

**MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR**  
**SEMESTER END THEORY EXAMINATION, B.Tech. (D:T.) Degree Course 2017-18**

Semester	: II (V Dean)	Academic Year	: 2017-2018
Course No.	: DC-202	Course Title	: Physical Chemistry of Milk
Credits	: 2+1=3	Total Marks	: 50
Day & Date	: Tuesday, 19.06.2018	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) Which of the following component of milk has lowest specific gravity .....
  - a) Lactose
  - b) Protein
  - c) Fat
  - d) Water
- ii) Pycnometer is used for the measurement of the following physical property of milk .....
  - a) Viscosity
  - b) Specific Gravity
  - c) Surface Tension
  - d) Refractive index
- iii) Surface tension of milk is in the range of .....
  - a) 50-52 dynes/cm
  - b) 70-75 dynes/cm
  - c) 100-105 dynes/cm
  - d) 150-152 dynes/cm
- iv) Which of the following component of milk fluorescence strongly .....
  - a) Fat
  - b) Riboflavin
  - c) Vitamin C
  - d) Calcium
- v) Lactose in milk is present in ..... form.
  - a) Colloidal
  - b) Ionic
  - c) Emulsion
  - d) True solution

B). Define the following. (05)

- i) Milk-serum
- ii) Buffer capacity
- iii) Half life period of isotopes
- iv) Recknagel phenomenon
- v) Tyndall effect

Q. 2 A) Answer the following. (05)

- i) What is titratable acidity?
- ii) State Kohlraush law.
- iii) What is Butyro-refractometer reading?
- iv) What are electrolytes?
- v) What is the relationship between absorbance and transmittance?

(P.T.O.)

- B) State whether True or False. If false, rewrite the statement after making necessary corrections. (05)
- i) Density of water is maximum at 20°C.
  - ii) Milk sugar has got maximum impact on the surface tension of milk.
  - iii) A compound which is an electron pair donor is generally classified as Bronsted base.
  - iv) Major constituent responsible for lowering of freezing point of milk is lactose.
  - v) Pascal-second is the unit of surface tension.

### SECTION - 'B'

- Q. 3 A) Differentiate between density and specific gravity. Explain in detail the factors affecting specific gravity of milk. (05)
- B) Explain in detail the Arrhenius theory of acid and base. (05)
- Q. 4 A) Define surface tension. Discuss various methods used for the measurement of surface tension of a liquid. (05)
- B) Illustrate the role of different constituents responsible for buffering capacity of milk. (05)
- Q. 5 A) Differentiate between Newtonian and Non-Newtonian fluids. (03)
- B) Discuss the factors affecting viscosity of milk. (03)
- C) Explain in brief the colligative properties of milk. (04)
- Q. 6 A) What do you mean by redox potential? What are the milk constituents responsible for its redox potential? (03)
- B) Write a note on refractive index of milk. (03)
- C) What are colloids? Discuss Tyndall effect and Brownian movement. (04)
- Q. 7 Define the term milk. State the gross composition of cow and buffalo milk. Explain in detail the various constituents of milk. (10)

\*\*\*\*\*