


- d) What are ambident nucleophiles ? Give any two examples.  
e) Draw the most stable conformations for the following with justification.



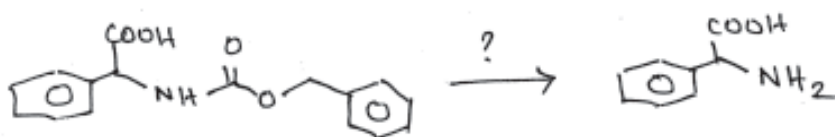


f) Indicate (if any) prochiral groups/faces in the following.



g) What is Strecker reaction ? Explain with an example.

h) Suggest a suitable reagent and propose a mechanism for the following.

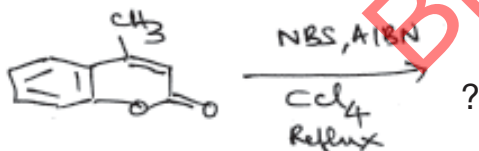


i) What is Kiliani-Fischer synthesis ? Explain with a suitable mechanism.

j) Draw the conformational structures of D- and L-forms of mannose.

k) Give the synthesis of purine from uric acid.

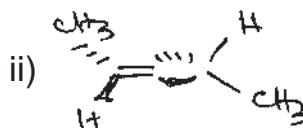
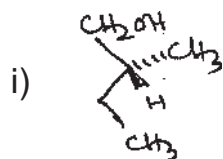
l) Predict the product and propose a mechanism.



2. a) Write on aromaticity in naphthalene and any one meso-ionic compound.

b) Give an account of generation, structure, stability and reactivity of benzyl cation.

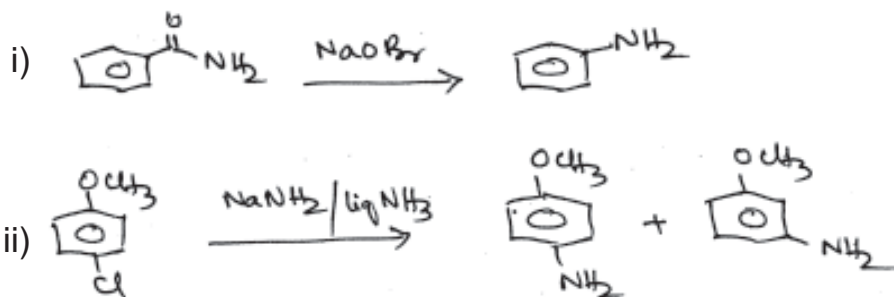
c) According to CIP rules, write the R/S configurational notations of the following.



(3×4=12)



3. a) Explain how the presence of intermediate is helpful in establishing the mechanism of the following reactions.

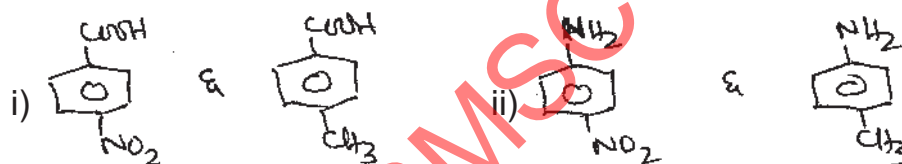


b) What is Cram's rule? Explain with a suitable example.

c) Write a note on conjugation and hyper conjugation in organic compounds.

(3×4=12)

4. a) Discuss the effect of resonance on the acidity and basicity of the following pairs.

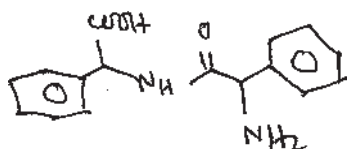


b) Give an account of nomenclature and conformations of



c) Suggest a suitable synthetic scheme for the following dipeptide :

(3×4=12)



5. a) List out the major differences between the  $S_N1$  and  $S_N2$ , mechanisms.

b) Give a brief account of the conformations and stability of 1,3-dimethylcyclohexanes.



c) Write a note on :

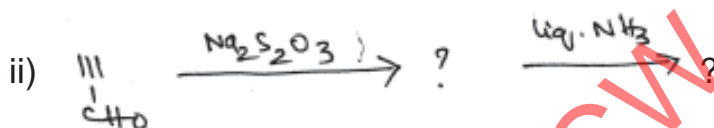
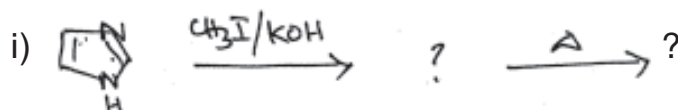
- i) Racemization in peptide synthesis
- ii) Peptidomimetics

(3×4=12)

6. a) Explain the method of determination of configuration of D-glucose.

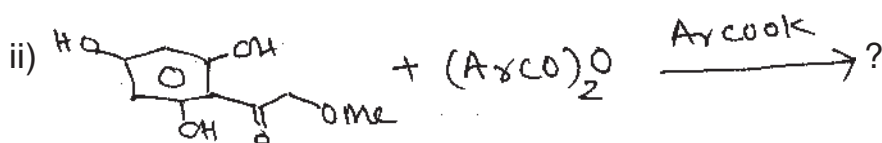
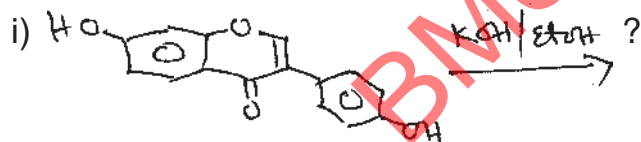
b) Outline the solution phase synthesis of Leu-Enkephalin.

c) Predict the products



(3×4=12)

7. a) What are the products of the following reactions ?



b) Outline the synthesis of aldonic acid.

c) Discuss the Sangers method of sequencing the following peptide.  
GlyAlaPheGly.

(3×4=12)

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