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FPT-403/BFS/4th Sem/2013/M

BASICS OF FOOD CHEMISTRY

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. (a) Define covalent bond and hydrogen bond. 2
- (b) What do you understand by dissociation of water and give the relation between pH and temperature ? 4
- (c) What is water activity ? What is its significance ? 3
- (d) What do you mean by storage stability of foods ? Explain the effect of a_w on storage stability. 4
- (e) Differentiate between free water and bound water. 1

[Turn over

2. (a) Define glycans. Classify them with an example of each. 3
- (b) Write the various reactions of a monosaccharide. 6
- (c) Define DP and DE. 2
- (d) What is the difference between nutrients and nutrition ? Classify nutrients. 3
3. (a) Draw the structure of sucrose, maltose and lactose. 6
- (b) Define hydrolysis. Explain with an example. 2
- (c) Briefly explain various types of browning reactions. 4
- (d) What are the important functions of protein? 2
4. (a) Write short notes on : 6
- (i) Cellulose
- (ii) Starch
- (iii) Pectin.

- (b) Draw the structure of any four amino acids and classify them according to their functional group. 6
- (c) Differentiate between essential and non-essential amino acids with an example of each. 2
5. (a) Write short notes on : calcium, iron, magnesium and phosphorus. 6
- (b) Explain various levels in the structure of protein. 4
- (c) What do you mean by hydrogenation ? What is its effect on shelf life of fat/oil ? 3
- (d) Differentiate between saturated and unsaturated fatty acids. 1
6. (a) Classify lipids. Explain the formation of fat/oil in the form of a reaction. 3
- (b) What do you mean by denaturation of protein ? Explain with an example. 2

(c) Write short notes on any *two* of the following : 5

- (i) Chlorophyll
- (ii) Anthocyanins
- (iii) Carotenoids.

(d) Fill in the blanks : 4

Vit	Solubility	Deficiency disease	Source
i.			green leafy veg. carrots
ii.		Rickets	
iii. Vit C			
iv.	Water soluble		

7. (a) What is activation energy ? What are the factors effecting the enzyme action ? 6

(b) Define acidity and rancidity. 4

(c) Draw the structure of : 1+1+2=4

- (i) Galactopyranose
- (ii) HMF
- (iii) Pentadecanoic acid.

8. (a) Explain in detail the formation of an emulsion. What are the basic requirements of an emulsifier to form stable emulsion ?

6

(b) Find the amount of water removed from 30 kg of fruit pulp if the amount of dry matter in the final dehydrated pulp is 10 kg that contributes to 50% of the dehydrated pulp by weight.

5

(c) Write a short note on food additives. 3