Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.TECH /FT(N)/SEM-3/FT-303/2012-13

2012

CHEMISTRY OF FOOD

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 : $10 \times 1 = 10$

i) The example of hydrocarbons found in plant lipids is

a) carotenoids b) lecithin

c) squalene d) all of these.

ii) Brown seaweed polysaccharide is

a) gum acacia b) agar

c) carrageenan d) algin.

iii) Which one of the following is not a monosaccharide ?

a) Sorbose b) Galactose

c) Dextran d) Arabinose.

iv) Glucose shows its α & β structure due to

a) isomerisation b) mutarotation

c) polymerization d) none of these.

v) The aromatic ring containing amino acid is
   a) serine b) arginine
   c) tyrosine d) cystiene.

vi) Zein is deficient of the following two essential aminoacids
   a) leucine & isoleucine
   b) lysine & tryptophan
   c) threonine & methionine
   d) arginine & histidine.

vii) Myosin is
   a) cereal protein b) fish protein
   c) meat protein d) none of these.

viii) Example of milk whey protein is
   a) α-casein b) *K*-casein
   c) albumin d) β-lactoglobulin.

ix) Zwitterions of protein molecules are formed at the condition of
   a) low pH b) high pH
   c) isoelectric point d) all of these.

x) Isoelectric point of milk protein is
   a) 5·8 b) 4·6
   c) 7·9 d) 6·4.

xi) The amino acids in proteins are united through an acid-amide type of bond called
   a) glycosydic linkage b) peptide linkage
   c) both (a) and (b) d) none of these.

xii) In lactose molecule the linkage between glucose and galactose molecule will be
   a) α – 1 : 4 – glycosidic linkage
   b) α – 1 : 2 – glycosidic linkage
   c) β – 1 : 4 – glycosidic linkage
   d) α – 1 : 6 – glycosidic linkage.

xiii) Food tannins are
   a) caffeic acid b) gallic acid
   c) aspartic acid d) none of these.

xiv) Butyric acid is found in

a) cheese b) yoghurt

c) butter d) all of these.

xv) The co-enzyme of vitamin B_6 is

a) TPN b) TPP

c) PALPO d) none of these.

GROUP – B

(Short Answer Type Questions)

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

2. What is colloid ? How colloidal interactions in food materials determine the solubility of food components ? What is water activity ? 1 + 3 + 1
3. What do you know about the physiological functions of lipids ? Why natural fatty acids contain even number of carbon atoms ? 3 + 2
4. What is protein ? Why it is called a 'macromolecule' ? Explain different techniques employed for isolation of proteins. 1 + 1 + 3
5. What is gum ? How gums are classified in terms of their sources of production ? Briefly explain their role in food industry. 1 + 2 + 2
6. Name one water soluble vitamin and explain its role in human nutrition. What type of coenzyme is produced by thiamine or vitamin B_1 ? Mention a few functions of such enzymes containing thiamine coenzyme. 2 + 1 + 2

GROUP – C

(Long Answer Type Questions)

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

7. Discuss the moisture isotherm at 20 degree centigrade relating water activity with relative reaction rate in food system.
8. Discuss the different methods of purification of proteins.

9. What do you mean by gelatinization of starch ? Mention the changes which are taken place during this process in a starch riched food. 7 + 8

10. What is globular protein ? What types of changes occur in meat during curing process ? What is actomyosin ? Why egg ovalbumin is a complete protein ? Describe the biochemical changes occur during spoilage of fish due to improper storage for longer time. What is the fate of TMAO and glycogen of marine fish on spoilage ? 1 + 3 + 2 + 2 + 4 + 3

11. What are porphyrins ? Name one magnesium-containing porphyrin and one iron-containing porphyrin. How plant porphyrin-derivatives undergo changes on storage and on processing at acidic and alkaline pH ? Why removal of chlorophyll is necessary during processing of vegetable oils ? How β-carotene adds to nutritional value of food materials ? Briefly explain the role of potassium and sodium in our body.
2 + 2 + 4 + 2 + 2 + 3

12. Write short notes on any *five* of the following : 5 × 3
    a) EAA
    b) Classification of wheat protein
    c) Stability of vitamin C in food processing
    d) SDS-PAGE in food analysis
    e) Oxidative and hydrolytic rancidity
    f) Processing loss of anthocyanin
    g) Anti-nutrient of food
    h) Food emulsions.

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