M: FOOD TECHNOLOGY

Q. 1 – Q. 10 carry one mark each.

Q.1 Bread staling is caused by _____.

(A) Caramelisation
(B) Gelatinisation
(C) Retrogradation
(D) Aggregation

Q.2 The grades of tea in the increasing order of their leaf size are ____, _____ and _____ .

(A) Souchang, pekoe and orange pekoe
(B) Pekoe, souchang and orange pekoe
(C) Orange pekoe, souchang, and pekoe
(D) Orange pekoe, pekoe, and souchang

Q.3 Fruit juice is being pasteurized in a tubular heat exchanger. The retention time in holding tube of 0.2 m^2 cross sectional area is 3 seconds. If the flow rate of juice is 0.4 m^3 s^{-1}, the length of the holding tube in m, is _____ .

Q.4 The oil, which experiences flavor reversion even at the lower peroxide value is _____.

(A) Mustard
(B) Soybean
(C) Palm
(D) Sesame

Q.5 80 kg of wheat containing 10 kg of moisture has been dried to a moisture content of 8% wet basis in 3 hours under constant rate period of drying. The drying rate in kg h^{-1} is _____

Q.6 The rate of cream separation in a disc bowl centrifuge can be increased by _____ .

(A) Increasing the size of the bowl
(B) Lower viscosity of fluid
(C) Increasing RPM of the bowl
(D) All of these

Q.7 Rigor mortis is caused due to _____ .

(A) Unavailability of ATP which is necessary to break the link between actin and myosin
(B) Rupturing of tissue due to unavailability of oxygen
(C) Decrease in body temperature
(D) Breakage of rigid protein molecules in sarcoplasm

Q.8 Oxygen is permeating through an EVOH film of thickness ‘t’ and solubility coefficient ‘S’. If diffusivity of oxygen through the film is ‘D’, then permeability of oxygen through the film will be _____

(A) D/t
(B) D/S
(C) D × S
(D) S/D

Q.9 Condensing steam is used to heat vegetable oil in a double pipe co-current heat exchanger. If the inlet and outlet temperature of steam are T_{hi} and T_{ho}, and for vegetable oil T_{ci} and T_{co} respectively, the log mean temperature difference (ΔT_{LM}) will be _____ .

(A) $\dfrac{T_{hi}-T_{co}}{\ln\dfrac{T_{hi}-T_{ci}}{T_{hi}-T_{co}}}$

(B) $\dfrac{(T_{ho}-T_{co})-(T_{hi}-T_{co})}{\ln\dfrac{T_{ho}-T_{ci}}{T_{ho}-T_{co}}}$

(C) $\dfrac{(T_{hi}-T_{co})-(T_{ho}-T_{ci})}{\ln\dfrac{T_{hi}-T_{ci}}{T_{ho}-T_{co}}}$

(D) $\dfrac{T_{co}-T_{ci}}{\ln\dfrac{T_{hi}-T_{ci}}{T_{hi}-T_{co}}}$

Q.10 To produce Blue veined cheese, the curd is inoculated with strains of _____.

(A) *Propioniobacterium shermanii*
(B) *Penicilium roqueforti*
(C) *Pencilium camemberti*
(D) *Brevibacterium linens*

Q. 11 – Q. 20 carry two marks each.

Q.11 Match the food spoilage organisms given in Column I with the associated foods given in Column II

Column I	**Column II**
P. *Clostridium botulinum*	1. Fish
Q. *Salmonella spp.*	2. Cooked starch foods
R. *Vibrio parahaemolyticus*	3. Meat, egg and poultry
S. *Bacillus cereus*	4. Canned foods

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

Q.12 Fluid is flowing inside a pipe of radius 'R' in fully developed laminar flow. If the velocity of the fluid at the centre at a distance 'L' is 'v_{max}', velocity at radial distance of ¾ (R) will be __times v_{max}

(A) 9/16 (B) 7/16 (C) 16/9 (D) 16/7

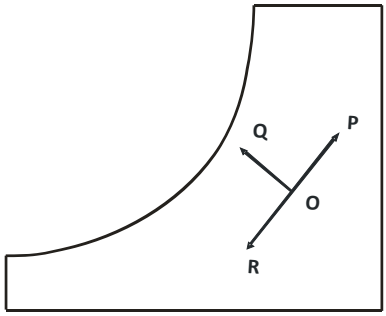
Q.13 The amount of sugar to be added (kg) to 40 kg of mango pulp to increase its total soluble solids from 20% wt. to 65% wt. is _____

Q.14 a) **Assertion:** Acidulates are added in soft drinks to provide a buffering action.
r) **Reason:** Buffers tend to prevent changes in pH and prevent excessive tartness.
Choose the correct answer from the following

(A) Both a) and r) are true but r) is not the correct reason
(B) Both a) and r) are true and r) is the correct reason for a)
(C) a) is true but r) is false
(D) Both a) and r) are false

Q.15 The D_{121} and Z values for C. *botulinum* spores in canned food are 0.2 min and 10 ^{o}C, respectively. Total time required in min, to reduce the spores from 10^{2} to 10^{-6} at 111 ^{o}C is _____ .

Q.16 In a typical Psychrometric Chart shown below, the processes OP, OQ and OR related to air water vapor mixture are _____, _____ and _____.



(A) Cooling & dehumidification, cooling & humidification, heating & humidification
(B) Cooling & dehumidification, heating & humidification, drying
(C) Heating & humidification, cooling & humidification, cooling & dehumidification
(D) Heating & humidification, cooling & dehumidification, drying

Q.17 Match the enzymes in Column I with their functions in Column II

Column I	**Column II**
P. Amylase	1. Conversion of sucrose to glucose and fructose
Q. Invertase	2. Softening of dough
R. Phosphatase	3. Effectiveness of pasteurization
S. Protease	4. Conversion of starch to maltose

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

Q.18 Match the terms in Column I with their most appropriate description in Column II

Column I	**Column II**
P. Enrichment	1. Overcome the deficiency of nutrients by mixing of two plant sources
Q. Fortification	2. Overcome the deficiency of nutrients from a synthetic source
R. Supplementation	3. Restoration of nutrients which are lost during processing
S. Complementation	4. Addition of nutrients which may or may not originally present

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

Q.19 Match the products in Column I with their Original Phase in Column II

Column I	**Column II**
P. Milk	1. Colloidal
Q. Butter	2. Solution
R. Lactose	3. Water in oil emulsion
S. Casein	4. Oil in water emulsion

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

Q.20 a) **Assertion:** Presence of low sulphur containing amino acids makes casein in milk to boil, sterilize and concentrate without coagulation even at higher temperatures.

r) **Reason:** This is due to the restricted formation of di-sulphide bonds resulting in increased stability.

Choose the correct answer from the following

(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

END OF THE QUESTION PAPER