



Name :

Roll No. :

Invigilator's Signature :

CS/B.Sc (H)/BT/GEN/Micro. Bio./Mol. Bio./SEM-4/CH-401/2013

2013
CHEMISTRY

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

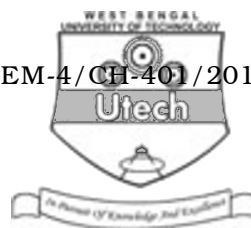
GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : 10 × 1 = 10
- i) Grignard reagent is used for preparation of
 - a) Alkanes
 - b) Alkenes
 - c) Alkynes
 - d) All of these.
 - ii) For a reaction catalyst changes
 - a) activation energy
 - b) free energy
 - c) equilibrium constant
 - d) none of these.
 - iii) Solubility of iodine in ethanol is
 - a) 15 @ C
 - b) 18 @ C
 - c) 20 @ C
 - d) 17 @ C.
 - iv) Each turn of α -helix contains
 - a) 3.6 amino acid
 - b) 3.5 amino acid
 - c) 3.2 amino acid
 - d) 3.3 amino acid.



- v) Iodine is used to activate
- a) Aluminium b) Magnesium
c) Titanium d) Sodium.
- vi) 4-toluene sulphonyl chloride is used as a reagent in
- a) Curtius rearrangement
b) Neber rearrangement
c) Lossen rearrangement
d) both (b) & (c).
- vii) Pinacol-Pinacolone rearrangement converts
- a) a germinal diol to a ketone
b) a vicinal diol to a ketone
c) a ketone to an amide
d) an alcohol to an olefin.
- viii) Hoffman rearrangement is an example of migration to
- a) electron deficient nitrogen
b) electron deficient carbon
c) electron deficient oxygen
d) none of these.
- ix) Galactose is an epimer of
- a) Mannose b) Glucose
c) Fructose d) Acarbose.
- x) The unit of k in the first order reaction is
- a) mole/L time
b) time⁻¹
c) L/mole-time.



- xi) Colligative property depends on
- chemical properties of solute
 - physical properties of the solute
 - concentration of the solute in bulk solution
 - all of these.
- xii) Which organometallic compound is used as additive to petrol ?
- Tetramethyl zinc
 - Tetramethyl cadmium
 - Tetramethyl lead
 - Tetramethyl magnesium.

GROUP - B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

- What is activation energy ? It is essential for a catalyst to decrease activation energy. Comment. $1 + 4$
- Give an example each of a zero order reaction and a fractional order reaction. Compare the time required for 20% and 80% of a first order reaction. $2 + 3$
- What is an active methylene group ? Give the mechanism how active methylene group makes condensation reaction. $2 + 3$
- Define half life. What are the half-lives of a zero order reaction and a first order reaction ? $1 + 2 + 2$
- Discuss any suitable method for the conversion of aldopentose to aldohexose.



GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. Write about the chemical reactions of glucose. Discuss Ruff degradation and its importance in chemistry. $10 + 5$
8. What is the process of production of iodine ? Write down short note on the characteristics of iodine. $8 + 7$
9. Write down a short note on secondary structure of protein. What is the difference between tertiary structure and quaternary structure of protein. $10 + 5$
10. What happens when phenyl acetate is heated with anhydrous AlCl_3 ? Write the name of the reaction. Write with mechanism what product you will get when *cis* and *trans* but-1,3-diene is treated with maleic acid. Give synthetic use of HIO_4 and PCl_5 . Give the difference between application of LiAlH_4 and NaBH_4 . $(2 + 1) + (2 + 3) + 4 + 3$
11. What are oxidising and reducing sugars ? How do you convert an aldose into ketose containing two additional carbon atoms ? How do you convert aldopentose to aldohexose ? What happens when glucose is subjected to reacts with hydroiodic acid and red phosphorous at 100°C ? How sorbitol can be synthesized from glucose ? $3 + 3 + 3 + 3 + 3$
12. What are poly phalide ions and polyhalides ? How are they classified ? What are solvated polyhalides ? How are simple and mixed polyhalides prepared ? Discuss the structure and shape of trihalide anion and cation. $\frac{1}{2} + \frac{1}{2} + 1 + 1 + 1 + 3 + 4 + 4$
13. Write an account of any *three* of the following : 3×5
 - a) Fries rearrangement
 - b) Benzidene rearrangement
 - c) Dakine rearrangement
 - d) Cumene hydroperoxide rearrangement
 - e) Allylic rearrangement.