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53 (FPT 304) FCHN

2016

FOOD CHEMISTRY AND NUTRITION

Paper : FPT 304

Full Marks : 100

Time : Three hours

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

Answer **any five** questions out of **seven**.

1. (a) Define Sugar. Why monosaccharides are referred to as simple sugars? Give examples of simple sugars. 4
- (b) What is Water Activity? Explain its significance. 4
- (c) What is Pro-vitamin? Write the functions and chemical names of vitamin E and K. 6
- (d) Discuss in brief the importance of food colorants. 6

Contd.

2. (a) Define the following terms : $2 \times 5 = 10$

- (i) HMF
- (ii) Monomer
- (iii) Peptide bond
- (iv) Maltose
- (v) Bound water.

(b) Explain hydrogenation and its effect on shelf life of fat/oil. 4

(c) What is polypeptide? Explain how the formation of dipeptide bond takes place. 2+4

3. (a) Differentiate between : $3 \times 3 = 9$

- (i) Essential and Non-essential FA
- (ii) Acidity and Rancidity
- (iii) Hydrophobic and Hydrophilic

(b) What is mutarotation? Draw the structure of Alpha-D-Glucopyranose and Alpha-D-Glucofuranose. 5

(c) What is saponification? Compare it's fat with trans fat. 6

4. (a) Explain caramelization and its consequences. 4
- (b) What do you mean by hydrolysis? Give examples. 4
- (c) What are triglycerides? Explain simple and compound lipids. 6
- (d) What is antioxidant? Explain vitamins as antioxidant. 6
5. (a) Explain moisture sorption isotherm for a typical food product, showing the hysteresis. 7
- (b) What is Salt bridge? Explain in brief the secondary structure of protein. 8
- (c) Explain PUFA and MUFA. 2
- (d) What are the three principal types of flavorings used in foods? 3
6. (a) Write the chemical formula for : 5×1=5
- (i) Glucose
- (ii) Stearic acid
- (iii) Ribose
- (iv) Glyceraldehyde
- (v) Palmitic acid.

- (b) What are D and L isomers? Show the structure of D and L-glyceraldehydes. 2+2+2
- (c) Explain solubility of lipids. 3
- (d) What is amino-acid? Give *three* important properties of amino-acid. 4
- (e) Write *two* important functions of lipids. 2
7. (a) Write short notes on : **(any four)** 4×4=16
- (i) Fat soluble vitamins
 - (ii) Strecker Aldehyde
 - (iii) Maillard reaction
 - (iv) BMR
 - (v) Amadori-rearrangement
 - (vi) Minerals in food.
- (b) What are the *two* functional groups of monosaccharide? 2
- (c) Write the composition of raffinose. 2
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