2½ Hours | Total Marks: 75

1. Attempt **all** questions.
2. **All questions** carry **equal** marks.
3. Draw **neat labelled diagrams** wherever necessary.
4. Use of **log tables** and **non-programmable calculators** is **allowed**.

Q.1 Select the correct alternative: (Any Fifteen) 15

1 Selective destruction of heat sensitive microbial population in milk by low temperature holding can be done at _____ ^{0}C for 30 minutes.
   a) 71.7 ^{0}C
   b) 63 ^{0}C
   c) 55 ^{0}C
   d) 80 ^{0}C

2 If the milk is refrigerated, the growth of Thermophiles and heat-resistant spore formers is retarted but_____ species continue to grow.
   a) Mesophilic
   b) Thermophilic
   c) Psychrophiles
   d) Autotrophs

3 Which of the following pathogenic microorganisms is responsible for putrefaction of milk turning it red?
   a) *Streptococcus cremoris*
   b) *Serratia marcescens*
   c) *Pseudomonas syncyanea*
   d) *Alcaligenes viscolactis*

4 In _____, lactic acid is the only or major product of lactose fermentation with no gas formation.
   a) Homofermentation
   b) Heterofermentation
   c) Mix fermentation
   d) Individual fermentation

5 In order to detect the coliforms in milk samples, usage of _____ is recommended.
   a) Nutrient agar
   b) Sabouraud's agar
   c) Deoxycholate lactose agar
   d) MacConkey's agar

6 The laboratory or pilot scale experiments which are conducted under conditions which mimic the industrial scale are called as _____.
   a) Scale up
   b) Scale down
   c) Production scale
   d) Trouble shooting

7 _____ is not a critical factor in obtaining a suitable inoculum.
   a) choice of medium
   b) size of inoculum
   c) free of contamination
   d) variable biochemical characteristics of strain

8 In the brewing industry, the term crop means _____.
a) to inoculate
b) to contaminate
c) the harvested yeast from previous fermentation
d) to attenuate

9 If _____ control is used, the output response to an error will lead to reduced deviations, faster stabilization and a reduced offset.
a) Proportional plus integral
b) Proportional plus derivative
c) Proportional plus integral plus derivative
d) Proportional

10 _____ makes meat and poultry products juicier and tenderer.
a) Curdlan
b) Xanthan gum
c) Gum karaya
d) Dextran

11 Filter aid is not required in which filtration process?
a) Cross flow filtration
b) Rotary drum filtration
c) Pressure leaf filter
d) Plate and frame filter

12 Affinity chromatography cannot be used for separation and purification _____.
a) Amberlite IRC 50
b) Antigen
c) Antibody
d) Vaccine

13 In which of the following centrifuge the broth enters via the central spindle and then circulates through the series of concentric chambers mounted within the rotor chamber?
a) Multi chamber centrifuge
b) Solid bowl scroll centrifuge
c) Disc bowl centrifuge
d) Basket centrifuge

14 _____ enzyme is hydrolysing specific bonds of microbial cell wall and thus it is suitable for cell disruption.
a) Luciferase
b) Lysozyme
c) Pullulanase
d) Polymerase

15 Which of the following criteria makes Cross flow filtration more beneficial as compared to centrifugation during downstream processing?
a) Product become free from filter aid
b) Closed system
c) Efficient separation
d) Separation is independent of cell and media density

16 Recommended limit of viable airborne microorganisms in environmental grade A area is less than _____CFU/m 3 g.
a) 1
b) 10
c) 100
d) 1000

17 Entry to an aseptic suite is usually through _____ changing procedure.
a) Grey-Black-White
b) Black-Grey-White
c) Black-White-Grey
d) Black-Black-Grey

18 The sum total of the arrangements made to ensure that the final product is of the quality required for its intended purpose is called as _____.
a) In process control
b) QA
c) QC
d) HACCP

19 _____ cycle includes the acquisition of all raw materials, their processing into a final product, and subsequent packaging and distribution.
a) Quality assurance
b) Quality control
c) Manufacturing
d) Packaging

20 Prerequisites of a manufacturing process are listed. Find the incorrect one:
a) clean air
b) production in an open system to reduce cost
c) production in a closed system
d) dust-free environment

Q2A) Explain the bacterial flora of raw milk. 08

Q2B) Explain the production process of yoghurt. 07

OR

Q2C) Elaborate on types of pasteurization techniques along with time and temperature used for treatment. 08

Q2D) Define starter culture. Discuss its significance in dairy technology. 07

Q3A) What are the general principles of inoculum development? Explain the procedure of fungal inoculum development. 08

Q3B) Elaborate on microbial production of citric acid with respect to: 07
a) strain used
b) recovery and industrial applications of citric acid

OR

Q3C) Elaborate on any two applications of microbial polysaccharides in food processing industries. 08

Q3D) Elaborate on scale up and factors involved in scale up. 07

Q4A)	Describe Construction and Working of Batch filters used in downstream processing.	08
Q4B)	Give an account on Physiochemical methods of cell disruption.	07
	OR	
Q4C)	Give the benefits of Drying of the final product and explain working of different driers used for the drying process.	08
Q4D)	Define: Chromatography and explain any two types of Chromatography methods used in particular product purification.	07
Q5A)	Environmental cleanliness and quality of starting material are important factors in the manufacturing of sterile products. Justify.	08
Q5B)	Elaborate on HACCP.	07
	OR	
Q5C)	Describe in detail the general requirements of a clean and aseptic area with respect to a sterile products manufacturing unit.	08
Q5D)	Describe the operating standards in sterile product formulation.	07