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Total Number of Pages : 2

AR-17

B.TECH

3rd Semester (BACK PAPER) Examination-2019**BCHPC3030 PHYSICAL AND ANALYTICAL CHEMISTRY**
CHEMICAL

Time : 3 Hours

Maximum : 100 Marks

Answer ALL Questions

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions) 10 x 2=20 Mark**Q.1. Answer All Questions**

- a The diameter of colloidal particle is of the order:
a) 10^{-3} m b) 10^{-6} m c) 10^{-15} m d) 10^{-7} nm
- b The process of passing of a precipitate into colloidal solution, on adding an electrolyte is called:
a) dialysis b) peptisation c) electrophoresis d) electrosmosis
- c The tyndall effect is not observed in:
a) suspension b) true solution c) emulsion d) colloidal solution
- d The gas evolved at the anode when K_2SO_4 (aq) is electrolysed between Pt electrode is:
a) O_2 b) H_2 c) SO_2 d) SO_3
- e Which has maximum conductivity:
a) $[Cr(NH_3)_3Cl_3]$ b) $[Cr(NH_3)_4Cl_2]Cl$
c) $[Cr(NH_3)_5Cl]Cl_2$ d) $[Cr(NH_3)_6Cl_3]$
- f The electric charge for electrode deposition of gram equivalent of a substance is
a) 1 ampere per second
b) 96500 C per second
c) 1 ampere for 1 hour
d). Charge on one mol of electrons
- g Silica-garden is developed by setting of coloured ions in the void of silicates. It is a case of: (a)
a) adsorption b) absorption c) both d) none
- h Oil soluble dye is mixed with water-in-oil then
a) dispersion medium is coloured b) dispersion phase is coloured
c) both coloured d) none is coloured
- i The molecules which is IR-inactive but Raman-active is
a) HCl b) N_2 c) SO_2 d) protein
- j Raman effect is
a) absorption of light b) emission of light c) elastic scattering of light d) inelastic scattering of light

**PART – B: (Short Answer Questions) 10X2=20 Marks****Q.2. Answer ALL questions**

- a Differentiate between hydrophilic and hydrophobic system?
- b Write two properties of colloidal system.
- c What should be the condition in terms of free Gibbs Energy, Entropy change and enthalpy change for spontaneous mixing?
- d What is the difference between metal and stress corrosion?
- e Which factor does effect the rate of corrosion mention them?
- f What are the types of Batteries?
- g Define the term absorption?
- h Derive the Langmuir adsorption isotherm?
- i Define molecular spectroscopy?
- j Define Atomic and molecular spectra?

PART – C: (Long Answer Questions) 4X15=60 Marks**Answer ALL questions**

- Q.3**
- a Write in detail on electrophoresis ? 10
 - b Write the preparation of gels? 5
- OR
- c Explain colligative properties in dilute solution? 10
 - d Write the measurement of lowering of vapour pressure by static method? 5
- Q.4**
- a Mention principle of batteries? 8
 - b Mention the advantage of fuel cells? 7
- OR
- c Explain about Lead storage battery? 7
 - d Explain about Nickel-cadmium battery? 8
- Q.5**
- a Explain Langmuir theory of adsorption? 10
 - b Explain shortly about Freundlich Isotherm? 5
- OR
- c What are the applications of Adsorption? 5
 - d What are the difference between physical adsorption and chemical adsorption? 10
- Q.6**
- a What are the main components of mass spectroscopy? 5
 - b Write about atomic absorption spectroscopy? 10
- OR
- c What are the components of atomic absorption spectroscopy? 5
 - d Write about Emission spectroscopy? 10

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