

**SUBJECT CODE NO:- B-2007**  
**FACULTY OF SCIENCE**  
**B.Sc. F.Y (Sem-II) Examination March/April 2018**  
**Chemistry Paper-IV**  
**Physical Chemistry**

[Time: 1:30 Hours]

[Max. Marks: 50]

Please check whether you have got the right question paper.

- N.B
- i. Attempt all questions.
  - ii. Illustrate your answer with suitable labeled diagram.

Q.1 Derive Van der Waals equation of state. Explain its critical phenomena. 20

**OR**

Write in detail the laws of crystallography.

Q.2 Explain the factors influencing the rate of reaction. 20

**OR**

Write short notes on any four:

- a) Calculate the distance between two points lying on the straight line
  - i) (3,2) and (9,-4)
  - ii) (9,-2) and (3,8)
- b) Using logarithms solve
  - i)  $736 * 121$
  - ii)  $2030 \div 120$
- c) Explain structure of nematic and cholesteric phases.
- d) Write the difference between solids and gases.
- e) Give in detail the general applications of colloids.
- f) What is sols? Write the properties of sols.

Q.3 Multiple choice questions. 10

- 1) The change of gas to liquid is
  - a) Vaporization
  - b) Freezing
  - c) Condensation
  - d) Sublimation
- 2) Air at sea level is found to be dense. This is accordance with
  - a) Boyle's law
  - b) Charles' law
  - c) Avogadro's Hypothesis
  - d) Graham's law

- 3) Which of the following is not related to chemical kinetics
- VSEPR Theory
  - Collision theory
  - Transition state theory
  - Rate theory
- 4) The reaction  $2 N_2O_5 \rightleftharpoons 2 N_2O_4 + O_2$  is
- Bimolecular second order
  - Unimolecular first order
  - Bimolecular first order
  - Zero order
- 5)  $A + B + C \rightarrow$  Product. The molecularity is
- 02
  - 01
  - 03
  - 0
- 6) The unit of viscosity is
- Dyne
  - Joule /cm
  - Joule
  - Poise
- 7) Which of following is an insulator
- Graphite
  - Silicon
  - Diamond
  - Alluminium
- 8) Liquids in liquids are
- Sols
  - Gels
  - Emulsion
  - None of the above

- 9)  $\log 200$
- a) 2.1010
  - b) 2.2501
  - c) 2.3510
  - d) 2.3010

10) The slope of straight line is

- a)  $y = \frac{x}{c}$
- b)  $y = mx + c$
- c)  $y = \frac{mx}{c}$
- d)  $my = x + c$