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SUBJECT CODE NO: - YY-2333
FACULTY OF SCIENCE AND TECHNOLOGY
B.Sc. F.Y (Sem-II)
Examination March / April - 2023
Chemistry Paper-IV Physical Chemistry

[Time: 1:30 Hours] **[Max. Marks: 40]**

Please check whether you have got the right question paper.

N. B 1) All questions are compulsory.
2) All questions carry equal marks.

Q1 Define system.

Write various types of system with suitable examples. 10

OR

Explain in brief.

a) Hess's law of constant heat summation. 05

b) Effect of change of temperature on equilibrium state of reaction. 05

Q2 Derive the Kinetic gas equation. 10

OR

a) Discuss factors affecting rate of reaction. 05

b) Hydrolysis of ethyl acetate by NaoH with equal concentration of reactants gave the following data 05

Time (min)	0	5	15
Vol. of acid (Ml)	16.0	10.5	6.0

Show that reaction is of second order.

Q3 Write short notes on (any 2) 10

a) Various statements of second law of thermodynamics.

b) Le-chatelier's principle

c) Postulates of kinetic theory of gases

d) Rate constant

Q4 Multiple choice question. 10

1) Among the following, intensive property is
   a) Density
   b) Viscosity
   c) Both a & b
   d) None of these

2) Hot water in a beaker is an example of
   a) Closed system
   b) Isolated system
   c) Open system
   d) None of these

3) Standard heat of enthalpy is assumed to be zero for _____
   a) Graphite
   b) Diamond
   c) Charcoal
   d) Lamp back

4) Hess's law is related to _____
   a) Constant heat summation
   b) Enthalpy of formation
   c) Free energy
   d) All of the above

5) Equilibrium reaction are characterized by
   a) Going to completion
   b) Of being non spontaneous
   c) The presence of both reactants and products in a definite proportion
   d) Both a & b

6) The compressibility factor for an ideal gas is
   a) 3
   b) 1.5
   c) 1
   d) 2

7) Kinetic gas equation is given by relation
   a) $Pv = \frac{3}{1}mnv^2$
   b) $Pv = {}^{1}/_{3}\,mnx^2$
   c) $Pv = \frac{1}{2}mnv^2$
   d) $None\ of\ these$

8) On increasing the concentration of reactant, the rate of reaction will
   a) Decrease
   b) Increase
   c) No change
   d) None of these

9) When the rate of reaction is equal to the rate constant, the order of the reaction is
   a) Third order
   b) Second order
   c) Zero order
   d) First order

10) $K = \frac{2.303}{t} \quad \log \frac{a}{a-x}\ is\ a$
   a) First order rea^{n}
   b) Second order rea^{n}
   c) Zero order
   d) Half life order