

2015
JMS

Roll No. _____

M.Tech. Food Technology
I Semester Examination 2015
Course Code: MFTC-102
Course Title: Food Chemistry

Time: 3 hours

Max Marks: 75

Read the instructions carefully. Marks are mentioned against each question

Q1. Answer each of the following in one line/one word. (1 x 15)

- z.** Name the deficiency disease caused by vitamin C.
- aa.** What class of carbohydrates does pectin fall in?
- bb.** Define dextrinization **OR** retrogradation.
- cc.** Name the coenzyme forms of niacin.
- dd.** Name any sulphur containing amino acid.
- ee.** What is invert sugar?
- ff.** Give two examples of PUFA.
- gg.** Define chelate and give an example.
- hh.** What functional role does sodium play in human body?
- ii.** What structural conformation does the structure of water molecule assume?
- jj.** Ascorbic acid, one of the least stable vitamins, readily and reversibly oxidizes to form _____.
- kk.** The energy required to convert 1 gm of ice to water at 273 K is known as _____.
- ll.** The pungent compound in pepper is _____.
- mm.** _____ value denotes the mineral content in foods.
- nn.** Gluten and Zein protein is present in _____ and _____, respectively.

Q2. Attempt any three of the following (5 X 3)

- (f) Write detailed notes on any **two**: (i) Metal uptake in canned foods, (ii) Anthocyanins and flavonoids, (iii) Umami and Kokumi substances, (iv) Polysaccharides.
- (g) Explain: Oxidative phosphorylation **OR** cholesterol synthesis from acetyl coA.
- (h) Give a brief account of various hormones and their effects on metabolic reactions w.r.t their implications in food industry.
- (i) What is the difference between transamination and deamination? Explain various reactions occurring in transdeamination.

(j) Define water activity. How does it affect the stability and shelf life of foods?

Q3. Attempt any three of the following (5 X 3)

- (g) Define and enlist essential amino acids. Explain the secondary and tertiary structure of proteins.
- (h) Explain in detail, maillard browning and its significance in foods.
- (i) What are fatty acids? Explain the mechanism of autooxidation and lipid peroxidation of fats.
- (j) Write a short note on the following in view of the applications in food industry: (i) Mesomorphic lipids, (ii) Protein hydrolysates.
- (k) Elaborate on the various physical and chemical properties and structures of water as well as ice.

Q4. Attempt any three of the following (5 X 3)

- (f) Differentiate between intentional and incidental additives giving appropriate examples.
- (g) What are sorption isotherms? Give their significance in food preservation.
- (h) Give the structure, dietary sources, RDA, functions and deficiency syndromes of the following (any two): (i) Vitamin A, (ii) Vitamin K, (iii) Niacin, (iv) Vitamin B₁₂
- (i) What do you understand by mineral bioavailability? Explain the factors affecting mineral bioavailability in human body.
- (j) Give a detailed account on the chemistry of flavour volatiles from plant and animal derived fats and oils.

Q5. Attempt any three of the following (5 X 3)

- (a) What are the various antinutritional factors present in foods. Give a brief account.
 - (b) Give the structure and properties of the pigment chlorophyll. What are the different changes that it undergoes during processing. Name its various forms.
 - (c) Explain the importance of sensory assessment of various flavours in food industry.
 - (d) Give a detailed account of chemical nature of sulphur volatiles present in fruits and vegetables **OR** fish products and seafoods.
 - (e) What is an ideal antimicrobial preservative? Give a brief account of: (a) Benzoic acid, (b) Sulphur dioxide and sulphites, to be used as preservatives in food products.
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