**ALVA’S PRE UNIVERSITY COLLEGE, MOODBIDRI**

**Department of Chemistry**

**CET / NEET Crash Course 2019 – 2020**

**Topics- surface chemistry, General principles and processes of isolation of elements-C15**

1. Which are not purely surface phenomenons?

1) Viscosity, surface tension 2) adsorption, absorption

3) Absorption, viscosity 4) adsorption, viscosity

2. Surface area per gram of adsorbent is called

1) Molar surface area 2) normal surface area

3) Specific surface area 4) equivalent surface area

3. Equilibrium constant changes

1) If some catalyst is added 2) if temperature is changed

3) If pressure is changed 4) if concentration is changed

4. In the atmosphere, there is formation of ozone from oxygen

3O2-----> 2O3

This is catalysed by

1) NO 2) N2 3) CO 4) sunlight

5. Folowing are the terms for activity and selectivity

i: activity is the ability of catalysts to accelerate chemical reactions and selectivity is the ability of catalyst to direct reaction to yield particular products

ii: activity is the ability of catalyst to direct reactions to yield particular products and selectivity is the ability of catalyst to accelerate chemical reactions

Select correct term

1) i 2) ii 3) i and ii both 4) none of these

6. Opal (mineral with liquid inclusion) is a

1) Gel (liquid dispersed in solid phase)

2) Solid sol ( solid dispersed in solid phase)

3) Sol (solid dispersed in liquid)

4) Foam (gas dispersed in liquid)

7. Select correct statement(s)

1) A hydrophilic colloid is a colloid in which is a strong attraction between the dispersed phase and water

2) A hydrophobic colloid is a colloid in which ther is lack of attraction betwen dispersed phase and water

3) Hydrophobic sols are often formed when a solid crystallises rapidly from a chemical reaction or a supersaturated solution

4) All of the above

8. Which type of solutions is not filterable through filter and parchment membrane both?

1) True solutions are colloidal sol 2) colloidal sol and suspension

3) True solution and suspension 4) suspension only

9. Peptisation is

1) Conversion of a colloidal into precipitate form

2) Conversion of precipitate into colloidal sol

3) Conversion of metal into colloidal sol by passage of electric current

4) Conversion of colloidal sol into macromolecules

10. Which part of the soap (RCOO-) dissolves grease and forms micelle?

1) R part (called tail of the anion)

2) -COO- part (called head of the anion)

3) Both (1) & (2)

4) None of the above

11. Intensity of the scattered light depends on the difference between. .............. Of dispersed phase and dispersion medium

1) densities 2) refractive indices 3) viscosity 4) surface tension

12. Electro-osmosis is observed when

1) dispersion medium begins to move in electric field

2) dispersed phase begins to move in an electric field

3) in both (1) & (2)

4) in none of the above

13. Tyndal effect is not observed in

1)suspension 2) starch sol 3) gold sol 4) NaCl solution

14. Which is kinetic phenomenon?

1) brownian motion 2) tyndall effects

3) both (1) & (2) 4) none of these

15. Following are some of the properties of the colloidal sols

I tyndall effect

II brownian motion

III maxwell distribution of molecules

These valid properties are

1) I, II, III 2) I, II 3) I, III 4) II, III

16. Potential difference of the electrical double layer formed in a colloidal sol is called

1) EMF 2) zeta potential

3) brownian potential 4) nernst potential

17. Which is not the example of coagualation?

1) coagulation of milk 2) purification of water by addition of alum

3) rubber plating and chrome tanning

4) formation of deltas at the river beds

18. Protective sols are

1) lyophilic 2) lyophobic

3) both (1) & (2) 4) none of (1) &(2)

19. Which is correct matching of emulsion?

1) milk O/W 2) cold cream W/O

3) butter O/W 4) vanishing cream O/W

20. Artificial rain is caused by spray of

1) electrified sand or salt 2) neutral salt or salt

3) negatively charged sand or salt

4) positively charged sand or salt

21. Copper is extracted from copper pyrites by heating in a Bessemer converter. The method is based on the principle that

1) Copper has more affinity for oxygen than sulphur at high temperature.

2) Iron has less affinity for oxygen than sulphur at high temperature.

3) Copper has less affinity for oxygen than sulphur at high temperature.

4) Sulphur has less affinity for oxygen at high temperature.

22. Which of the following is not a carbonate ore?

1)Calamine 2) Siderite

3) Bauxite 4) Malachite

23. Which of the following is correct statement?

1)Hall-Heroult process is used in the extraction of Al & Fe.

2)Leaching of Bauxite with NaOH produces sodium meta aluminate and sodium silicate.

3) Cast iron is made from pig iron.

4) Blister copper occur due to CO2

24. The metal oxide which cannot be reduced to metal by carbon is

1)Fe2O3 2)Al2O3

3)PbO 4)ZnO

25. The method of zone refining of metals is based on the principle of

1)Greater solubility of the impurity in the molten state than in the solid.

2) Greater mobility of the pure metal than that of the impurity.

3)Higher melting point of the impurity than that of the pure metal.

4)Greater noble character of the solid metal than that of the impurity.

26. Chemical reduction is not suitable for

1) Zinc oxide into zinc

2) Cuprite to copper

3) Bauxite into aluminium

4) Haematite into iron

27. Which method is not correct for refining of crude metals ?

1) Liquation : tin

2) Zone refining : silicon

3)Mond process Aluminum

4)Electrolytic refining : blister copper

28. In electrorefining the impure metal is

1) Anode 2) Cathode

3)Anode or cathode 4) Electrolyte

29. Identify the alloy containing a non – metal as a constituent in it.

1) Invar 2)Steel

3) Bell metal 4) Bronze

30. In thermite process , the reducing agent is

1) C 2) Zn

3) Na 4) Al

31. Which of the following benefaction processes is used for the mineral, Al2O3.2H2O?

1) Froth floatation

2) Leaching

3) Liquation

4) Magnetic separation

32. The chemical reagent used for leaching of gold and silver ores is

1) Sodium hydroxide

2) Potassium cyanide

3) Potassium cyanate

4)Sodium thiosulphate

33. How is impure Ni purified?

 

34. Heating mixture of Cu2O and Cu2S will give

1) Cu +SO2 2) Cu +SO3

3)CuO + CuS 4)Cu2SO3

35. Aluminium is extracted from alumina (Al2O3) by electrolysis of a molten mixture of

1)

2) 

3) 

4) 

36. Siderite and sphalerite are the ores of the metals

1) Al and Zn 2) Fe and Cu

3)Cu and Zn 4) Fe and Zn

37. The mineral carnallite contains (i) and (ii) metals. (iii) is purified by cupellation and (iv) is purified by distillation.

(i) (ii) (iii) (iv)

1) calcium zinc mercury tin

2) calcium magnesium zinc lead

3) potassium calcium copper mercury

4) magnesium potassium silver mercury

38. Sulphide ores of metals are usually concentrated by froth floatation process. Which one of the following sulphide ores offer an exception and is concentrated by chemical leaching?

1) Galena 2) Copper pyrites

3) Sphalerite 4) Argentite

39. The process in which the ore is heated in excess of air below it's melting point is known as

1) Roasting 2) Calcination

3) Reduction 4) Distillation

40. The substance used as an activator in froth floatation process is

1) Potassium ethyl xanthate

2) Sodium cyanide

3) Copper sulphate

4) Pine oil

41. From the Ellingham graph between Gibbs energy and temperature, out of C and CO which is a better reducing agent for ZnO?

1) Carbon 2)CO

3) Both of these 4) None of these

42. Mark the correct statements.

(i) Mercury can be refined by the process of distillation.

(ii) In poling, the molten impure metal is stirred with green poles of wood. (iii) In electrolytic refining of metals, impure metal is made as cathode and a thin strip of pure metal is made as anode.

1) (i) and (ii) 2) (i) and (iii)

3) (ii) and (iii) 4) (i), (ii) and (iii)

43. Find the incorrect match.

1) Kaolinite – [Al2(OH)4 Si2O5]

2) Siderite - Fe2O3

3) Sphalerite - ZnS

4) Magnetite - Fe3O4

44. During the process of electrolytic refining of copper, some metals

present as impurity settle as ‘anode mud’. These are

1) Sn and Ag 2) Pb and Zn

3) Ag and Au 4) Fe and Ni.

45. Among the following, the main reactions occurring in blast furnance during extraction of iron from heamatite are

i) Fe2O3 + 3CO2Fe +3CO2

ii)FeO +SiO2FeSiO3

iii) Fe2O3 + 3C2Fe +3CO

iv) CaO +SiO2CaSiO3

1) ii & iii 2) i & iv

3) i & ii 4) iii & iv

Solutions-

1. Ans 3

2. Ans 3

3. Ans2

4. Ans1

5. Ans 1.

6. Ans-1.

7. Ans-4.

8. Ans-4

9. Ans-2

10. Ans-3

11. Ans-2

12. Ans- 1

13. Ans-4

14. Ans-1

15. Ans- 2

16. Ans - 2

17. Ans - 3. It is electrophoresis

18. Ans - 1

19. Ans – 3

20. Ans - 1.

21. Ans- 1

22. Ans- 3

23. Ans - 3

24. Ans- 2

25. Ans- 1

It is based on the difference in solubility of impurities in molten and solid state of the metal. This method is used for obtaining metals of very high purity.

26. Ans- 3

27. Ans- 3

Mond’s process is used for purification of Nickel.

28. Ans- 1

Anode is made of impure metal and cathode is made of thin plate of pure metal

29. Ans- 2

It always have few % of carbon.

Invar – Ni + Fe

Bell metal – 80% Cu + 20% Sn

Bronze – Cu +Sn

30. Ans- 4

In thermite process,a mixture of concentrated oxide ore and Al powder is taken , where Al act as a reducing agent .



31. Ans- 2

32. Ans- 2

33. Ans- : 4

Nickel is purified by Mond's process, in which impure Nickel is treated with CO at 60-80°C then volatile compound, Nickel carbonyl, is formed. Nickel carbonyl decomposes at 1800C to form pure Nickel and carbon monoxide

34. Ans : 1

2Cu2O + Cu2S6Cu + SO2

35. Ans- 3

36. Ans- 4

Siderite — FeCO3 and Sphalerite – ZnS

37. Ans- 4

38. Ans: 4

Ag2S (argentite or silver glance) is an ore of Ag. Silver is extracted from argentite by the Mac-Arthur and forest cyanide process.



39. Ans : 1

40. Ans : 3

41. Ans :1

The free energy of formation (∆G°) of CO from C becomes lower at temperatures above 1180 K whereas that of CO2 from C becomes lower above 1270 K than ∆G° of ZnO. However, ∆G° of CO2 from CO is always higher than that of ZnO. Hence, C can reduce ZnO to Zn but not CO.

42. Ans :1

In electrolytic refining of metals, impure metal is made as anode and a thin strip of pure metal is made as cathode.

43. Ans :2

44. Ans :3

In the electrolytic refining of copper the more electropositive impurities like Fe, Zn, Ni, Co, etc. dissolve in the

solution and less electropositive impurities such as Ag, Au and Pt collect below the anode in the form of anodic mud.

45. Ans: 2