Q92. An element M reacts with another element X to form MX2. In terms of loss or gain of electrons, identify the element which is oxidized and which is reduced.

Ans. When an element M loses its electron, oxidation process takes place. When this electron is gained by element X, reduction process takes place. Therefore, element M is oxidized while element X is reduced.

Q93. How can you justify that only an oxidation reaction but the following reaction is not also a complete Redox. reaction.

$$FeO + CO \longrightarrow Fe + C02$$

Ans. When Feo reacts with CO, oxygen is removed from Feo which shows reduction process. On the other hand when oxygen is added to CO it shows oxidation process. Therefore, it is a complete redox reaction.

Q94. Explain the term oxidation and reduction on the basis of electronic concept with an example.

Ans. Oxidation: A process in which loss of electrons takes place is called oxidation.

$$Zn \qquad zn2+ + 2e$$

$$Fe+3 + le$$

Reduction: A process in which gain of electrons takes place is called reduction.

$$2H^+ + 2e^- \longrightarrow H_2$$

$$Cl_2 + 2e^- \longrightarrow 2Cl^-$$

- Q95. Write applications of galvanic cell?
- Ans. As a result of Redox reaction, electric current is produced. The batteries which are used for starting automobiles, running calculators and toys and to lit the bulbs work on the same principle.

Multiple Choice Questions

1. The branch of chemistry which deals with the relationship between electricity and chemical reactions.
   (a) Electrochemis
   (b) Thermochemts
   (c) Analytical chemistry
   (d) Industrial chemistry

Oxidation involves (a) Removal of oxygen
(b) Addition of oxygen
(c) Gain of electron
(d) Addition of hydrogen

3. In HCI, oxidation number of H is:

4. The oxidation number of all elements in free state is:
   (a) One (b) Two

(c) Three (d) Zero 5. The oxidation number of Group-I elements is:

6. The oxidation number of hydrogen in Jinetal hydrides is:

7. The oxidation number of oxygen is +2 in:

(a) 1-120 (b) OF2

(d) HN03 8. In neutral molecules, the algebraic sum of the oxidation numbers of all the elements is:

(a) One (b) Two

(c) Three (d) Zero

9. The oxidation number of sulphur in H2S04 is:

10. Oxidizing agent is a substance which

(a) Reduces itself and oxidizes other

(b) Reduces itself and also reduces other

(c) Oxidizes itself and reduces other (d) Oxidizes itself and also oxidizes other

11. Chemical reaction in which the oxidation state of one or more substances changes are called

(a) Catenation (b) Reduction

(c) Redox (d) Oxidation 12. Which of the following is good electrolyte

(a) NaCl (b) H2S04

(c) NaOH (d) All of them 13. Which of the following is a weak electrolyte?

(a) NaC1 (b) CH3COOH

(c) KCI (d) NaOH 14. Which ionizes in small extent ill, water

(c) NaOH (d) H2S04 15. The substances which do not ionize in solution and do not allow to pass current through them are called:

(a) Strong electrolytes

(b) Weak electrolytes

(c) Non-electrolytes

(d) Electrolytes

16. Example of electrolytic cell is:

(a) Down's cell (b) Nelson's cell

(c) Daniel cell (d) Both a and b 17. Which of the following is a non-electrolyte?

(a) Benzene

(b) Sodium chloride

(c) Sulphuric acid

(d) Sodium hydroxide

18. Oxidation always takes place at:

(a) Anode (b) Cathode

(c) Both of them (d) None of them

19. Which gas is evolved during the electrolysis of fused sodium chloride?

(a) Hydrogen (b) Chlorine

(c) Oxygen (d) All of them

20, Pure water is a

(a) Non-electrolyte

(b) Strong electrolyte

(c) Weak electrolyte

(d) All of them

21. During electrolysis of sodium chloride in aqueous state, which gás is evolved from the cathode electrode?

(a) Hydrogen (b) Chlorine

(c) Oxygen (d) All of them

22.Who invented first electrolytic cell?

(a) BerzeIiuS (b) A. Volta

c)J. Dalton (d) Newton 23. In which cell electrical energy is converted into chemical energy?

(a) Galvanic cell

(b) Voltaic cell

(c) Electrolytic cell

(d) All of them

24. Which is produced as a result of Redox reaction?

(a) Electric current

(b) Chemical current

(c) Both a and b

(d) None of them

25. In galvanic cell cathode electrode carries:

(a) Positive charge

(b) Negative charge

(c) No charge

(d) Neutral charge 26. Which cell is used in the manufacturing of sodium metal from fused MCI?

(a) Down's cell (b) Nelson's cell

(c) Both of them (d) None of them

27. Which acts as anode in Down's cell?

(a) Iron (b) Carbon

(c) Silver (d) Steel

28. C12 gas is formed, when Cl- ions are

(a) Reduced (b) Oxidized

(c) Removed

(d)Reacted with metals 29. In Nelson's cell, cathode is made up of:

(a) Iron (b) zinc

(c) Graphite (d) steel 30. Which ion is not formed during electrolysis of aqueous sodium chloride?

31. Sodium hydroxide is manufactured

(a) Nelson'ScellÃb) Down's cell

(c) Galvanicçell (d) Voltaic cell

32. Chemical formula of rust is

(b) Fe304. 2H20

(c) Fe203. nH20 (d) Fe304

33. Corrosion of iron is called

(a) Rusting (b) Smelting

(c) Roasting (d) All of them 34. Which medium accelerates the process of rusting?

(a) Acidic (b) Basic

(c) Buffer (d) Neutral 35. A region on iron surface when rusting takes place is known as

(a) Cathodic region

(b) Anodic region

(c) Both of them

(d) None of them

36. Rusting occurs on

(a) Iron (b) Steel

(c) Aluminium (d) Both a and b

37. Stainless steel contains

(a) Nickel (b) Iron

(d) Chromium (d) All of them 38. Which of the following is a corrosion resistant metal?

(b) Zn

(c) Sn (d) Sr 39. In order to give longer life, the containers of iron are coated by:

(a) Tin (b) Chromium

(c) Carbon (d) Both a and

40.A process of coating thin layer of Zn on iron is called• (a) Catenation

(b) Rusting cy Smelting (d) Galvanizing

41. The electrolytic cell is made up of:

(a) Cement (b) Glass

(c) Wood

(d) All of the above

42.Which of the following is a common example of silver Plating?

(a) Wares (b) Cutlery

(c) Jewellery (d) All of them

43. Which metal has a great tendency to corrosion?

(a) Potassium (b) Sodium

(c) Aluminium (d) All of them

44. In early nineteenth century photographers produce crude images using papers covered with

(a) Chromium sulphate

(b) Nickel sulphate

(c) Silver nitrate

(d) Potassium nitrate 45. Chemical formula of sodium hyposulphite is:

(a) Na2S04 (b) Na2S203

(c) Na2S03 (d) NaS04

46. Sodium hyposulphite dissolves:

(a) Mercury iodide

(b) Silver iodide

(c) Potassium iodide

(d) Sodium iodide

47. Which is not a property of fine silver?

(a) It is soft

(b) It is not malleable (c) It is easily damaged

(d) All of them

48. The percentage of any metal can make up the non-silver portion of sterling is:

(a) 2.7 (b) 4.5

(c) 7.5 (d) 8.4 49. The percentage of silver in sterling silver is:

(c) 99. (d) 92.5

SO.Sterling silver is an alloy of silver and:

(a) Iron (b) Copoer

(c) Chromium (d) Aluminium 51. Spontaneous chemical reactions take place in:

(a) Electrolytic cell

(b) Galvanic cell

(c) Nelson's cell

(d) Down's cell

52. Formation of water from hydrogen and oxygen is:

(a) Redox reaction

(b) Acid-base reaction

(c) Neutralization

(d) Decomposition

53. Which of the following is NOT an electrolytic cell?

(a) Down's cell (b) Galvanic cell

(c) Nelson's cell (d) Both a and c

54. The oxidation number of chromium in K2Cr207 is:

(d) + 14 55. Which of the following is N(Ÿr an electrolyte?

(a) Sugar solution

(b) Sulphuric acid solution

(c) Lime solutio

(d) Sodium chloride solution 56 he most common example of corrosion is:

(a) Chemical decay

(b) Rusting of iron

(c) Rusting of aluminum

(d) Rusting of tin

57. Nelson's cell is used to prepare caustic soda along with gases. Which of the following gas is produced at cathode?

(a) C12 (b) 1-12

(d) 02 58. During the formation of water from hydrogen and oxygen, which of the following does nc occur?

(a) Hydrogen has oxidized

(b) Oxygen has reduced

(c) Oxygen gains electrons .(d) Hydrqgen behaves as oxidizing agent

59. In the Redox reaction between Zan and HCI, the oxidizing agent is:

(a) Zn

(c) cr

Answer Key

1.	a	**2.**	b	**3.**	b	**4.**	d	**5.**	a
6.	b	**7.**	b	**8.**	d	**9.**	c	**10.**	a
11.	c	**12.**	d	**13.**	b	**14.**	a	**15.**	c
16.	d	**17.**	a	**18.**	a	**19.**	b	**20.**	c
21.	a	**22.**	b	**23.**	c	**24.**	a	**25.**	a
26.	a	**27.**	b	**28.**	b	**29.**	a	**30.**	c
31.	a	**32.**	c	**33.**	a	**34.**	a	**35.**	b
36.	d	**37.**	d	**38.**	a	**39.**	d	**40.**	d
41.	d	**42.**	d	**43.**	c	**44.**	c	**45.**	b
46.	b	**47.**	b	**48.**	c	**49.**	d	**50.**	b
51.	b	**52.**	a	**53.**	b	**54.**	b	**55.**	a
56.	b	**57.**	b	**58.**	d	**59.**	b		