



BRAINWARE UNIVERSITY

Term End Examination 2023

Programme – B.Sc.(BT)-Hons-2020/B.Sc.(BT)-Hons-2021

Course Name – Advanced Chemistry

Course Code - BBTC403

(Semester IV)

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

(i) Select the odd one from the following.

- a) Arabinose
- b) Xylose
- c) Lyxose
- d) Erythrose

(ii) The treatment of CH_3MgX with $\text{CH}_3\text{C}=\text{C}-\text{H}$ produces

- a) $\text{CH}_3-\text{CH}=\text{CH}_2$
- b) $\text{CH}_3-\text{C}=\text{C}-\text{CH}_3$
- c) CH_4
- d) $\text{H}-\text{C}\equiv\text{C}-\text{H}$

(iii) What would be the product formed when 1-Bromo-3-chlorocyclobutane reacts with two equivalents of metallic sodium in ether?

- a) 
- b) 
- c) 
- d) 

(iv) The degree of unsaturation of lipids can be measured by

- a) Iodine number
- b) Saponification number
- c) Reichert Meissel number
- d) Polenske number

(v) Lower fatty acid contains..... C atoms

- a) 3-11
- b) 1-9
- c) 2-10
- d) 2-12

(vi) The short hand representation of palmitic acid is

- a) 16:0
- b) 18:1(9)
- c) 17:0
- d) 19:0

(vii) Examples of Epimers are

- a) Glucose & Galactose
- b) Glucose & Ribose
- c) Maltose & Glucose
- d) Fructose & Maltose

- (viii) Ozonolysis of an organic compound 'A' produces acetone and propionaldehyde in equimolar quantity. Identify 'A' from the following compounds
- a) 1-pentene
b) 2-methyl-1-pentene
c) 2-methyl-2-pentene
d) 2-pentene
- (ix) Which of the following amino acids has a net negative charge at physiologic pH (~7.4)?
- a) Glutamic Acid
b) Histidine
c) Lysine
d) Asparagine
- (x) The name of the disease that occurs due to mercury pollution is
- a) Minamata disease
b) Skin cancer
c) Duch ouch disease
d) Kidney damage
- (xi) $-NH_2$ group of amino acid can be protected by using
- a) DCC
b) p-nitro phenol
c) Phosphorus Pentachloride
d) BOC
- (xii) In edmann method the reagent used is
- a) Phenyl cyanide
b) Phenyl isocyanide
c) Phenyl isothiocyanate
d) Benzene
- (xiii) Glucose on treatment with HIO_4 produces
- a) 5HCOOH and 1HCHO
b) 4HCOOH and 2HCHO
c) 6HCOOH
d) 3HCOOH and 3HCHO
- (xiv) Alkene reacts with Iodine and $PhCOOAg$ to produce
- a) Cis diol
b) Trans diol
c) Epoxide
d) Both cis and trans diol
- (xv) Fructose is what type of sugar
- a) 3-ketohexose
b) 2-ketohexose
c) 4-ketohexose
d) 1-ketohexose

Group-B

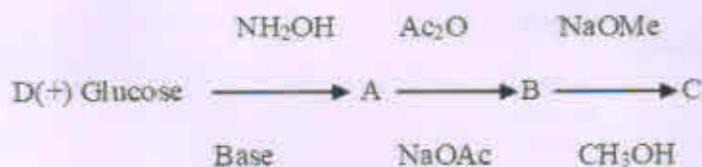
(Short Answer Type Questions)

3 x 5=15

- Define glycolipid with examples. (3)
- State a reagent for allylic bromination of 1-butene and give mechanism for the reaction., Why $C=C$ does not add up Br_2 under experimental condition? (3)
- What are the bondings responsible for secondary structure of protein? Explain them? (3)
- What will happen if trans 2-butene is treated with diazomethane in presence of little oxygen and why is this product formed? Construct plausible mechanism (3)
- Should D Fructose respond to Tollen's reagent? Explain it with suitable mechanism (3)

OR

Write the structure for A to D in the following sequence of reactions (3)



Name this overall method.

Group-C
(Long Answer Type Questions)

5 x 6=30

7. Calculate ΔH° for both steps of chain propagation for chlorination and evaluate which step is rate determining one? (5)

C-H=104 Kcal/mole

Cl-Cl=58 Kcal/mole

C-Cl=84 Kcal/mole

H-Cl=103 kcal/mole

8. Transform glycine to phenyl alanine without using Erylmayer azalactone synthesis (5)

9. Draw the howarth structure of D-Sucrose (5)

10. Convert 1-Butene to 1,3- butadiene with mechanism. (5)

11. What does polenske number indicates? What is the other name of volatile fatty acid number and define it. (5)

12. What is acid rain? Explain its cause and effects with reactions. (5)

OR

Define oligotrophic and mesotrophic water bodies. Explain how the eutrophication can be controlled. (5)
