



**GK-142002**

Seat No. \_\_\_\_\_

**M. Sc. (Sem. II) Examination**

**March / April – 2019**

**MSCOC - 202 : Organic Chemistry**

Time : Hours]

[Total Marks :

1 (a) Answer the following :

- (1) How will you differentiate of Xylene by  $^1\text{H}$  NMR and  $^{13}\text{C}$  NMR on the basis of number of NMR signals?
- (2) Discuss fast Atomic Bombardment (FAB) technique used in mass spectroscopy.

**OR**

- (1) Give a brief idea on  $^{13}\text{C}$  chemical shifts of atomic and heteromatic carbon by giving a propitiate examples.
- (2) Discuss in brief principle and instrumentation in mass spectroscopy.

(b) Answer the following :

- (1) Deduce the structure of the compound from the following spectral data with suitable explanation.

Mol. wt : 90

UV : 200 nm

IR :  $2960\text{ cm}^{-1}$ ,  $1156\text{ cm}^{-1}$ ,

NMR : (a)  $3075(\delta)$ , 9.6 sq. Singlet

(b)  $3090(\delta)$ , 14.4 sq. Singlet

Mass (M/z) : 90, 85, 59, 28

**OR**

- (b) Deduce the structure of the compound from the following spectral data with suitable explanation.

Mol. Formula :  $C_{10}H_{14}O$

UV : 220 nm, 262 nm.

IR : 3200 (b) 3080, 2900, 1605, 1598, 1450, 1300, 1100, 730, 688  $cm^{-1}$ .

NMR : (a) 1H (205) Singlet

(b) 2H (4.0) Singlet

(c) 6H (1.8) Singlet

(d) 5H (7.8) Singlet

Mass (M/z) : 150, 149, 133, 119, 118, 91, 65, 39.

- 2 (a) Answer the following :

- (1) Draw Jablonski diagram and explain the term Fluorescence and Phosphorescence.
- (2) Discuss Photo sensitisation of  $\alpha - \beta$  epoxy ketones undergoing rearrangement.

OR

- (1) Explain Norris type-I reaction mechanism.
- (2) Explain photodimerization of 1, 3 butadiene.

- (b) Answer the following :

- (1) Give synthesis and four important reactions for any two : Pyrazole, Imidazole, Primidine, Cinnoline.

- 3 (a) Answer the following :

Discuss the Principle and mechanism and synthetic applications of the following : (Any Two)

- (1) Stobbe Condensation
- (2) Michale addition
- (3) Witting Reaction

- (b) Discuss the Principle and mechanism and synthetic applications of the following : (Any Two)

- (1) Knoevanagel Reaction
- (2) Birch Reaction
- (3) Suzuki Reaction

- 4 (a) Discuss selectivity mechanism and three utilities of following reagents.

- (1) Phase transfer catalysis
- (2) Grignard Reagents

OR

- (1) Gilman's Reagents
- (2) Lithium diisopropylamide (LDA)

- (b) Discuss selectivity mechanism and tree utilities of following reagents :

- (1) Baker's Yeast
- (2) 2,3 Dichloro 5,6 dicyanobezoquinone (DDQ)

OR

- (1) Dicyclohexyl carbodimide (DCC)
- (2) 1,3 Dithiane

- 5 Answer the following in very short :

- (1) What is isotop peak?
- (2) Mention the m/c values for tropylium and phenylion.
- (3) Give structure of following compound.
  1. 2, 5 dimethyl Thiazole.
  2. 3,4 dimethyl Imidazole
- (4) Give one synthesis of Quinazoline.
- (5) What is steglich esterification.
- (6) What is Jones reagent? How is it prepared?
- (7) One synthesis of oxazole.
- (8) One synthesis of Quinazoline.
- (9) Give one application of Jones Oxidation.
- (10) Give one requirement for the selection of Photosensitiser.
- (11) Explain ortho effect in mass spectroscopy.
- (12) Give one example of [2, 2, 2] cryptate.
- (13) Which organic molecules will offer  $T_1$  to  $S_0$  transition? Why?
- (14) Give chemical equation to prepare 3°alcohol from ester.