M.Sc. I, Sem. II

Seat No.:

MARCH - 2022 (Summer session) Examination

Subject Code: 83401

(विद्यार्थ्यांनी हा विषय कोड OMR वर लिहावा / Student should fill this code on OMR sheet)

Subject Name: Master Of Science (New CBCS)_83401_59805/71513/74579 - Physical Chemistry- I _23.08.2022_10.00 AM

Date: 23-08-2022 **Time:** 10:00:00 to 11:00:00

QP Code: 10393QP

Total Marks : 50 Each Question 2 Marks, Total 25 Ques, Duration 1 Hr

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1. Entropies of all perfectly crystalline substances are -------

a. One
b. Infinity
c. Zero
d. None of these

2. Chemical potential is an ---------- property

a. Extensive
b. Intensive
c. Fundamental
d. None of these

3. The relationship between volume of a component with its chemical potential is

a. $(\delta P/ \delta \mu i)ni = Vi$
b. $(\delta \mu i/ \delta P)p,ni = Vi$
c. $(\delta V/ \delta P)\ \mu i = ni$
d. $(\delta P/ \delta Vi)ni = \delta \mu i$

4. Maxwell relations are ----------to open systems

a. Applicable
b. Not applicable
c. Used in combination with chemical potential
d. None of these

5. $\Sigma ni\ \delta \mu i = 0$ is called as------equation

a. Maxwell relation
b. Duhem-Margules
c. Partial molar volume
d. Gibb's Duhem

6. $\Delta G mixing = RT\ \Sigma ni \ln \gamma i + R\ \Sigma ni \ln xi$, this equation gives------

a. Total energy
b. Free energy of mixing
c. Entropy of mixing
d. Internal energy of mixing

7. The set of occupation number is called as --------

a. Ensemble
b. Entropy
c. Free energy
d. Distribution

8. In canonical ensemble -------and ---------- are same

a. Volume and temperature
b. Pressure and temperature
c. Pressure and volume
d. Entropy and volume

9. In the Maxwell Boltzmann distribution law, --------- forces are constant

a. Intramolecular
b. Intermolecular
c. Adhesive
d. Repulsive

10. Qv= exp [-hν/2KT]/[1-exp[-hν/KT] is the expression for ------- partition function of a molecule

a. Vibrational
b. Rotational
c. Translational
d. Electronic

11. A= -KT ln Z, in this equation work function------ is expressed in terms of molar partition function

a. K
b. T
c. A
d. Z

12. R {ln [e5/2V / Lh3] (2πmkT)}3/2 =?

a. P
b. T
c. S
d. V

13. --------diffuse slowly and cannot pass through the animal and vegetable membrane

a. Colloids
b. Sol
c. Gel
d. Micelles

14. Critical micelle concentration --------- as molecular weight of hydrocarbon chain of surfactant grows because in this case solubility minimizes and tendency of surfactant molecule to increase

a. Increases
b. Decreases
c. Approaches to infinity
d. Approaches to zero

15. The charge on the colloidal particles is due to -------- of either positive or negative ions from environment on their surface

a. Absorption
b. Ionization
c. Evaporation
d. Preferential adsorption

16. The presence of large amount of electrolytes causes-------in stable sols

a. Adsorption
b. Absorption
c. Coagulation
d. Ionization

17. Complete the equation x/m =?

a. K C.1/n
b. K.C.m
c. C.m.x
d. K.C.1/x

18. The surface tension of water -------- after the addition of a surfactant.

a. Increases
b. Reaches to zero
c. Decreases
d. Reaches to infinity

19. Degree of polymerization and molecular weight of polymer are related to ----------

a. Number of molecules
b. Nature of molecules

c. Molecular size
d. Weight of molecules

20. Molecular weight of polymer is expressed in ----------

a. Average molecular weight
b. Total molecular weight
c. Weight of monomer
d. Total moles of polymer

21. The size of polymer molecule depends upon -------and ------

a. Number of monomers, represents degree of polymerization
b. Nature of monomers, represents sedimentation polymerization
c. Density of monomer, represents chain polymerization
d. Viscosity of monomer, average molecular weight

22. The process in which monomers are converted into polymers are called as----------

a. Chain initiation
b. Termination
c. Polymerization
d. Sedimentation

23. Viscosity average molecular weight is expressed in---------

a. MS
b. MP
c. MD
d. MV

24. Ms=Σnimi2/ Σnimi gives---------- molecular weight

a. Viscosity average
b. Osmometry average
c. Sedimentation average
d. Total

25. ------ is defined as relative increase in viscosity per unit concentration of the polymer

a. Increases viscosity
b. Reduced viscosity
c. Total viscosity
d. Average viscosity