*Name* : .....

*Roll No.* : .....

*Invigilator's Signature* : .....

**CS/B.Tech(FT-N)/SEM-3/FT-303/2011-12**

**2011**

# 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 × 1 = 10

i) β-1 : 4-glycosidic linkage is formed in

a) sucrose molecule b) maltose molecule

c) lactose molecule d) none of these.

ii) Brown seaweed polysaccharide is

a) gum acacia b) agar

c) algin d) carrageenan.

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

a) Sorbose b) Mannose

c) Dextrin d) Arabinose.

iv) Glucose shows its α and β structure due to

a) isomerisation b) mutarotation

c) polymerisation d) none of these.

v) The aromatic ring containing amino acid is

a) Serine b) Arginine

c) Tyrosine d) Cystiene.

vi) Corn protein ( Zein ) is deficient of ..... essential aminoacids.

a) Leucine and Isoleucine

b) Lysine and Tryptophan

c) Threonine and Methionine

d) Arginine and 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) $\alpha$-casein b) *K*-casein

c) albumin d) $\beta$-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) Antinutritional factors found in soy protein is

a) alanine b) conglycine

c) glycine d) none of these.

xii) Lycopene is an example of

a) carotenoid b) anthoxanthin

c) anthocyanin d) catechin.

xiii) Example of phospholiphids is

a) fatty aldehyde b) lecithin

c) cephalin d) both (b) and (c).

xiv) Naturally occurring antioxidant is

a) Vitamin *D* b) Vitamin *C*

c) Vitamin *E* d) both (b) and (c).

xv) Enzymatic browning can be prevented by the addition of

a) citric acid b) lactic acid

c) ascorbic acid d) sorbic acid.

## GROUP – B
## ( Short Answer Type Questions )

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

2. What is water activity ? Explain the relationship between water activity and food quality. What do you mean by IMF ? $1 + 3 + 1$

3. What are the different parts of water remain associated with a food material ? How food deterioration may occur due to the presence of different types of water binding ? $2 + 3$

4. What are the different forms of proteins ? Discuss with proper examples.

5. Classify proteins on the basis of (i) solubility (ii) source. Give relevant examples. $2\frac{1}{2} + 2\frac{1}{2}$

6. What is the importance of saponification reaction in fats and oil industry ? Classify lipids based on origin and degree of saturation. $2\frac{1}{2} + 2\frac{1}{2}$

## GROUP – C
## ( Long Answer Type Questions )

Answer any *three* of the following. 3 × 15 = 45

7. What is gelatinization of starch ? Explain with diagram. What are the factors that govern gelatinization of starch ? Compare between strach gel and pectin gel. What is meant by low and high methoxy pectin ? Mention some uses of starch and pectin in food industries showing their molecular form. 3 + 3 + 3 + 3 + 3

8. What is meant by denaturation of proteins ? Mention the factors that affect denaturation of proteins. Write short notes on Milk protein, Wheat protein, Egg protein. 2 + 4 + 9

9. a) What will be the oxidized product of glucose under the influence of strong oxidizing agent ? How glucosazone can be formed ? What is sorbitol ? 2 + 3 + 2

   b) How does milk sugar undergo enzymatic breakdown process ? What is invert sugar ? Why honey is sweeter than other sugars ? Give an example reducing sugar and non-reducing sugar each. 2 + 2 + 2 + 1 + 1

10. Discuss the change of colour occurs during heat processing of chlorophyll and also explain its storage stability. How flavour constituent of spices can be influenced by heat treatment ? What are the colour components of red beet, carrot, pea and tomato ? State the function of MSG in food. How does butter provide flavour in food ? 5 + 4 + 4 + 1 + 1

11. Write short notes on any *three* of the following : 3 × 5

    a) Polyacrylamide Gel Electrophoresis ( PAGE )

    b) Stability of vitamin *E* in food processing

    c) Column chromatography

    d) IMF

    e) Reichert-Meissl number.