

Seat No. : _____

OB-120

October-2018

M.Sc., Sem.-II (Repeater)

**408 : CHEMISTRY
(Organic Chemistry)**

Time : 2.30 Hours]

[Max. Marks : 70

1. (A) Answer the following : **14**

Discuss in brief principle and instrumentation in mass spectroscopy, give three differences between ^{13}C and ^1H NMR. Write spectral characteristics of p-Anisidine (IR, ^1H NMR, Mass - fragmentation with ion peaks).

OR

Answer the followings :

(i) Write a note on simple cleavage and McLafferty rearrangement. **7**

(ii) (a) Write a note on HRMS. **7**

(b) Discuss the Mass fragmentation of p-Bromo acetanilide in detail.

(B) Answer any **four** of the followings : **4**

(i) What is isotope peak ?

(ii) What do you understand by Nitrogen rule in mass spectroscopy ?

(iii) What information will be given by IR spectroscopy ?

(iv) Discuss shielding and deshielding in ^1H NMR.

(v) Which method is more appropriate to differentiate between o & p isomers of Toluidine (IR, Mass or ^1H NMR) ?

(vi) What is the internal standard in ^1H NMR and why ?

2. (A) Answer the following : 14

Discuss the Jabloski diagram. Write a note on photoisomerisation of olefins by Schenk mechanism. Describe the criteria of aromaticity, tautomerism and characteristics of hetero-cyclic compounds.

OR

Answer the followings :

- (i) (a) Give synthesis and reactions of Benzothiazole. 7
(b) What is Paterno-Buchi reaction ? Discuss it's reaction with relevant evidences.
(ii) Give one synthesis and two important reactions for Imidazole and Pyrimidine. 7

- (B) Answer any **four** of the followings : 4

- (i) What is quantum yield and quantum efficiency ?
(ii) Give structures of Cinnoline, Quinazoline, Quinoxaline.
(iii) Give one example which shows photodimerisation reaction.
(iv) What is Fermi resonance ?
(v) What is mesoionic compound ? Give one example of it.
(vi) Give structures of Benzo (b)-pyrazine and 4-Hydroxy-6(IH)pyrimidine.

3. (A) Answer the following. 14

Give a brief account on Sonogashira reaction. Discuss the Dickmann reaction with mechanism. What is Mannich base ? Discuss mechanism for the generation of Mannich base through acid and base catalyzed reaction with relevant sequential steps.

OR

Answer the followings :

- (i) (a) Give a brief account on Buchwald-Hartwig reaction.
(b) Give a brief account on Wittig reaction. 7
(ii) Using Villsmeyer-Haack reaction give the mechanism for the preparation of p-N-N-dimethyl amino benzaldehyde using suitable starting material. 7

- (B) Answer any **three** of the followings : 3
- (i) Give names of reagents used for Mitsunobu reaction.
 - (ii) Which reagent is used in Jones oxidation ?
 - (iii) What is Pfitzner-Moffatt oxidation ?
 - (iv) Which chemicals are used in the Swern oxidation reaction ?
 - (v) What are the variable oxidizing states of Palladium in the Suzuki reaction ?

4. (A) Answer the following : 14
- Discuss selectivity, mechanism and three utilizes of DCC, DIBAL-H, Grignard reagents and DDQ reagents.

OR

Answer the followings.

- (i) Discuss selectivity, mechanism and three utilizes of PTC and DMP reagents. 7
 - (ii) Discuss selectivity, mechanism and three utilizes of Sodium borohydride and Sodium cyanoborohydride reagents. 7
- (B) Answer any **three** of the followings. 3
- (i) Write structure of Gilman's reagent.
 - (ii) What is n-BuLi ? Give its one application.
 - (iii) Why Grignard reagent used in the anhydrous condition ?
 - (iv) Which reagent is used for complete conversion of acid & alcohol to ester ?
 - (v) What is reductive amination ? Give its example.
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