2012

Q.1 Among the following fatty acids, which group is known as essential fatty acids?

(A) 9,11-Octadecadienoic and 9,11,13-Octadecatrienoic
(B) 9,12-Octadecadienoic and 9,12,15-Octadecatrienoic
(C) 9-Octadecenoic and 9,11-Octadecadienoic
(D) 9,11-Octadecadienoic and 9-Eicosenoic

Q.2 Cellulose, the structural polysaccharide of plant, is a polymer of

(A) β-D-Glucose
(B) α-D-Glucose
(C) β -D-Galactose
(D) α-D-Galcturonic acid

Q.3 The important role of carotenoids in the human diet is their ability to serve as precursors of

(A) Vitamin C (B) Vitamin D (C) Vitamin A (D) Vitamin K

Q.4 Which one of the following microorganisms is used in the preparation of bread?

(A) *Candida utilis* (B) *Saccharomyces cerevisiae*
(C) *Saccharomyces cevarum* (D) *Aspergilus niger*

Q.5 Which one of the microorganisms given below is NOT RESPONSIBLE for ropy or stringy fermentation of milk?

(A) *Alcaligenes viscolactis*
(B) *Enterobacter aerogenes*
(C) *Streptococcus cremoris*
(D) *Streptococcus lactis*

Q.6 A mild heat treatment of foods that destroys pathogens and extends its shelf life is called

(A) Baking (B) Blanching
(C) Sterilization (D) Pasteurization

Q.7 The most common and least expensive plastic film used for packaging of solid food materials is

(A) Polyethylene (B) Polystyrene
(C) Polypropylene (D) Polyvinylchloride

Q.8 Reassociation of amylose and formation of crystalline structure upon cooling of cooked starch solution is termed as

(A) Synersis (B) Gelatinization
(C) Retrogradation (D) Denaturation

Q.9 Thermal destruction of microorganisms follows a kinetics of

(A) Zero order
(B) First order
(C) Second order
(D) Fractional order

Q.10 Which one of the following is NOT A CORRECT statement?

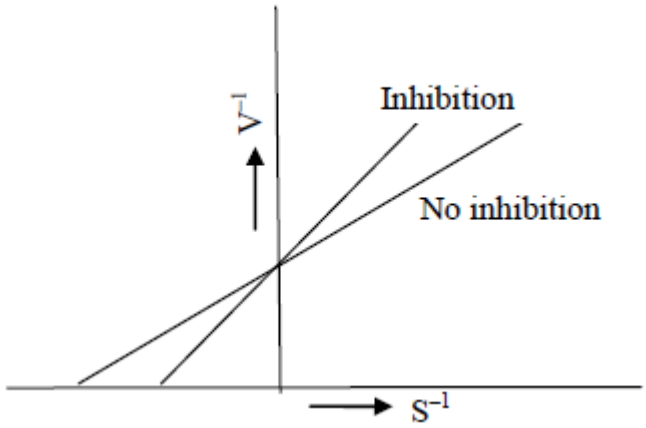
(A) Meatiness is the taste produced by compounds such as glutamate in products like cheese, soy sauce.

(B) Astringency is a dry mouth feel in the oral cavity that is most associated with phenolic compounds.

(C) Saltiness is a taste that is mainly produced by chloride ions.

(D) Sourness is related to acidity and is sensed by hydrogen ion channels in the human tongue.

Q.11 The following plot represents the Lineweaver-Burk equation of an enzymatic reaction both in the presence and the absence of inhibitor. Here, V is the velocity of reaction and S is the substrate concentration.



The nature of inhibition shown in the plot is

(A) Non-competitive

(B) Anti-competitive

(C) Competitive

(D) Mixed type

Q.12 Make the correct match of the food constituents in Group I with their nature given in Group II.

Group I	Group II
P) Ascorbic Acid	1) Sugar
Q) Phenyl alanine	2) Chelate
R) Dextrose	3) Amino Acid
S) Haemoglobin	4) Antioxidant

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

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

Q.13 Make the correct match of the fermented food products in Group I with the microorganisms in Group II.

Group I	Group II
P) Yoghurt	1) Lactobacillus acidophilus and Lactobacillus delbrueckii
Q) Cheese	2) Leuconostoc mesenteroides and Lactobacillus plantarum
R) Sauerkraut	3) Lactobacillus delbrueckii and Streptococcus thermophillus
S) Kefir	4) Lactobacillus casei and Streptococcus thermophillus

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

Q.14 Match the following between organelle or cellular components of a bacterium cell in Group I with the constituents and functionalities in Group II.

Group I	Group II
P) Cytoplasmic membrane	1) Protein synthesis
Q) Flagellum	2) Peptidoglycan
R) Cell wall	3) Phospholipid bilayer
S) Ribosome	4) Motility of cell

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

Q.15 Thermal death time (TDT) of Clostridium botulinum at 121 ^{0}C is 2.78 min with a z-value of 10 ^{0}C.The TDT of the microorganism at 116 ^{0}C (in min) is
(A) 5.270 (B) 8.791 (C) 1.390 (D) 0.712

Q.16 Make the correct match between specific food processing operations in Group I with their mechanism of action in Group II.

Group I	Group II
P) Ball Mill	1) Compression and shear
Q) Roller Mill	2) Pressure bursting
R) Flash Peeling	3) Friction and shear
S) Abrasive Peeling	4) Impact and shear

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

Q.17 & 18: 650 g of a wet food containing 405 g water is dried in a tray dryer to a final moisture content of 6.8 % (dry basis). It is observed that the drying process occurs under constant rate period and it takes 8 h.

A) Initial moisture content (in percentage) of the food on wet basis is
(1) 62.31 (2) 70.45 (3) 162.31 (4) 165.31

B) The rate of drying (in kg/h) is
(1) 128.79 (2) 126.35 (3) 77.81 (4) 0.0485

Q.19 & 20 Air at 1 atmospheric pressure (101.325 kPa) and 30 ^{0}C with absolute humidity of 0.0218 kg/kg of dry air is flowing in a drying chamber. The saturated vapor pressure of water (p^0_w , in kPa) is related to temperature (T, in ^{0}C) as given below

$\ln p^o_w = 18.6556 - \frac{5217.635}{T+273}$

Heat capacities of dry air (average molecular weight 29) and that of water vapor (molecular weight 18) are1.005 and 1.884 kJ/kg.K, respectively. Latent heat of vaporization of water at reference temperature (0 ^{0}C) is 2502.3 kJ/kg.

A) The relative humidity of air (in percentage) is
(1) 62.82 (2) 68.22 (3) 86.62 (4) 81.80

B) The enthalpy (in kJ/kg) of moist air is
(1) 85.93 (2) 54.55 (3) 31.38 (4) 99.38

Q.21 & 22: The total solids content in a milk sample is 18 %. It is desired to produce 1000 kg of sweetened condensed milk (SCM) having 40 % sugar, 25 % moisture and rest milk solids.

A) What is the 'Sugar Ratio' (in percentage) in the SCM in terms of sugar and water content in the final product?
(1) 48.19 (2) 61.54 (3) 54.16 (4) 56.14

B) If the 'Concentration Degree' is 2.5, the amount of sugar added in kg in the milk sample is
(1) 246.16 (2) 216.64 (3) 192.76 (D) 224.56