

B. Sc. (Part-II) (Semester-III) (CBCS) Examination, June - 2023
CHEMISTRY (Paper - V)
DSC-C-3: Physical Chemistry
Subject Code: 73302

Day and Date: Monday - 12/6/2023
Time: 2.30 to 4.30

Total marks: 50

- Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams and give equations wherever necessary.
4) Use of scientific calculator and logarithmic table is allowed.

Q1) Choose the correct alternative for each of the following and rewrite the sentence.

[10]

- a) Half life of third order reaction, $t_{1/2} = \underline{\hspace{2cm}}$.
- | | |
|------------------|------------------|
| i) $k / 0.693$ | ii) $0.693 / k$ |
| iii) $3 / 2ka^2$ | iv) $2ka^2 / 32$ |
- b) Adsorption is multilayer in case of adsorption.
- | | |
|------------------------|-------------------|
| i) Chemical | ii) Physical |
| iii) both (i) and (ii) | iv) none of these |
- c) With increase in temperature, the surface tension of liquid .
- | | |
|----------------|------------------|
| i) increases | ii) remains same |
| iii) decreases | iv) becomes zero |
- d) The radioactive disintegration is an example of order reaction.
- | | |
|------------|------------|
| i) first | ii) second |
| iii) third | iv) fourth |
- e) Ebonite is an example of .
- | | |
|------------------|-------------------|
| i) conductor | ii) insulator |
| iii) electrolyte | iv) none of these |
- f) Lower the value of energy of activation, is the reaction.
- | | |
|-------------|-------------------|
| i) slower | ii) deadly slow |
| iii) faster | iv) none of these |

- g) Conductance is the reciprocal of _____.
- i) conductivity
 - ii) resistance
 - iii) specific resistance
 - iv) none of these
- h) Viscosity of liquid is determined by _____.
- i) Ostwald's viscometer
 - ii) stalagmometer
 - iii) drop pipette
 - iv) none of these
- i) The curve representing the variation of amount of gas adsorbed with equilibrium pressure at constant temperature is called as _____.
- i) adsorption isochore
 - ii) adsorption isobars
 - iii) adsorption isostere
 - iv) adsorption isotherm
- j) A Geiger-Muller tube is a _____.
- i) photographic detector
 - ii) gas ionization detector
 - iii) cloud chamber
 - iv) spectrophotometer

Q2) Solve any two of the following. (20)

- a) What are the third order reactions? Give characteristics and examples of third order reactions.
- b) Explain in detail Ostwald viscometer method.
- c) What is adsorption? Derive the mathematical expression for Langmuir adsorption isotherm.

Q3) Solve any four of the following. (20)

- a) Write a note on Hittorf's rule.
- b) Define and explain the terms.
 - i) Conductance
 - ii) Specific conductance
 - iii) Equivalent conductance
- c) Write a note on Collision theory.
- d) Give any two applications of adsorption.
- e) Distinguish between metallic and electrolytic conductors.
- f) Write a note on Physical properties of liquids.