

M.Sc.(Chem.) Semester - 1 (CBCS) Examination
Oct/Nov. -2019 - [NEW COURSE]
ORGANIC CHEMISTRY (CORE)

Time: 2:30 Hours

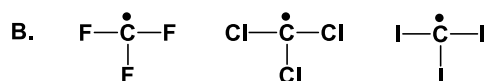
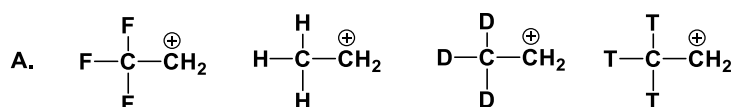
Marks: 70

Instructions:

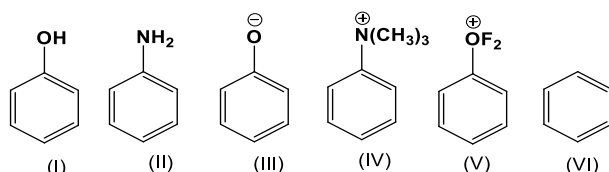
1. All questions are compulsory.
2. Figures to the right indicate marks.

Q.1 (a) Answer the following.**4 Marks**

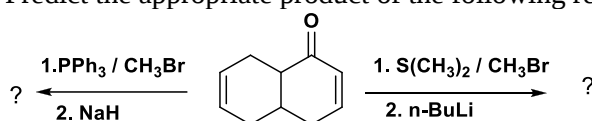
- (1) Arrange the following intermediates (set A & B) according to their increasing order of stability. Justify your answer.



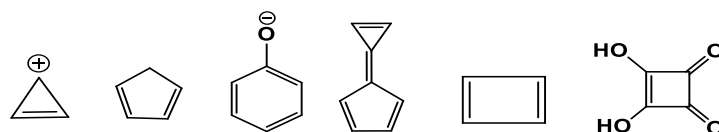
- (2) Arrange the following compounds (I to VI) according to their increasing order of reactivity towards aromatic electrophilic substitution reaction (ArESR). Justify your answer.

**Q.1 (b) Answer any two question out of three.****10 Marks**

- (1) What is carbene? Describe, structure, hybridization, generation and reactivity of Carbene.
- (2) How will you generate free radicals ? Explain reactivity of singlet and triplet free radicals.
- (3) Predict the appropriate product of the following reactions and write its mechanism:

**Q.2 (a) Answer the following.****4 Marks**

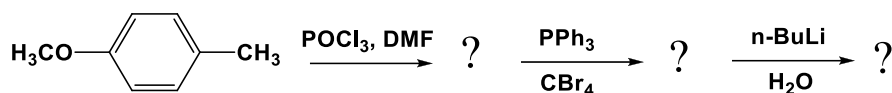
- (1) Why anti-aromatic compounds are less stable compare to aromatic compounds?
- (2) Classify the following compounds as per their aromatic/anti-aromatic/non-aromatic characters.

**Q.2 (b) Answer any two questions out of three.****10 Marks**

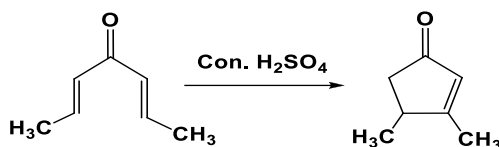
- (1) Give Huckel's rule for aromatic and anti-aromatic compounds and explain with examples.
- (2) Explain aromaticity of: (a) 6π electron system and (b) 8π electron system.
- (3) What are annulenes? Describe aromaticity in annulenes with examples.

Q.3 (a) Answer the following.**4 Marks**

- (1) Identify the reaction and complete the following reaction sequence:



- (2) Identify the following reaction and write its mechanism.

**Q.3 (b) Answer any two questions out of three.****10 Marks**

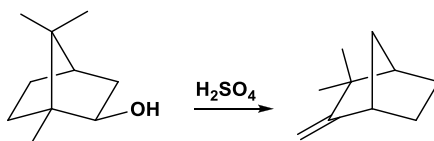
- (1) Describe principle, reaction mechanism and at least four applications of Dieckmann condensation reaction.
- (2) Describe principle, reaction mechanism and three applications of Nef reaction.
- (3) Write a note on Michael addition reaction.

Q.4 (a) Answer the following.**4 Marks**

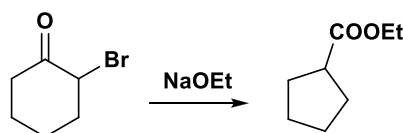
- (1) Discuss why Beckmann rearrangement is stereospecific?
- (2) Describe reactivity of phenylisocyanate towards various nucleophiles with examples.

Q.4 (b) Answer any two questions out of three.**10 Marks**

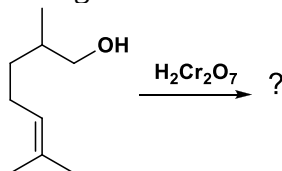
- (1) Describe Principle, mechanism and migration aptitude of pinacol-pinacolone rearrangement.
- (2) Identify the following rearrangement, write its mechanism and give three applications:



- (3) Identify the following rearrangement, write its mechanism and give three applications:

**Q.5 (a) Answer the following.****4 Marks**

- (1) Predict the product of the following reaction & write its mechanism.



- (2) Write structure of collin's reagent & give its two applications.

Q.5 (b) Answer any two questions out of three.**10 Marks**

- (1) Write a note on Dess-Martin reagent.
- (2) Write a note on swern oxidation reaction.
- (3) Describe preparation and four applications of DIBAL-H reagent.
