**Seat No: _____** **Enrollment No:_____**

# PARUL UNIVERSITY

## FACULTY OF AGRICULTURE

## B.Tech. (Dairy Technology) Summer 2018 - 19 Examination

**Semester: 2** **Date: 26/04/2019**
**Subject Code: 20104156** **Time: 02:00 pm to 04:00 pm**
**Subject Name: Physical Chemistry of Milk** **Total Marks: 50**

**Instructions**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

**Q.1**

**A) Fill in the blanks (Each of 0.5 Mark)** **(05)**

i) Titritable acidity of milk expressed as_____.
ii) The pH range of fresh milk is_____
iii) The instrument used to measuring freezing point is _____.
iv) Pycnometer is used to measuring _____ of milk
v) Gels are mostly liquid, yet they behave like solids due to a ……..
vi) Area of contact between two phases is called as ……..
vii) Symbol ρ used to express …….
viii) ……..is represented by γ symbol
ix) ……unit commonly used for expressing viscosity
x) ……is expressed as the molarity of sodium hydroxide required to increase pH by 1.0 unit/ litre of solution

**B) Multiple Choice Questions (Each of 0.5 Mark)** **(10)**

i) Viscosity of skim milk is …….. centipoise
a) 1.2 b) 1.5 c) 1.8 d) 2.0
ii) ……% of water present in milk
a) 77 b) 81 c) 87 d) 91
iii) The refractive index of cow's milk generally falls in the range of…….
a) 1.3740-1.3785 b) 1.3640-1.3685 c) 1.3540-1.3585 d) 1.3440-1.3485
iv) The boiling point of normal milk is ……°C
a) 100 b) 100.15 c) 100.45 d) 101
v) The average freezing point of bovine milk is usually within the range……°C
a) -0.212 to – 0.250 b)-0.412 to – 0.450 c)-0.512 to – 0.550 d)-0.612 to – 0.650
vi) ……are major components affecting the freezing point of milk
a) Lactose and soluble salts b) Protein and Vitamin
c) Fat and Protein d) Vitamin and Fat
vii) …….. instrument used for determination of surface tension of milk
a) Stalagmometer b) Pycnometer c) Lactometer d) Hydrometer
viii) Specific gravity of fat is …….at 20 °C
a)1.346 b)1.555 b)1.0 d) None of the above
ix) Specific gravity of protein is …….at 20 °C
a) 1.555 b) 1.346 b)1.0 d) 4.12
x) ……is unit of surface tension
a) Newton per meter b) Kg/m3 c) Centipoise d) g/ml
xi) The specific gravity of milk is decreased by……..
a) Addition of water b) Addition of cream
c) Increased temperature d) All of the above
xii) The specific gravity of milk is decreased by……..
a) Addition of separated fat b) Removal of fat
c) reduction of temperature d) All of the above

xiii) Surface tension of skim milk is …… centipoise
a) 51-52 b) 52-52.5 c) 42-45 d) 39-40

xiv) Viscosity of whole milk is ……dynes/cm
a) 1.2 b) 1.5 c) 2 d) 2.2

xv) Colostrums and mastitis milk differs radically from normal milk in the proportion of
a) Protein and salts b) Protein and Vitamin
c) Fat and Protein d) Vitamin and Fat

xvi) ……..indicator used for determination of acidity of milk
a) phenolphthalein b) Methyl orange c) Methylene blue d) mixed indicator

xvii) The pH of normal healthy cow milk will range between …….
a) 6.0-6.2 b) 6.2-6.4 c) 6.4-6.6 d) 6.6-6.8

xviii) Which is the example of water in oil emulsions
a) Milk b) Ice cream c) Salad dressing d) Mayonnaise

xix) Partially dehydrated gels when dipped in water absorb water resulting in increase in the volume of gel is called……..
a) Swelling b) Synersis c) Thixotrophy d) Hydration

xx) ……..is used for determination or specific gravity of milk
a) Hydrometer b) Pycnometer c) Westphal balance d) All of the above

**Q.2**

**A) Define the following (Any five out of seven questions)** **(05)**

(1) Emulsion
(2) Gels
(3) Specific gravity
(4) Surface tension
(5) Viscosity
(6) Colligative property
(7) Osmosis

**B) Answer the following (Any five out of seven questions)** **(05)**

(1) Enlist the factor affecting of emulsions
(2) Enlist different type of viscometers
(3) What is Raoult's Law
(4) States the importance of acidity of milk
(5) What is buffering index
(6) Enlist factors influence the properties of emulsions
(7) What is Reckangel phenomenon

**Q.3 Write Short notes (Any five out of six questions)** **(10)**

(1) State the principle of surface tension measurement
(2) States the Stoke's law
(3) True and colloidal solutions
(4) Lyophyllic and lyophobic colloids
(5) Newtonian fluids and non-newtonian fluids
(6) Types of buffers

**Q.4 Long Questions (Any three out of four questions)** **(15)**

(1) Explain the different method used for determination of density and specific gravity of milk
(2) Define emulsion and explain its type and properties
(3) Define viscosity and explain different factor affecting of viscosity of milk
(4) Discuss in details about major constituents of milk