UNIT-I - ELECTROCHEMISTRY – OBJECTIVE MATERIAL

FILL IN THE BLANKS:

1. pH =10 buffer is _____
2. For acidic solution with the increase of dilution pH value _____
3. pH of pure water at 65 0C is _____
4. Units of cell constant is _____ and represented by _____
5. _____ type of current is used in conducto-metric titration.
6. Kohlrausch law is _____
7. With the increase of dilution, specific conductance _____ and equivalent conductance _____
8. Units of Dissociation constant _____
9. Molar conductivity of strong electrolyte _____ _____ & _____ with dilution and for weak electrolytes _____ _____ with dilution.
10. Calomel electrode is _____
11. The primary electrode used in Acid-Base titrations of potentiometry is _____ electrode.
12. The electrode used in pH metric titrations is _____
13. The concentration of KCl solution at 25 ^{0}C in calomel electrode is _____ or _____
14. Electrochemical series is based on _____ of both _____ and _____
15. Nernst equation is _____
16. EMF of cell is obtained as _____
17. The practical application of galvanic cell is _____
18. Galvanic cell converts _____ into _____energy.
19. If $C_1 = C_2$ then Ecell = _____
20. Cathode in dry cell is _____
21. PEMFC means _____
22. _____ Electrolyte used in Alkaline fuel cell.
23. Rechargeable Batteries are _____ batteries.
24. Example for galvanic cell is _____
25. Between Zinc and Copper, which acts as Anode and which acts as Cathode? _____,_____

Match the following:

26. Leblanche cells [ ] a. H_2/O_2
27. Electrolyte [ ] b. Anode
28. MnO_2 [ ] c. $LiAlCl_2$
29. Metalic Lead [ ] d. primary batteries
30. Fuel cell [ ] e. Cathode

True or False

31. The phenomenon of addition of impurities to semi conductors is doping [ ]
32. Conductance is measured with pH-meter [ ]
33. Calomel electrode contains Agar-Agar solution [ ]
34. Glass bulb in glass electrode is sensitive towards H+ ions [ ]
35. $Zn \rightarrow Zn^{+2} + 2e^-$ is reduction process [ ]
36. Cell constant = observed conductance /specific conductance [ ]
37. For weak electrolytes [ ]

38. For degree of Dissociation [ ]

39. Quinone is  [ ]

40. Ni-Cd cell is secondary battery [ ]

Multiple choice questions:

41. pH =5 buffer is [ ]

a. $CH_3COOH + CH_3COONa$ b. $NH_4Cl + NH_4CO_3$ c. $NH_4Cl = NH_4OH$ d. $HCl + CH_3COOH$

42. Salt bridge made of _____ [ ]

a. KCl b. Starch c. Agar-agar d. all

43. Fuel cell example is _____ [ ]

a. H_2/O_2 b. Solid oxide c. phosphoric acid d. all

44. Primary battery is ____ [ ]

a. Ni-Cd cell b. Lithium ion cell c. Lithium metal cell d. Lead-acid cell

45. Ionic mobility is related with _____ [ ]

a. equivalent conductance b. ionic conductance c. specific conductance d. none

46. In electrochemical series, the metals above H2 are _____ [ ]

a. active b. inactive c.both d. none

47. 47. Secondary reference electrodes is ___ [ ]

a. platinum b. silver c. quinhydrone d. copper

48. Fuel cells gives oxidation products ___ [ ]

a. with combustion b. without combustion c. with pollution d. b&c

49. N-type semiconductors are belonging to _____ group [ ]

a. III b. IV c. V d.VI

50. Wheatstone bridge circuit is in ___ [ ]

a. conductometric b. potentiometric c. pH-meter d. all

Answers:

FILL IN THE BLANKS:

1. $NH_4Cl + NH_4OH$ 2. Increases 3. Less than 7 4. Cm^{-1}, x 5. Alternative current 6. $\Lambda_o = \lambda_o^+ + \lambda_o^-$ 7. Decrease , increase 8. Mol L^{-1} 9.increases slightly & linearly, increases steadily 10. Hg/Hg_2Cl_2 paste 11. Platinum 12. Ion selective electrode (glass electrode) 13. 0.1M or Saturated 14. Electrode potentials, metals & non-metals. 15. $E = E^0 - \frac{0.0591}{n} \log \frac{[Prod]}{[React]}$ 16. $E_{RPC} - E_{RPO}$ or $E_R - E_L$ 17. Daniel cell 18. Chemical energy to electrical energy 19. $E_{cell} = 0$ 20. Carbon surrounded by MnO_2 21. Protan exchange membrane fuel cell 22.KOH 23. SECONDARY BATTERY 24. Dry cell or lead storage cell 25. Zn-anode, Cu-cathode.

Match the following: 26.D 27. C 28. E 29. B 30. A

TRUE OR FALSE:

Q	31	32	33	34	35	36	37	38	39	40
A	T	F	F	T	F	F	F	T	T	T

MULTIPLE CHOICE QUESTIONS:

Q	41	42	43	44	45	46	47	48	49	50
A	A	C	D	B	B	A	C	D	C	A

UNIT – II - SCIENCE OF CORROSION - OBJECTIVE MATERIAL

1. In corrosion [ ]
   a. metal becomes oxide b. metal oxide becomes metal c. both d. none
2. Corrosion is [ ]
   a. metallurgy b. reverse of metallurgy c. both d. none.
3. Corrosion is [ ]
   a. oxidation b. reduction c. both d. none.
4. Oxidation corrosion is [ ]
   a. dry corrosion b. wet corrosion c. both d. none.
5. Stable oxide film is present in [ ]
   a. Au b. Ag c. Pt d. Al
6. Volatile oxide film is present in [ ]
   a. Mo b. Na c. Al d. Ag
7. Porous oxide film is present in [ ]
   a. Mo b. Na c. Al d. Ag
8. Pilling Bed worth rule is related to [ ]
   a. dry corrosion b. wet corrosion c. both d. none.
9. In electrochemical corrosion, oxidation corrosion takes place at [ ]
   a. cathode b. anode c. both electrodes d. none
10. Evolution of hydrogen takes place in [ ]
    a. acidic medium b. basic medium c. neutral d. all
11. Rusting of iron takes place in [ ]
    a. dry corrosion b. wet corrosion c. both d. none
12. $Fe_2O_3\,H_2O$ is _____ rust [ ]
    a. Red b. green c. yellow d. black
13. Magnetite is [ ]
    a. Fe_2O_3 b. $Fe_2O_3\,H_2O$ c. $Fe_2O_3\,2H_2O$ d. Fe_3O_4
14. When two different metals are connected and exposed to corrosive environment then the corrosion is called [ ]
    a. galvanic b. differential aeration c. soil d. microbial
15. Concentration cell corrosion is also called [ ]
    a. galvanic b. differential aeration c. soil d. microbial
16. In the galvanic corrosion _____ undergoes oxidation [ ]
    a. upper b. lower c. all d. none
17. Impurities can generate [ ]
    a. galvanic cells b. stress structures c. homogeneity d. all
18. To prevent corrosion, the oxygen concentration should be [ ]
    a. low b. high c. moderate d. any thing
19. If the soluble ions are present in the corroding medium then the corrosion is [ ]
    a. low b. high c. moderate d. any thing
20. Corrosion can be prevented by [ ]
    a. pure metal b. alloy c. both d. none.

21. Zn is _____ to Cu [ ]
    a. anode b. cathodic c. neutral d. all
22. Sn is _____ to Cu [ ]
    a. anode b. cathodic c. neutral d. all
23. In anodic coatings the oxidation potential of coating metal is ___ base metal [ ]
    a. more than b. less than c. equal d. marginally high or low
24. Galvanization is an example for _____ coating [ ]
    a. anode b. cathodic c. neutral d. all
25. Tinning is an example of _____ coating [ ]
    a. anode b. cathodic c. neutral d. all
26. Galvanization done by [ ]
    a. hot dipping b. electroplating c. spraying d. cementation
27. Tinning is done by [ ]
    a. hot dipping b. electroplating c. spraying d. cementation
28. In galvanization, ammonium chloride acts as [ ]
    a. flux b. slag c. oxidizing agent d. reducing agent
29. In tinning, zinc chloride acts as [ ]
    a. flux b. slag c. oxidizing agent d. reducing agent
30. Duralumin is prepared by [ ]
    a. hot spraying b. cementation c. metal cladding d. all
31. In electroplating, anode is [ ]
    a. impure metal b. pure metal c. alloy d. all
32. In electroplating, electrolyte is [ ]
    a. metal b. non-metal c. alloy d. salt solution of the coating metal
33. Metal spraying is carried out for [ ]
    a. low melting metals b. high melting metals c. non-metals d. all
34. Cementation is also called [ ]
    a. diffusion b. hot dipping c. metal spraying d. metal cladding
35. Anode in electroplating if chromium is [ ]
    a. Pb-Sn alloy b. Cu-Zn alloy c. Pb-Zn alloy d. Zn-Sn alloy
36. Paints are _____ coatings [ ]
    a. organic b. in-organic c. metallic d. all

Q	1	2	3	4	5	6	7	8	9
ANS	**A**	**A**	**A**	**C**	**D**	**A**	**C**	**A**	**B**
10	11	12	13	14	15	16	17	18	19
A	**C**	**A**	**D**	**A**	**B**	**A**	**D**	**A**	**B**
20	21	22	23	24	25	26	27	28	29
C	**A**	**B**	**B**	**B**	**A**	**B**	**A**	**A**	**A**
30	31	32	33	34	35	36			
C	**B**	**D**	**A**	**B**	**A**	**A**			