

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

Semester	: II (V Dean)	Academic Year	: 2016-2017
Course No.	: DC-203	Course Title	: Chemistry of Milk
Credits	: 2+1=3	Total Marks	: 50
Day & Date	: Tuesday, 13.06.2017	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)
- i) Phospholipid present in milk fat .....
    - a) Glycerol
    - b) Palmitate
    - c) Plasmin
    - d) Lecithin
  - ii) Deficiency of vitamin A leads to .....
    - a) Scurvy
    - b) Sterility
    - c) Dermatitis
    - d) Night blindness
  - iii) Average calcium content (mg/100ml.) of cow milk .....
    - a) 50
    - b) 95
    - c) 15
    - d) 123
  - iv) The decomposition of hydrogen peroxide to water and oxygen is catalyzed by .....
    - a) Lactase
    - b) Catalase
    - c) Lactoperoxidase
    - d) Hexokinase
  - v) Isoelectric point of casein .....
    - a) 3.2
    - b) 6.0
    - c) 4.6
    - d) 5.5
- B) Define the following terms. (05)
- i) Milk
  - ii) Triacylglycerols
  - iii) Lactitol
  - iv) Vieth ratio
  - v) Non-protein nitrogen
- Q. 2. A) Identify the following. (05)
- i) Principal whey protein present in buffalo milk.
  - ii) Major sterol of milk fat.
  - iii) Enzyme responsible for hydrolysis of lactose into glucose and galactose.
  - iv) Specific rotation of  $\beta$ -lactose.
  - v) Relationship between chloride and lactose in milk.

(P.T.O.)

- B) State whether True or False, If false, rewrite the statement after making necessary corrections. (05)
- i) The pH of colostrum is less than that of normal milk.
  - ii) Average ash content of human milk is around 0.8%.
  - iii) The size of milk fat globules ranges between 0.1 – 22 nm.
  - iv) Milk is a poor source of iron.
  - v) The number of carbon atoms present in oleic acid is 16.

#### SECTION – 'B'

- Q. 3 a) Describe various factors affecting milk composition. (05)  
b) Explain in detail the significance of lipase and alkaline phosphatase in the field of dairying. (05)
- Q. 4 a) Define lipid. Describe the classification of milk lipids. State its importance in dairy industry. (05)  
b) Define vitamin. Write an explanatory note on fat soluble vitamins in milk. (05)
- Q. 5 a) Differentiate between milk plasma and milk serum. (03)  
b) Explain mutarotation of lactose. (03)  
c) Write down structural formula of  $\alpha$ - and  $\beta$ - lactose and discuss physico-chemical properties of lactose. (04)
- Q. 6 a) Enlighten the characteristics of dairy metals. (03)  
b) Write an explanatory note on major minerals in buffalo milk. (03)  
c) Discuss the effect of changes in temperature on salt equilibrium in milk. (04)
- Q. 7 What is a milk protein? Classify milk proteins indicating their approximate concentration and give the ratio of CN:WP in cow, buffalo, sheep, human and equine milk. Describe the term genetic polymorphism. (10)

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