5234

B. Sc. EXAMINATION

(Fifth Semester)

CHEMISTRY

CH-303

Organic Chemistry

: *Three Hours* *Maximum Marks :* 27

: *First* question is compulsory. Attempt *five* questions in all, selecting at least *two* questions from each Section A & B.

i) Why TMS is used as reference compound in PMR spectroscopy ?

ii) Give two examples of organic compounds which gives only 1 signal in PMR Spectroscopy.

(iii) Draw Howarth's projection formulae of D-Sucrose.

(iv) Differentiate between Anomers and Epimers.

(v) What happens when Dimethyl zinc reacts with water ?

(vi) Why organolithium compounds are more reactive than Grignard's reagent ?

(vii) Give reaction for preparation of Tetraethyl lead and its uses. 1×7=7

Section A

2. (a) Explain and assign structure to an organic compound with molecular formula $C_9H_{11}Br$ with the following sets of PMR data :

(i) Multiplet, δ 2.15, (3H)

(ii) Triplet, δ 2.75, (2H)

(iii) Singlet, δ 7.22 (5H)

(iv) Triplet, δ 3.38, (2H) 3

(b) What is Chemical Shift ? How it is measured relative to TMS in PMR spectroscopy. 2

3. (a) Write notes on any *two* of the following :

(i) Spin-Spin coupling and coupling constant

(ii) Equivalent and non-equivalent protons

(iii) Sheilding and deshielding of protons. 3

(b) How does a signal is obtained in PMR spectroscopy ? 2

4. (a) PMR spectrum of an organic compound recorded on a 100 MHz instrument shows a single at 84 Hz. What would be the position of a signal on delta and tau units & give position of signal when 60 MHz spectrophotometer is used. 3

(b) Explain anisotropic effects observed in the PMR spectrum of acetophenone. 2

5. (a) How would you convert the following :

(i) Glucose into Fructose

(ii) D-Glucose into D-Arabinose

(iii) D-Arabinose into D-Mannose. 3

(b) Why sucrose is called invert sugar ? It does not reduces Tollen's reagent and Fehling Solution. Explain. 2

6. How would you get the following compounds :

(i) Dithionic acid from Grignard reagent

(ii) Tertiary alcohol from Phenyl Lithium

(iii) Acetaldehyde reacts with α-Bromoester and zinc

(iv) 2-Propanol from Ethyl formate

(v) Acetone from Grignard's reagent. 5

7. (a) Give mechanism of conversion of glucose into glucosazone. 2

(b) Discuss structure of Lactose and draw Howarth's projection formula for it. 2

(c) Differentiate between epimer and anomer. 1