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**SUBJECT CODE NO: BB-2427**  
**FACULTY OF SCIENCE AND TECHNOLOGY**  
**B.Sc (CBCGS)(Pattern 2022) S.Y SEM III**  
**Examination November / December 2025**  
**Chemistry-VIII Physical Chemistry**

[Time: 1:30 Hours]

[Max. Marks: 40]

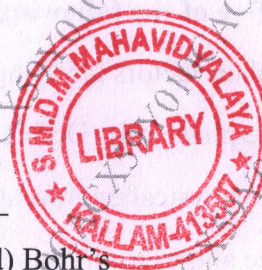
Please check whether you have got the right question paper.

N. B

- 1) Attempt all question.
- 2) Figure to the right indicates marks.
- 3) Use of non-programmable calculation is allowed.

**Q1 Choose and write the correct answer of the following****10**

1. The process of absorption is \_\_\_\_  
 a) Exothermic      b) Endothermic      c) Isothermic      d) None of these
2. Freundlich isotherms is not applicable at \_\_\_\_  
 a) Low pressure      b) High pressure  
 c) Room pressure      d) Low temperature
3. The phase rule was first discovered by scientist \_\_\_\_  
 a) Arrhenius      b) Nernst      c) Gibbs      d) Bohr's
4. A system with zero degree of freedom is known as \_\_\_\_  
 a) Trivariant      b) Bivariant      c) Monovariant      d) Nonvariant
5. According to de-Broglie's equation the momentum of a particle in motion is \_\_\_\_ proportional to wavelength  
 a) Inversely      b) Directly      c) Not      d) Remain the same
6.  $\nabla^2 \psi + \frac{8\pi^2m}{h^2} (E - v) \psi$  is ----- equation  
 a) Arrhenius      b) Schrodinger wave      c) Bohr's      d) De-Broglie
7. Formation of ammonia is \_\_\_\_ reaction  
 a) Photochemical      b) Electrochemical  
 c) Thermal      d) Redox
8. A species which can both absorb and transfer radiant energy for activation of the reactant molecule is called is \_\_\_\_  
 a) Radiater      b) Reactor      c) Biosensitizer      d) Photosensitizer
9. SI unit of electrical conductivity is \_\_\_\_  
 a) Gram      b) Siemens per meter      c) Moles      d) Celsius



10. Beer's law states that the intensity of light decreases with \_\_\_\_\_

- a) Pressure      b) Temperature      c) Concentration      d) Volume

**Q2 Solve any three of the following**

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- Distinguish between physical absorption and chemical absorption
- Discuss carbon dioxide system with phase diagram
- Calculate De-Broglie's Wavelength of an electron, if mass of electron is  $9.0 \times 10^{-28}$  gm and moves with a velocity  $2.7 \times 10^8$  cm/sec ( $n = 6.626 \times 10^{-27}$  erg.sec)
- What is quantum yield? Explain experimental method for the determination of quantum yield
- Give application of calorimetry

**Q3 Solve any five of the following**

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- Explain factors affecting on adsorption
- State phase rule. Define phase with example
- Give physical interpretation of  $\psi$  and  $\psi^2$
- State and explain Heisenberg's uncertainty principle
- Define photochemical process and thermal process with example
- Write note on conductometric titration
- Calculate cell constant and specific conductance, if 0.1 N solution of a salt is placed between two platinum electrode 2 cm apart and area of cross section  $4\text{cm}^2$  has a resistance of 250 ohms.

