

MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR
SEMESTER END THEORY EXAMINATION, B.Tech. (DT) Degree course 2016-17

Semester	: II (V Deans Syllabus)	Academic Year	: 2016-2017
Course No.	: DC-202	Course Title	: Physical Chemistry of Milk
Credits	: 2+1=3	Total Marks	: 50
Day & Date	: Monday, 12/06/2017	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)
- The following is protective type of colloids
 - α_{s1} -casein
 - β -casein
 - κ -casein
 - α -lactalbumin
 - Electrical conductivity of milk is mainly due to
 - Lactose
 - Minerals
 - Fat globules
 - Whey proteins
 - The coefficient of viscosity is reciprocal of
 - Fluidity
 - Electrical conductivity
 - Surface tension
 - Optical activity
 - The following is a colligative property
 - Density
 - Osmotic pressure
 - Redox potential
 - Surface tension
 - The dissociation constant value of following base is higher
 - NH_3
 - NH_4OH
 - CH_3NH_2
 - NaOH
- B) Do as directed. (05)
- Define Raoult's law.
 - 'Milk is a heterogenous system'. Explain.
 - Give specific gravity values of cow milk and buffalo milk.
 - State on Bronsted-lowry concept of acid-base.
 - Enlist constituent responsible for redox potential of milk.
- Q. 2. A) Define / explain the following. (05)
- Refractive index
 - pH of a solution
 - Common-ion effect
 - Apparent acidity of milk
 - Radioactivity

(P.T.O.)

- B) State whether True or False, If false, rewrite the statement after making necessary corrections. (05)
- i) Surface tension of butter milk is high.
 - ii) Riboflavin is responsible for light yellow colour of cow milk.
 - iii) Phenolphthalein is a redox indicator.
 - iv) Casein micelles are present in milk as a sol.
 - v) α - rays has highest penetrating power.

SECTION - 'B'

- Q. 3 a) What are colloids? Give their types with examples. Discuss optical property of colloids. (05)
b) Explain coefficient of viscosity. Discuss factors affecting viscosity of milk. (05)
- Q. 4 a) Define buffer. Derive Henderson - Hasselbalch equation. (05)
b) Discuss electrical conductivity of milk. (05)
- Q. 5 a) Define and explain density and specific gravity. (03)
b) Write a short note on radionuclide's in milk. (03)
c) Describe the redox potential of milk. (04)
- Q. 6 a) Discuss Beer-Lambert law. (03)
b) Discuss the factors affecting pH and acidity of milk. (03)
c) Define colligative properties and enlist them. Explain in details factors affecting freezing point of milk. (04)
- Q. 7 Define the term surface tension and interfacial tension. State the surface tension of milk and milk products. Explain in detail the factors affecting surface tension of milk. (10)
