

## SY.BSC microbiology paper 2 April 2019 answer key

### **Q.1. A. Define the following:**

- i. **Innate immunity:** The nonspecific immune response or innate or natural immunity; offers resistance to any microorganism or foreign material encountered by the vertebrate host. It includes general mechanisms inherited as part of the innate structure and function of each animal (such as skin, mucus, and constitutively produced antimicrobial mediators like lysozyme), and acts as a first line of defense
- ii. **Ripened cheese:** Ripened cheeses is cheese made by coagulating milk proteins with enzymes (rennet) and culture acids. These cheeses are also ripened (aged) by bacteria or mold.
- iii. **Blanching :**Blanching is a unit operation prior to freezing ,canning or drying in which fruits or vegetables are heated for the purpose of inactivating natural/endogenous enzymes ,modifying texture ,preserving colour, flavour and nutritional value, and removing trapped air
- iv. **Thermal death time :** TDT is the shortest time necessary to kill all microorganisms in a suspension at a specific temperature and under defined conditions
- v. **Butter:** Butter is a water-in-oil emulsion, wherein milkfat forms the continuous phase.

### **Q.1B State whether the following statements are true or false**

- i. Lactoferrin is an enzyme that catalyses the production of superoxide radicals, that is toxic to many microorganisms **False**
- ii. Dahi is fermented milk in India **True**
- iii. PCR is a biological test to detect microorganisms in food **False**
- iv. D-reduction time is the time in which when 100 cells are killed **False**
- v. SPC agar will enable to enumerate coliforms from milk **False**

### **Q.1.C Give one example for each of the following**

- i. Antimicrobial substance present in tears- **Lysozyme**
- ii. Surveillance method used by epidemiologists- **Use of remote sensing and geographic information systems**
- iii. Biological structure that protects food against spoilage- **Protective covering on the food like shell on egg, skin on poultry, shell on nuts, rind or skin on fruits and vegetables, artificial coating like**

**plastic or wax, Layers of fat over meat may protect the part of the flesh or scales may protect the outer part of the fish.**

- iv. Dye reduction test used to assess quality of milk –**MBRT,RRT**
- v. Acid heat curd cheese –**Ricotta,Queso blanco**

**Q.1.D select the most appropriate alternative:**

- i. The cells that are first to arrive at the site of an infection are -----  
---(**neutrophils,eosinophils,plasma cells**)
- ii. -----is a cultural method to detect microorganisms in food.(**spiral plater,microcalorimetry,DMC**)
- iii. -----is the inhibitory substance present in milk(lysozyme, benzoic acid,**lactenins**)
- iv. -----is a surface ripened cheese(**Ricotta,limburger,Roquefort** )
- v. -----is subjecting milk to 72°C for 15 seconds(**HTST,LTST,UHT**)

**Q.2.A answer any two of the following:**

- i. Describe the process of phagocytosis- **Prescott 7<sup>th</sup> edition page no .752-755**
- ii. Write a short note on food poisoning and food borne infections --  
**Food Microbiology by Frazier 5th edition ,page no. 401 onwards**
- iii. Discuss the production of butter - **Applied Dairy Microbiology by Martha & Steele page no.129-137**

**Q.3.A Answer any three of the following:**

- i. Give an overview of the non-specific and specific immune responses in man- **Prescott 7<sup>th</sup> edition page no. 743-744**
- ii. What are cationic peptides? How do they function against gram positive bacteria? **Prescott 7<sup>th</sup> edition page no .762**
- iii. Discuss : The structure and function of granulocytes- **Prescott 7<sup>th</sup> edition page no .746**
- iv. What major events occur during an inflammatory reaction and how do they contribute to pathogen destruction **Prescott 7<sup>th</sup> edition page no .756-758**
- v. Explain the following terms –Droplet nuclei,vehicle,fomite and vector **Prescott 7<sup>th</sup> edition page no .892-896**
- vi. Write a short note on measuring frequency: The epidemiologists tools **Prescott 7<sup>th</sup> edition page no .887**

**Q.3.B. Do as directed (any two of the following)**

- i. Name the following : a process in which microorganism or other parasites are coated by serum component thereby preparing them for recognition and ingestion by phagocytic cells- **Opsonization**
- ii. What is the significance of interferon? **Interferons (IFNs) are a group of related low molecular weight, regulatory cytokines produced by certain eukaryotic cells in response to a viral infection. Besides defending against viruses, they also help regulate the immune response**
- iii. Give one difference between a convalescent carrier and a healthy carrier- **A convalescent carrier is an individual who has recovered from the infectious disease but continues to harbour large numbers of the pathogen whereas a healthy carrier is an individual who harbours the pathogen but is not ill.**
- iv. List two examples of sources of nosocomial infections -**The nosocomial pathogens that cause diseases come from either endogenous or exogenous sources.**

**Q.4. A answer any three of the following:**

- i. Discuss Radurization, Radicidation and Radapperetization- **Food Microbiology by Frazier 5th edition page no. 164**
- ii. What is the role of bacteria in food microbiology - **Food Microbiology by Frazier 5th edition page no. 42 onwards**
- iii. Explain the effects of pH and aw on growth of microorganism in food - **Food Microbiology by Frazier 5th edition page no. 4-10**
- iv. Write a note on meat spoilage- **Food Microbiology by Frazier 5th edition page no. 229 onwards**
- v. State the factors affecting heat resistance of a microorganism- **Food Microbiology by Frazier 5th edition page no. 91-96**
- vi. List the various methods of drying .Discuss the various treatments before drying the food - **Food Microbiology by Frazier 5th edition page no. 135-137**

**Q.4.B Do as directed :( Any two of the following)**

- i. What is the LAL test during examination of food? **Limulus amoebocyte lysate test is used to detect the presence of endotoxins released by gram negative organism in food**

- ii. Explain HACCP –**hazard analysis critical control point involves the identification of ingredients and products which might have an effect on food safety**
- iii. What is RODAC?-**replicate organism direct agar contact/contact plate method is a method of microbiological examination of surface of food wherein organism are inoculated on a raised agar surface**
- iv. What is an osmophilic yeast? - **Osmophilic yeasts are able to grow in products containing high concentrations of organic solutes, particularly sugars.**

**Q.5. A. Answer any three of the following:**

- i. Write a note on heat treatment employed to control microorganism in milk- **Applied Dairy Microbiology by Martha & Steele page no.68-71**
- ii. Discuss steps in cheese making - **Applied Dairy Microbiology by Martha & Steele page no.351-354**
- iii. How would you determine number of thermotolerant organism in milk?- **Applied Dairy Microbiology by Martha & Steele page no.65**
- iv. What could be the possible sources of contamination of milk?- **Applied Dairy Microbiology by Martha & Steele page no.61-63**
- v. Schematically explain production of dry whey - **Applied Dairy Microbiology by Martha & Steele page no.87-90**
- vi. Describe steps in production of yoghurt and dahi- **Applied Dairy Microbiology by Martha & Steele page no.307-311,319-320**

**Q.5B Do as directed: (Any two of the following):**

- i. Give significance of rennet- **Rennet is an enzyme produced by ruminants which curdles the casein in milk and is used to separate milk into solid curds for cheese making and liquid whey.**
- ii. Explain Cheddar cheese –**Also called as milled curd cheddar is a smooth body which is salted and available in finger size piece's**
- iii. What is a starter culture?-**A starter culture is a microbiological culture which is involved in**

**fermentation and is needed to maintain the pH and growth conditions during fermentation**

- iv. **What is flavoured milk? - Flavoured milk is a sweetened dairy drink made with milk, sugar, food colourings and artificial or natural flavourings. Flavoured milk is often pasteurized using ultra-high-temperature (UHT) treatment, which gives it a longer shelf-life than plain milk.**