1. “The mass of an ion liberated at an electrode is directly proportional to the quantity of electricity”.
The above statement is associated with
(a) Newton’s law
(b) Faraday’s law of electromagnetic
(c) Faraday’s law of electrolysis
(d) Gauss’s law
Ans: c

2. The charge required to liberate one gram equivalent of any substance is known as _____ constant
(a) time
(b) Faraday’s
(c) Boltzman
Ans: b

3. During the charging of a lead-acid cell
(a) its voltage increases
(b) it gives out energy
(c) its cathode becomes dark chocolate brown in colour
(d) specific gravity of H_2SO_4 decreases
Ans: a

4. The capacity of a lead-acid cell does not depend on its
(a) temperature
(b) rate of charge
(c) rate of discharge
(d) quantity of active material
Ans: b

5. During charging the specific gravity of the electrolyte of a lead-acid battery
(a) increases
(b) decreases
(c) remains the same
(d) becomes zero
Ans: a

6. The active materials on the positive and negative plates of a fully charged lead-acid battery are
(a) lead and lead peroxide
(b) lead sulphate and lead
(c) lead peroxide and lead
(d) none of the above
Ans: c

7. When a lead-acid battery is in fully charged condition, the colour of its positive plate is
(a) dark grey
(b) brown
(c) dark brown
(d) none of above
Ans: c

8. The active materials of a nickel-iron battery are
(a) nickel hydroxide
(6) powdered iron and its oxide
(c) 21% solution of KOH
(d) all of the above
Ans: d

9. The ratio of ampere-hour efficiency to watt-hour efficiency of a lead-acid cell is
(a) just one
(b) always greater than one
(c) always less than one
(d) none of the above.
Ans: b

10. The best indication about the state of charge on a lead-acid battery is given by
(a) output voltage
(b) temperature of electrolyte
(c) specific gravity of electrolyte
(d) none of the above
Ans: c

11. The storage battery generally used in electric power station is
(a) nickel-cadmium battery
(b) zinc-carbon battery
(c) lead-acid battery
(d) none of the above
Ans: c

12. The output voltage of a charger is
(a) less than the battery voltage
(b) higher than the battery voltage
(c) the same as the battery voltage
(d) none of the above
Ans: b

13. Cells are connected in series in order to
(a) increase the voltage rating
(6) increase the current rating
(c) increase the life of the cells

(d) none of the above
Ans: a

14. Five 2 V cells are connected in parallel.
The output voltage is
(a) 1 V
(6) 1.5 V
(c) 1.75 V
(d) 2 V
Ans: d

15. The capacity of a battery is expressed in terms of
(a) current rating
(b) voltage rating
(e) ampere-hour rating
(d) none of the above
Ans: c

16. Duringthe charging and discharging of a nickel-iron cell
(a) corrosive fumes are produced
(b) water is neither formed nor absorbed
(c) nickel hydroxide remains unsplit
(d) its e.m.f. remains constant
Ans: b

17. As compared to constant-current system, the constant-voltage system of charging a lead acid cell has the advantage of
(a) reducing time of charging
(b) increasing cell capacity
(c) both (a) and (b)
(d) avoiding excessive gassing
Ans: c

18. A dead storage battery can be revived by
(a) adding distilled water
(6) adding so-called battery restorer
(c) a dose of H_2SO_4
(d) none of the above
Ans: d

19. As compared to a lead-acid cell, the efficiency of a nickel-iron cell is less due to its
(a) compactness
(b) lower e.m.f.
(c) small quantity of electrolyte used
(d) higher internal resistance
Ans: d

20. Trickle charging of a storage battery helps to
(a) maintain proper electrolyte level
(b) increase its reserve capacity
(c) prevent sulphation
(d) keep it fresh and fully charged
Ans: d

21. Those substances of the cell which take active part in chemical combination and hence produce electricity during charging or discharging are known as_____materials.
(a) passive
(b) active
(c) redundant
(d) inert
Ans: b

22. In a lead-acid cell dilute sulphuric acid (electrolyte) approximately comprises the following
(a) one part H2O, three parts H2SO4
(b) two parts H2O, two parts H2SO4
(c) three parts H2O, one part H2SO4
(d) all H2S04
Ans: c

23. It is noticed that durum charging
(a) there is a rise in voltage
(6) energy is absorbed by the cell
(c) specific gravity of H2SO4 is increased
(d) the anode becomes chocolate brown in colour (PbCfe) and cathode becomes grey metallic lead (Pb)
(e) all of the above
Ans: e

24. It is noticed that during discharging the following does not happen
(a) both anode and cathode become PbS04
(b) specific gravity of H2SO4 decreases
(c) voltage of the cell decreases
(d) the cell absorbs energy
Ans: d

25. The ampere-hour efficiency of a leadacid cell is normally between
(a) 20 to 30%
(b) 40 to 50%
(c) 60 to 70%
(d) 90 to 95%
Ans: d

26. The watt-hour efficiency of a lead-acid cell varies between
(a) 25 to 35%
(b) 40 to 60%
(c) 70 to 80%
(d) 90 to 95%
Ans: c

27. The capacity of a lead-acid cell is measured in
(a) amperes
(b) ampere-hours
(c) watts
(d) watt-hours
Ans: b

28. The capacity of a lead-acid cell depends on
(a) rate of discharge
(b) temperature
(c) density of electrolyte
(d) quantity of active materials
(e) all above
Ans: e

29. When the lead-acid cell is fully charged, the electrolyte assumes _____ appearance
(a) dull
(b) reddish
(c) bright
(d) milky
Ans: d

30. The e.m.f. of an Edison cell, when fully charged, is nearly
(a) 1.4 V
(b) 1 V
(c) 0.9 V
(d) 0.8 V
Ans: a

31. The internal resistance of an alkali cell is nearly _____ times that of the lead-acid cell.
(a) two
(b) three
(c) four
(d) five
Ans: d

32. The average charging voltage for alkali cell is about
(a) 1 V

(b) 1.2 V
(c) 1.7 V
(d) 2.1 V
Ans: c

33. On the average the ampere-hour efficiency of an Edison cell is about
(a) 40%
(b) 60%
(c) 70%
(d) 80%
Ans: d

34. The active material of the positive plates of silver-zinc batteries is
(a) silver oxide
(b) lead oxide
(c) lead
(d) zinc powder
Ans: a

35. Lead-acid cell has a life of nearly charges and discharges
(a) 500
(b) 700
(c) 1000
(d) 1250
Ans: d

36. Life of the Edison cell is at least
(a) five years
(b) seven years
(c) eight years
(d) ten years
Ans: a

37. The internal resistance of a lead-acid cell is that of Edison cell
(a) less than
(b) more than
(c) equal to
(d) none of the above
Ans: a

38. Electrolyte used in an Edison cell is
(a) NaOH
(b) KOH
(c) HC1
(d) HN03
Ans: b

39. Electrolyte used in a lead-acid cell is
(a) NaOH
(b) onlyH2S04
(c) only water
(d) dilute H2SO4
Ans: d

40. Negative plate of an Edison cell is made of
(a) copper
(b) lead
(c) iron
(d) silver oxide
Ans: c

41. The open circuit voltage of any storage cell depends wholly upon
(a) its chemical constituents
(b) on the strength of its electrolyte
(c) its temperature
(d) all above
Ans: d

42. The specific gravity of electrolyte is measured by
(a) manometer
(6) a mechanical gauge
(c) hydrometer
(d) psychrometer
Ans: c

43. When the specific gravity of the electrolyte of a lead-acid cell is reduced to 1.1 to 1.15 the cell is in
(a) charged state
(b) discharged state
(c) both (a) and (b)
(d) active state
Ans: b

44. In _____ system the charging current is intermittently controlled at either a maximum or minimum value
(a) two rate charge control
(b) trickle charge
(c) floating charge
(d) an equalizing charge
Ans: a

45. Over charging
(a) produces excessive gassing
(b) loosens the active material

(e) increases the temperature resulting in buckling of plates
(d) all above
Ans: d

46. Undercharging
(a) reduces specific gravity of the electrolyte
(b) increases specific gravity of the electrolyte
(c) produces excessive gassing
(d) increases the temperature
Ans: a

47. Internal short circuits are caused by
(a) breakdown of one or more separators
(b) excess accumulation of sediment at the bottom of the cell
(c) both (a) and (b)
(d) none of the above
Ans: c

48. The effect of sulphation is that the internal resistance
(a) increases
(b) decreases
(c) remains same
(d) none of the above
Ans: a

49. Excessive formation of lead sulphate on the surface of the plates happens because of
(a) allowing a battery to stand in discharged condition for a long time
(b) topping up with electrolyte
(c) persistent undercharging
(d) low level of electrolyte
(e) all above
Ans: e

50. The substances which combine together to store electrical energy during the charge are called _____ materials
(a) active
(b) passive
(c) inert
(d) dielectric
Ans: a

51. In a lead-acid cell, lead is called as
(a) positive active material
(b) negative active material
(c) passive material

(d) none of the above
Ans: b

52. The lead-acid cell should never be discharged beyond
(a) 1.8 V
(b) 1.9 V
(c) 2 V
(d) 2.1 V
Ans: a

53. On overcharging a battery
(a) it will bring about chemical change in active materials
(b) it will increase the capacity of the battery
(c) it will raise the specific gravity of the electrolyte
(d) none of the above will occur
Ans: d

54. Each cell has a vent cap
(a) to allow gases out when the cell is on charge
(b) to add water to the cell if needed
(c) to check the level of electrolyte
(d) to do all above functions
Ans: d

55. Following will occur if level of electrolyte falls below plates
(a) capacity of the cell is reduced
(b) life of the cell is reduced
(c) open plates are converted to lead sulphate
(d) all above
Ans: d

56. In constant voltage charging method, the charging current from discharged to fully charged condition
(a) decreases
(b) increases
(c) remains constant
(d) none of the above
Ans: a

57. 48 ampere-hour capacity would deliver a current of
(a) 48 amperes for 1 hour
(b) 24 amperes for 2 hours
(c) 8 amperes for 6 hours
(d) 6 amperes for 8 hours
Ans: d

58. In constant-current charging method, the supply voltage from discharged to fully charged condition
(a) decreases
(b) increases
(c) remains constant
(d) none of the above
Ans: b

59. Battery charging equipment is generally installed
(a) in well ventilated location
(b) in clean and dry place
(c) as near as practical to the battery being charged
(d) in location having all above features
Ans: d

60. Following will happen if the specific gravity of electrolyte becomes more than 1.23.
(a) Loss of capacity
(b) Loss of life
(c) Corrosion of the grids of the plate
(d) All above
Ans: d

61. Batteries are charged by
(a) rectifiers
(b) engine generator sets
(c) motor generator sets
(d) any one of the above methods
Ans: d

62. Cell short circuit results in
(a) low sp. gravity electrolyte
(b) abnormal high temperature
(c) reduced gassing on charge
(d) all above
Ans: d

63. Internal resistance of a cell is reduced by
(a) using vent plug to permit gas formed during discharge
(b) increasing the plate area
(c) putting plates very close together
(d) all above methods
Ans: d

64. Capacity of dry cells is
(a) more when it is supplying current for intermittent periods
(b) more when it is supplying current for continuous periods

(c) unaffected by the type of discharge
(d) none of the above
Ans: a

65. Battery container should be acid resistance, therefore it is made up of
(a) glass
(b) plastic
(c) wood
(d) all above
Ans: d

66. Sulphated cells are indicated by
(a) the loss of capacity of the cell
(6) the decrease of the specific gravity
(c) the low voltage of the cell on discharge
(d) all above conditions
Ans: d

67. In a lead-acid cell, if the specific gravity of sulphuric acid is 1.8, it will require following ratio of acid to water to get mixture of specific gravity of 1.3
(a) 6 parts of acid to 4 parts of water
(b) 4 parts of acid to 4 parts of water
(c) 4 parts of acid to 6 parts of water
(d) 4 parts of acid to 8 parts of water
Ans: c

68. Local action in a battery is indicated by
(a) excessive gassing under load conditions
(b) excessive drop in the specific gravity of electrolyte even when the cell is on open circuit
(c) both (a) and (b)
(d) none of the above
Ans: d

69. Following will happen if battery charging rate is too high
(a) excessive gassing will occur
(b) temperature rise will occur
(c) bulging and buckling of plates will occur
(d) all above will occur
Ans: d

70. Internal resistance of a cell is due to
(a) resistance of electrolyte
(b) electrode resistance
(c) surface contact resistance between electrode and electrolyte
(d) all above
Ans: d

71. If a battery is wrongly connected on charge following will happen
(a) current delivered by the battery will be high
(b) current drawing will be nil
(c) current drawing will be very small
(d) current drawing will be very high
Ans: d

72. In order that a hydrometer may float vertically in electrolyte its C.G. should be
(a) lowered
(b) raised
(c) undisturbed
(d) displaced sideways
Ans: a

73. If a lead-acid cell is discharged below 1.8 V the following will happen.
(a) Capacity of cell will reduce
(b) Sulphation of plates will occur
(c) Internal resistance will increase
(d) All above will occur
Ans: d

74. Life of the batteries is in the following ascending order.
(a) Lead-acid cell, Edison cell, Nickel cadmium cell
(b) Lead-acid cell, Nickel-cadmium cell, Edison cell
(c) Edison cell, Nickel-cadmium cell, lead-acid cell
(d) Nickel-cadmium cell, Edison cell, lead-acid cell
Ans: a

75. Persons preparing electrolyte should wear
(a) goggles or other face shield
(b) rubber
(c) rubber boots and gloves
(d) all above safety devices
Ans: d

76. Excessive charging a battery tends to
(a) produce gassing
(b) increase the internal resistance of the battery
(c) to corrode the positive plates into lead peroxide thereby weakening them physically
(d) bring about all above changes
Ans: d

77. Shelf life of a small dry cell is
(a) equal to that of large dry cell
(6) less than that of large dry cell
(c) more than that of large dry cell

(d) none of the above
Ans: b

78. The current flow through electrolyte is due to the movement of
(a) ions
(b) holes
(c) electrons
(d) none of the above
Ans: a

79. Level of electrolyte in a cell should be _____ the level of plates
(a) below
(b) equal to
(c) above
(d) none of the above
Ans: c

80. During discharge, the active material of both the positive and negative plates is changed to
(a) Pb
(b) Pb02
(c) PbO
(d) PbS04
Ans: d

81 _____ of electrolyte indicates the state of charge of the battery
(a) colour
(b) mass
(c) viscosity
(d) specific gravity
Ans: d

82. The following indicate that battery on charge has attained full charge
(a) colour of electrode
(b) gassing
(c) specific gravity
(d) all above
Ans: d

83. Dry cell is modification of
(a) Deniell cell
(b) Leclanche cell
(e) Lead-acid cell
(d) Edison cell
Ans: b

84. Capacity of a battery.is expressed in
(a) Ah
(b) Vh
(c) Wh
(d) kWh
Ans: a

85. In alkaline cell the electrolyte is
(a) dilute sulphuric acid
(b) concentrated sulphuric acid
(c) NaOH
(d) KOH
Ans: d

86. Self charge of a Ni-Fe cell is _____ Edison cell.
(a) equal to
(b) less than
(c) more than
(d) much more than
Ans: b

87. Ampere hour capacity of an industrial battery is based on _____ hours discharge rate.
(a) 8
(b) 12
(c) 16
(d) 24
Ans: a

88. The body of Edison cell is made of
(a) bakelite
(b) rubber
(c) nickel plated steel
(d) aluminium
Ans: c

89. Specific gravity of electrolyte in Edison cell is
(a) 0.8
(b) 0.95
(c) 1.1
(d) 1.21
Ans: d

90. All the electrical connections between the battery and vehicle should be by
(a) thin aluminium wires
(b) thin copper wires
(c) rigid cables

(d) flexible cables
Ans: d

91. A battery of 6 cells will show a drop of _____ volts from fully charged state to fully discharged state.
(a) 1.0
(b) 1.5
(c) 2.4
(d) 2.9
Ans: c

92. During the idle period of the battery, strong electrolyte tends to change the active material of the cell into
(a) Pb02
(6) PbSC-4
(c) PbO
(d) Pb
Ans: b

93. Chargmg of sulphated battery produces _____ heat.
(a) no
(b) very little
(c) less
(d) more
Ans: d

94. Hydrogen evolved during charging produces explosive mixture when it is more than
(a) 2%
(b) 4%
(c) 6%
(d) 8%
Ans: d

95. Weston standard cell at 20°C has voltage of _____ volts.
(a) 0.8
(b) 0.9
(c) 1.0187
(d) 1.5
Ans: c

96. Extent of corrosion in the underground metal work depends upon
(a) amount of moisture
(b) type of metals
(c) type of soil chemicals
(d) all above factors
Ans: d

97. Mercury cell has which of the following characteristics ?
(a) Flat discharge current-voltage curve
(6) High power to weight ratio
(c) Comparatively longer shelf life under adverse conditions of high temperature and humidity
(d) All of the above
Ans: d

98. Charging a sulphated battery at high rate results in
(a) boiling of electrolyte due to gassing
(b) warping of plates
(c) damage to separators, cell caps covers and battery case due to excessive temperature
(d) all above
Ans: d

99. Short circuiting of a cell may be caused
(a) buckling of plates
(b) faulty separators
(c) lead particles forming circuit between positive and negative plates
(d) excessive accumulation of sediment
(e) any one of above
Ans: e

100. In a battery cover is placed over the element and sealed to the top of the battery container. This is done
(a) to reduce evaporation of water from electrolyte
(b) to exclude dirt and foreign matter from the electrolyte
(c) to discharge both of the above functions
(d) to discharge none of the above functions
Ans: c

101. For a cell to work, which of the following condition(s) become necessary ?
(a) Two electrodes of different meta's should be inserted in the electrolyte, not touching each other
(b) Electrolyte must chemically react with one of the electrodes
(c) Electrolyte liquid or paste should be conducting
(d) All above three conditions are necessary
Ans: d

102. Which of the following primary cells has the lowest voltage ?
(a) Lithium
(b) Zinc-chloride
(c) Mercury
(d) Carbon-zinc
Ans: c

103. Which of the following primary cells has the highest voltage ?
(a) Manganese-alkaline
(6) Carbon-zinc
(c) Lithium
(d) Mercury
Ans: c

104. While preparing electrolyte for a lead-acid battery
(a) water is poured into acid
(b) acid is poured into water
(c) anyone of the two can be added to other chemical
Ans: b

105. Which of the following battery is used for air-craft ?
(a) Lead-acid battery
(b) Nickel-iron battery
(c) Dry cell battery
(d) Silver oxide battery
Ans: b

106. Which of the following cell has a. reversible chemical reaction ?
(a) Lead-acid
(b) Mercury oxide
(c) Carbon-zinc
(d) Silver-oxide
Ans: a

107. Which of the following is incorrect ?
(a) A storage cell has a reversible chemical reaction
(b) A lead-acid cell can be recharged
(c) A carbon-zinc cell has unlimited shelf life
(d) A primary cell has an irreversible chemical reaction
Ans: c

108. Which of the following has lower sp. gravity V
(a) Dilute H_2S_04
(6) Concentrated H_2SO_4
(c) Water
(d) Any of the above
Ans: c

109. Under normal charging rate, the charging current should be
(a) 10% of capacity
(b) 20% of capacity
(c) 30% of capacity
(d) 40% of capacity
Ans: a

110. When two batteries are connected in parallel, it should be ensured that
(a) they have same e.m.f.
(b) they have same make
(c) they have same ampere-hour capacity
(d) they have identical internal resistance
Ans: a

111. A typical output of a solar cell is
(a) 0.1V
(b) 0.26 V
(c) 1.1 V
(d) 2 V
Ans: b

112. Petroleum jelly is applied to the electrical connections to the lead-acid battery
(a) prevent local heating
(b) prevent short-circuiting
(c) reduce path resistance
(d) prevent corrosion
Ans: d

113. When the load resistance equals the generator resistance which of the following will be maximum ?
(a) Current
(b) Efficiency of the circuit
(c) Power in the load resistance
(d) Voltage across the load resistance
Ans: c

114. The common impurity in the electrolyte of lead-acid battery is
(a) chlorine
(b) dust particles
(c) lead crystals
(d) iron
Ans: d

115. In a lead-acid battery the energy is stored in the form of
(a) charged ions
(b) chemical energy
(c) electrostatic energy
(d) electromagnetic energy
Ans: b

116. Which among the following constitutes the major load for an automobile battery ?
(a) Brake light

(b) Self starter
(c) Parking lights
(d) Spark plugs
Ans: b

117. Which of the following factors adversely affects the capacity of the leadacid battery ?
(a) Temperature of surroundings
(b) Specific gravity of electrolyte
(c) Rate of discharge
(d) All of the above
Ans: d

118. Cells are connected in parallel to
(a) increase the efficiency
(b) increase the current capacity
(c) increase the voltage output
(d) increase the internal resistance
Ans: b

119. A constant-voltage generator has
(a) minimum efficiency
(b) minimum current capacity
(c) low internal resistance
(d) high internal resistance
Ans: c

120. Satellite power requirement is provided through
(a) solar cells
(b) dry cells
(c) nickel-cadmium cells
(d) lead-acid batteries
Ans: a