

Q. 1 – Q. 10 carry one mark each & Q.11 - Q.20 carry two marks each.

Q.1 Which of the following is an oil soluble pigment present in fruits and vegetables?

- (A) Flavonoids (B) Carotenoids (C) Anthocyanins (D) Tannins

Q.2 Which of the following represent the group of saturated fatty acids?

- (A) Lauric, Myristic, Arachidic (B) Palmitic, Linoleic, Linolenic
(C) Capric, Stearic & Oleic (D) Behenic, Caprylic, Arachidonic

Q.3 The anti-nutritional factor present in fava bean is

- (A) Gossypol (B) Curcine
(C) Vicine (D) Cyanogen

Q.4 Which of the following is a Gram positive bacteria?

- (A) *Listeria monocytogenes*
(B) *Proteus vulgaris*
(C) *Salmonella typhi*
(D) *Shigella dysenteriae*

Q.5 Irradiation carried out to reduce viable non-spore forming pathogenic bacteria using a dose between 3 to 10 kGy is

- (A) Radurization (B) Thermoradiation
(C) Radappertization (D) Radicidation

Q.6 Identify the correct statement related to the viscosity of Newtonian fluids from the following.

- (A) It is not influenced by temperature
(B) It increases with shearing rate
(C) It decreases with shearing rate
(D) It is not influenced by shearing rate

- Q.7 Adult male Wistar rats were fed with a protein based diet. Total 150 g of protein was ingested per animal. If the average weight increased from 110 g to 350 g after the end of experiment, the Protein efficiency ratio of the given protein would be _____. (up to two decimal points).
- Q.8 The initial moisture content of a food on wet basis is 50.76%. Its moisture content (%) on dry basis is _____.(up to two decimal points)
- Q.9 The oxygen transmission rate through a 2.54×10^{-3} cm thick low density polyethylene film with air on one side and inert gas on the other side is 3.5×10^{-6} mL $\text{cm}^{-2} \text{s}^{-1}$. Oxygen partial pressure difference across the film is 0.21 atm. The permeability coefficient of the film to oxygen is _____ $\times 10^{-11}$ mL (STP) $\text{cm cm}^{-2} \text{s}^{-1} (\text{cm Hg})^{-1}$.
- Q.10 Ambient air at 30°C dry bulb temperature and 80% relative humidity was heated to a dry bulb temperature of 80°C in a heat exchanger by indirect heating. The amount of moisture gain (g kg^{-1} dry air) during the process would be _____.

Q. 11 – Q. 20 carry two marks each.

Q.11 Match the commodity in **Group I** with the bioactive constituent in **Group II**

Group I

- P. Ginger
Q. Green tea
R. Spinach
S. Turmeric

Group II

1. Lutein
2. Gingerol
3. Curcumin
4. Epigallocatechin gallate

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

Q.12 Match the process operation in **Group I** with the separated constituent in **Group II**

Group I

- P. Extraction
Q. Degumming
R. Neutralization
S. Bleaching

Group II

1. Phospholipids
2. Free fatty acids
3. Pigments
4. Crude oil

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

Q.13 Match the spoilage symptom in **Group I** with the causative microorganism in **Group II**

Group I

- P. Green rot of eggs
- Q. Putrid swell in canned fish
- R. Red bread
- S. Yellow discoloration of meat

Group II

1. *Micrococcus* spp.
2. *Serratia marcescens*
3. *Pseudomonas fluorescens*
4. *Clostridium sporogens*

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

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

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

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

Q.14 Match the fermented product in **Group I** with the base material in **Group II**

Group I

- P. Sake
- Q. Chhurpi
- R. Natto
- S. Sauerkraut

Group II

1. Milk
2. Cabbage
3. Rice
4. Soybean

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

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

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

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

Q.15 Match the operation in **Group I** with the process in **Group II**

Group I

- P. Cleaning
- Q. Grading
- R. Size reduction
- S. Filtration

Group II

1. Quality separation
2. Clarification
3. Screening
4. Comminution

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

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

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

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

Q.16 Out of 7 principles of HACCP system, 4 are listed below. Arrange these principles in the order in which they are applied.

- (P) Conduct a hazard analysis
- (Q) Establish monitoring process
- (R) Establish critical limit
- (S) Establish record keeping and documentation process

(A) P, R, Q, S

(B) Q, R, P, S

(C) P, Q, R, S

(D) R, S, P, Q

- Q.17 Identify an example of a classical diffusional mass transfer process without involving heat, among the following.
- (A) Drying of food grains
 - (B) Carbonation of beverages
 - (C) Distillation of alcohol
 - (D) Concentration of fruit juice
- Q.18 For an enzyme catalyzed reaction $S \rightarrow P$, the kinetic parameters are:
 $[S] = 40 \mu\text{M}$, $V_0 = 9.6 \mu\text{M s}^{-1}$ and $V_{\text{max}} = 12.0 \mu\text{M s}^{-1}$.
The K_m of the enzyme in μM will be _____.(up to one decimal points)
- Q.19 A microbial sample taken at 10 AM contained 1×10^5 CFU/mL. The count reached to 1×10^{10} CFU/mL at 8 PM of the same day. The growth rate (h^{-1}) of the microorganism would be _____.(up to two decimal points)
- Q.20 The rate of heat transfer per unit area from a metal plate is 1000 W m^{-2} . The surface temperature of the plate is 120°C and ambient temperature is 20°C . The convective heat transfer coefficient ($\text{W m}^{-2} \text{ }^\circ\text{C}^{-1}$) using the Newton's law of cooling will be _____.



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END OF THE QUESTION PAPER