

B.N. Bandodkar College of Science, Thane

Ist Semester End Examination Oct 2014

USBC 101

Duration: 2hrs and 30 mins

MaxMarks-75

N.B 1) All Questions are compulsory.

2) Draw neat and labeled diagrams wherever necessary

3) Figures to right indicate full marks.

Q.1) A) Answer the following (Each question carries 4 marks)

20

a) Explain the structure of ice.

OR

a) Explain micelle formation.

b) What is molar mass ? Determine the molar mass of H_3PO_4 (Atomic mass of H= 1 ,
P=31.0 O =16)

OR

b) i) How many moles are in 22 gms of copper (At. weight of Cu = 63.5).

ii) How many moles are in 20 gms of aluminum (At. Weight of Al =).

c) Explain the titration curve of acetic acid.

OR

c) Explain the terms K_a and K_b .

d) Explain bicarbonate buffer system.

OR

d) Explain pOH ? What is OH^- of solution whose pOH is 9.0?

e) Explain the formation of hydronium ion.

OR

e) Explain molarity and normality.

Q.2) B) Answer the following (Each question carries 4 marks)

20

a) Draw the structures of i) tyrosine ii) methionine iii) isoleucine iv) valine.

OR

a) Draw the structures of i) histidine ii) phenylalanine iii) glutamine iv) leucine

b) Explain reaction of amino acids with Ninhydrin reagent.

OR

b) Explain the reaction of amino acids with Edman's reagent and Dansyl's reagent.

c) Explain characteristics of peptide bond.

OR

c) Explain peptide bond formation.

d) Explain secondary structure of protein.

OR

d) Explain haemoglobin structure.

e) Which are acidic amino acids?

OR

e) Which are neutral amino acids?

Q.3) Answer the following (Each question carries 4 marks)

20

a) Give the reaction for the formation of aldaric acid.

OR

a) Explain D and L isomers.

b) Give the structure of glucose and Ribose

OR

b) Give the reaction which explains the osazone formation (For Fructose)

c) Explain the classification of monosaccharides.

OR

c) Explain the oxidation reaction of carbohydrates with respect to glucose.

d) Draw and describe the structure of cellulose.

OR

d) What are homopolysaccharides? Describe any of them in detail.

e) Give the structure of D-glucosamine, D glucuronic acid and myo-inositol.

OR

e) What are mucopolysaccharides and explain any two of them in detail.

Q.4) A) Answer the following.(Each question carries 3 marks)

15

a) Draw the structure of water molecule.

OR

a) Explain mole.

b) Which are basic amino acids?

OR

b) Draw the structure of ionized amino acid.

c) What are polysaccharides?

OR

c) What are carbohydrates and give its formula.

Q.4) B) Answer the following. (Each question carries 2 marks)

a) Enlist neutral solvents.

OR

a) Draw pH scale and state one biological application.

b) Give any two biological role of proteins.

OR

b) Draw the structure of α helix.

c) Draw pyran and furan structures?

OR

c) Explain why carbohydrate is the prime source of energy.