

**MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR**  
**SEMESTER END THEORY EXAMINATION, B.Tech. Dairy Technology 2018-19**

Semester	: II (V Dean)	Academic Year	: 2018-2019
Course No.	: DC-202	Course Title	: Physical Chemistry of Milk
Credits	: 2+1=3	Total Marks	: 50
Day & Date	: Thursday, 27.06.2019	Time	: 11.00 to 13.00 Hrs.

- Note : 1) All questions from **Section 'A'** are compulsory.  
2) Solve **Any Three** questions from **Section 'B'**.  
3) Draw neat and well labelled diagram wherever necessary.

**SECTION - 'A'**

Q. 1 A) Choose the most appropriate answer from the options given below. (05)

- i) The following is unitless physical property .....
  - a) Density
  - b) Viscosity
  - c) Specific gravity
  - d) Surface tension
- ii) ..... is responsible for light yellow colour of cow milk.
  - a)  $\beta$ -carotene
  - b) Ascorbic acid
  - c) Riboflavin
  - d) Thiamine
- iii) The scattering of light by the colloidal particle is called .....
  - a) Adsorption
  - b) Tyndall effect
  - c) Electrophoresis
  - d) Brownian movement
- iv) Phenolphthalein changes its colour in the pH range of .....
  - a) 3.1-4.4
  - b) 6.0-7.6
  - c) 5-8
  - d) 8.3-10
- v) ..... is used to determine freezing point depression of milk.
  - a) Butyrefractometer
  - b) Stalagmometer
  - c) Cryoscope
  - d) Geiger-Muller Counter

B) Do as directed. (05)

- i) Define 'buffering capacity'.
- ii) 'Milk is opaque'. Explain.
- iii) Define 'common-ion effect'.
- iv) Enlist constituents responsible for natural acidity of fresh milk.
- v) Write on Arrhenius concept of acid-base.

Q. 2. A) Define/explain the following. (05)

- i) Relative strength of acids
- ii) Protective colloids
- iii) Gel
- iv) Acid-base indicators
- v) Redox potential of milk

(P.T.O.)

- B) State whether True or False, If false, rewrite the statement after making necessary corrections. (05)
- i) Electrical conductivity of mastitis milk is high.
  - ii) Bluish green colour of whey is due to vitamin A.
  - iii) Boiling point of cow milk is 100.55 °C.
  - iv) Methylene blue is an acid-base indicator.
  - v) Casein micelles in milk carry net negative charge.

**SECTION –‘B’**

- Q. 3 A) Define radioactivity. How radionuclides get entry into milk? (05)  
B) Discuss optical and electrical properties of colloids. (05)
- Q. 4 A) Define and explain concept of surface tension. Discuss the factors affecting surface tension of milk. (05)  
B) Explain in detail colligative properties of milk. (05)
- Q. 5 A) Discuss Beer-Lambert law and give its applications in the field of dairying. (03)  
B) Discuss various factors affecting refractive index of milk. (03)  
C) What is significance of viscosity in dairying? State the viscosity of milk and related fluids. Explain in brief factors affecting viscosity of milk. (04)
- Q. 6 A) Differentiate between true solution and colloidal solution. (03)  
B) Write a note on colour and flavor of milk. (03)  
C) Define the term buffer index. Explain in detail the constituents responsible for buffering capacity of milk. (04)
- Q. 7 Differentiate between density and specific gravity. State the specific gravity of milk constituents. Explain in details factors affecting specific gravity of milk. (10)

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