2013

Q.1 Kawashiorkor disease is caused due to the deficiency of

    (A) lysine   (B) unsaturated fatty acids

    (C) vitamin K   (D) protein

Q.2 Which of the following statements is TRUE in case of oxidative rancidity of vegetable oils and fats?

    (A) It is caused by the reaction of saturated fatty acids and oxygen

    (B) It involves polymerization of fatty acids

    (C) It is caused by the reaction of unsaturated fatty acids with oxygen

    (D) It is caused by oxidative enzymes

Q.3 The food borne disease, Q fever is caused by the organism,

    (A) Clostridium perfringens   (B) Coxiella burnetti

    (C) Bacillus cereus   (D) Staphylococcus aureus

Q.4 The primary bacterial spoilage of poultry meat at low temperature, with characteristic sliminess at outer surface, is caused by

    (A) Pseudomonas spp.   (B) Aspergillus spp.

    (C) Bacillus spp.   (D) Candida spp.

Q.5 The weight gain (in gram) per gram protein consumed is called

    (A) Net Protein Ratio (NPR)   (B) Biological Value (BV)

    (C) Protein Efficiency Ratio (PER)   (D) Chemical Score (CS)

Q.6 Which of the following carbohydrates is NOT classified as dietary fibre?

    (A) Agar   (B) Pectin

    (C) Sodium alginate   (D) Tapioca starch

Q.7 In the extruder barrel, the compression is achieved by back pressure created by the die and by

    (A) increasing pitch and decreasing diameter of the screw

    (B) using the tapered barrel with constant pitch

    (C) increase in the clearance between barrel surface and screw

    (D) opening of the die

Q.8 The brown colour of bread crust during baking is due to Maillard reaction between

(A) aldehyde groups of sugars and amino groups of proteins

(B) aldehyde groups of sugars and vitamins

(C) aldehyde groups of sugars and salt

(D) starch and yeast

Q.9 Blanching influences vegetable tissues in terms of

(A) enzymes production

(B) alteration of cytoplasmic membrane

(C) stabilization of cytoplasmic proteins

(D) stabilization of nuclear proteins

Q.10 Match the toxicants of plant foods in Group I with their main plant source given in Group II.

Group I	Group II
P) Gossypol	1) Khesari Dahl (Lathyrus sativus)
Q) Vicine	2) Cotton seeds
R) Glucosinolates	3) Fava beans
S) BOAA (beta-N- Oxalyl Amino L-Alanine)	4) Rapeseeds

(A) P-2, Q-3, R-4, S-1 (B) P-2, Q-4, R-3, S-1

(C) P-3, Q-1, R-2, S-4 (D) P-4, Q-3, R-1, S-2

Q.11 Match the products in Group I with the enzymes used for their preparation given in Group II.

Group I	Group II
P) Aspartame	1) Lipase
Q) Cocoa butter substitute	2) Glucose isomerase
R) High fructose corn syrup	3) Thermolysin
S) Lactose free milk	4) Invertase
	5) Beta galactosidase

(A) P-2, Q-1, R-4, S-3 (B) P-3, Q-1, R-2, S-5

(C) P-1, Q-3, R-2, S-4 (D) P-1, Q-2, R-4, S-5

Q.12 Match the food items in Group I with the type of colloidal dispersion given in Group II.

Group I	Group II
P) Mayonnaise	1) Sol
Q) Tomato ketchup	2) Emulsion
R) Cake	3) Gel
S) Curd	4) Solid foam

(A) P-4, Q-1, R-2, S-3 (B) P-3, Q-1, R-2, S-4

(C) P-2, Q-3, R-4, S-1 (D) P-2, Q-1, R-4, S-3

Q.13   [a] Assertion: In the presence of sucrose, the temperature and time for gelatinization of starch increases .

[r] Reason: Sucrose, due to its hygroscopic nature, competes with starch for water needed for gelatinization.

(A) Both [a] and [r] are true and [r] is the correct reason for [a]

(B) Both [a] and [r] are true but [r] is not the correct reason for [a]

(C) Both [a] and [r] are false

(D) [a] is true but [r] is false

Q.14 Thermal death of viable spores of Bacillus subtilis in a food sample follows a first order kinetics with a specific death rate constant of 0.23 min-1 at 100 °C. The time (in minutes) required to kill 99% of spores in the food sample at 100 °C will be

(A) 10   (B) 20   (C) 23   (D) 60

Q.15 How much skim milk (in kg) containing 0.1% fat should be added to 500 kg of cream containing 50% fat to produce standardized cream containing 36% fat?.

(A) 140   (B) 165   (C) 195   (D) 210

Q.16 Which of the following statements is NOT CORRECT in relation to muscle proteins ?

(A) Actin and myosin interact to form actomyosin which is responsible for muscle contraction

(B) Collagen contributes to the toughness of muscles due to its abundant presence

(C) Elastin, a constituent of ligaments, is tougher than collagen

(D) Actomyosin is not the main state of actin and myosin in post-mortem muscles

Q.17 & 18: A cold storage plant is used for storing 50 tonnes of apples in perforated plastic crates. During the storage, apples are cooled down from 28°C to storage temperature of 2°C. (Specific heat of the apple = 0.874 kCal kg^{-1} °C^{-1})

     A) If the required cooling is attained in 16 hours, the refrigeration plant capacity (in Tons) is

     (1) 19   (2) 24   (3) 29   (4) 32

     B) If the cooling is to be achieved in 8 hours, the power required (in Horse Power) to operate the plant having a Coefficient of Performance (COP) of 2.5 will be

     (1) 47   (2) 65   (3) 89   (4) 96

Q.19&20: An actively growing culture of *Acetobacter aceti* is added to the vigorously aerated fermented fruit juice medium containing 10 g l^{-1} ethanol to produce vinegar. After some time, the ethanol concentration in the medium is 0.8 g l^{-1} and acetic acid produced is 8.4 g l^{-1}.

     A) What is the conversion efficiency of the process with respect to theoretical yield?
     (1) 30   (2) 50   (3) 70   (4) 90

     B) The concentration of fermentable sugars (g l^{-1}) required in the fruit juice to produce 10 g l^{-1} ethanol, based on 90% fermentation efficiency is

     (1) 20.0   (2) 21.7   (3) 22.8   (4) 25.1

Q.21 and 22: An enzyme catalysed reaction (following Michaelis-Menten kinetics) exhibits maximum reaction velocity (Vm) of 75 nmol l^{-1} min^{-1}. The enzyme at a substrate concentration of 1.0x10-4 M shows the initial reaction velocity of 60 nmol l^{-1}min^{-1}.

     A) The Km value of the enzyme in molar concentration (M) is

     (1) 2.5×10^{-5} (2) 5.0×10^{-5}
     (3) 2.5×10^{-4} (4) 5.0×10^{-4}

     B) If the enzyme concentration for the reaction is doubled at a substrate concentration of 5.0×10^{-5} M, the initial reaction velocity in nmol l^{-1} min^{-1} will be

     (1) 37.5   (2) 50   (3) 60   (4) 100