Unit I
Water Technology

Q. 1. Suspended impurities can be separated by_____.
a. Zeolite process
b. Ion Exchange process
c. Filtration
d. Osmosis
Ans: c

Q. 2. The impurities in water having particle size greater than _____ are suspended particles.
a. 1000 A°
b. 10 A°
c. 0. 1 A°
d. 1 A°
Ans: a

Q. 3. The impurities like bacteria, fungi etc. and other small size aquatic animals are coming in the category of _____ impurities.
a. Suspended
b. Biological
c. Colloidal
d. Dissolved
Ans: b

Q. 4. Water which does not form lather readily with soap is called as _____.
a. Soft water
b. Pure water
c. Impure water
d. Hard water
Ans: d

Q. 5. The water which contains impurities like $Ca(HCO_3)_2$, $Mg(HCO_3)_2$, $MgCO_3$ is the type of _____ hardness.
a. Carbonate
b. Non-carbonate
c. Permanent
d. Mild
Ans: a

Q. 6. When water is becoming hard due to the salts other than carbonates then the type of hardness is _____.
a. Carbonate
b. Non-carbonate
c. Sulphate
d. Nitrate
Ans: b

Q. 7. $MgCO_3 + H_2O \xrightarrow{\text{Boiled}} Mg(OH)_2 + CO_2$
The hardness removed by above method is _____ hardness.
a. Mild
b. Temporary
c. Non-carbonate
d. Permanent
Ans: b

Q. 8. Rain water is _____ water.
a. Hard
b. Soft
c. Impure
d. Double distilled
Ans: b

Q. 9. Commonly used unit of hardness is _____.
a. ml
b. Kg
c. ppm of $CaCO_3$
d. cm
Ans: c

Q. 10. To avoid corrosion due to dissolved oxygen, water is treated with _____.
a. $CaCO_3$
b. $CuSO_4$
c. Na_2SO_3
d. $KMnO_4$
Ans: c

Q. 11. Dissolved CO_2 from water is removed by adding suitable amount of _____.

a. NH_3
b. CO_2
c. H_2S
d. H_2O
Ans: a

Q. 12. To prevent corrosion due to acid formation the pH of the boiler feed water is maintained in between _____.
a. 2 to 4
b. 8. 5 to 9
c. 3. 5 to 7
d. 11. 5 to 14
Ans: b

Q. 13. Galvanic corrosion can be avoided by suspending _____ plates.
a. Steel
b. Chromium
c. Aluminium
d. Zinc
Ans: d

Q. 14. When boiler produces steam rapidly, some water droplets are carried along with steam. This process of wet steam formation is called as _____.
a. Carry over
b. Foaming
c. Priming
d. Sludge formation
Ans: c

Q. 15. Foaming is formation of continuous _____ on the surface of water.
a. Steam
b. Sludge
c. Droplets
d. Foam
Ans: d

Q. 16. Priming and foaming reduces _____.
a. Efficiency of machines.
b. Hardness of water.
c. Alkalinity of water.
d. Chloride content in water.
Ans: a

Q. 17. The slimy and loose deposits of precipitated salts in a boiler tube is known as _____.
a. Scale
b. Sludge
c. Priming
d. Carry over
Ans: b

Q. 18. Carry over is the alternative name for _____.
a. Sludge formation
b. Corrosion
c. Scale formation
d. Priming and foaming
Ans: d

Q. 19. The hard and strong coating formed inside the boiler tube by chemical reaction is called as _____.
a. Sludge
b. Scale
c. Carry over
d. Hard water
Ans: b

Q. 20. Normally sludge formation is towards the _____ parts of the boiler tube.
a. Hotter
b. Bottom
c. Cooler
d. Middle
Ans: c

Q. 21. The fast corrosion of boiler caused by highly alkaline condition of water is called as _____.
a. Osmosis
b. Evaporation
c. Precipitation
d. Caustic embrittelment

Ans: d

Q. 22. Caustic embrittelment can be avoided by treating boiler feed water with _____.
a. Sodium carbonate
b. Sodium phosphate
c. Sodium chloride
d. Sodium sulphate
Ans: b

Q. 23.Scales are generally formed at _____ parts of the boiler tube.
a. Upper
b. Side
c. Hotter
d. Middle
Ans: c

Q.24.Scale forming salts like $CaSO_4$, $Mg(HCO_3)_2$ in the boiler water can be converted into highly soluble complexes by adding _____.
a. Calgon
b. $MgSO_4$
c. Na_2CO_3
d. $CuSO_4$
Ans: a

Q.25.By adding _____ at a boiler temperature, it is possible to form gelatinous precipitate of scale and sludge forming salts.
a. Sodium carbonate
b. Sodium sulphate
c. Sodium aluminate
d. Sodium hydroxide
Ans: c

Q. 26. By using _____ chelating compound scales and sludges can be converted into soluble complexes.
a. Na_2CO_3
b. EDTA
c. Na_2PO_4
d. $CaCO_3$
Ans: b

Q. 27. The following treatment of water is internal treatment.
a. Zeolite
b. Ion Exchange process
c. Calgon conditioning
d. Osmosis
Ans: c

Q. 28. The other name of zeolite process is _____ process.
a. Ion exchange
b. Permutite
c. Demineralization
d. Coagulation
Ans: b

Q. 29. Sodium zeolite is actually _____.
a. Sodium Silicate
b. Aluminium Silicate
c. Calcium Silicate
d. Hydrated Sodium Alumino Silicate
Ans:d

Q.30.Exhausted zeolite bed can be regenerated by _____.
a. 5% NaCl
b. 10 % NaCl
c. 100 % NaCl
d. 20 % NaCl
Ans: b

Q. 31. Brine is nothing but _____.
a. 5% NaCl
b. 10 % NaCl
c. 100 % NaCl
d. 20 % NaCl
Ans: b

Q. 32. Zeolites are _____ like structures.
a. Square
b. Triangular
c. Honey Comb
d. Pyramid
Ans: c

Q. 33. Zeolite is basically _____ process.
a. Cation Exchange
b. Anion Exchange
c. Water Exchange
d. Ion Exchange
Ans: a

Q. 34. Zeolite process can not be used for water containing _____ impurities.
a. Dissolved
b. Biological
c. Suspended
d. Colloidal
c. Deionization
d. Osmosis
Ans: c

Q. 37. By using Ion Exchange process _____ can be exchanged.
a. Cations
b. Anions
c. Cations and anions both
d. None of these
Ans: c

Q. 38. The exhausted cation exchanger can be regenerated by _____.
a. NaCl
b. Dil. HCl
c. KCl
d. $CaCl_2$
Ans:b

Q. 39. The exhausted anion exchange resins can be regenerated by _____.
a. Dil. NaOH
b. $Ca(OH)_2$
c. KOH
d. $CaSO_4$
Ans: a

Q. 40. In EDTA vs hard water titration, the indicator used is _____.
a. Phenolpthalein
b. EBT
Ans: d

Q. 35. 8 % NaCl solution means _____.
a. 8 g/lit
b. 80 g/lit
c. 0. 8 g/lit
d. 0. 08 g/lit
Ans: b

Q. 36. Other name of Ion Exchange process is _____.
a. Permutite
b. Zeolite
c. Methyl orange
d. Fluoroscien
Ans: b

Q. 41. The colour of the metal-EDTA complex is _____.
a. Colourless
b. Wine red
c. Blue
d. Yellow
Ans: a

Q. 42. The colour of metal-EBT complex is _____.
a. Colourless
b. Wine red
c. Blue
d. Yellow
Ans: b

Q. 43. Na_2EDTA is _____dentate ligand.
a. Bi
b. Tri
c. Tetra
d. Hexa
Ans: d

Q. 44. In EDTA-hard water titration along with indicator _____ is added.
a. HCl
b. Buffer
c. NaOH

d. HNO_3
Ans:b

Q. 45. In EDTA titration by adding buffer solution _____ maintained.
a. Alkalinity
b. Acidity
c. pH
d. Neutrality
Ans: c

Q. 46. In alkalinity titration, first end point is called as _____ end point.
a. Phenolpthalein
b. EBT
c. Methyl orange
d. Fluorosciene
Ans: a

Q.47. In alkalinity experiment, phenolphthalein end point is _____.
a. Colourless to pink
b. Pink to colourless
c. Yellow to red
d. None of these
Ans: b

Q. 48. In alkalinity titration, second end point is called as _____ end point.
a. Phenolpthalein
b. EBT
c. Methyl orange
d. Fluoroscien
Ans: c

Q. 49. In alkalinity experiment, methyl orange end point is _____.
a. Colourless to pink
b. Pink to colourless
c. Yellow to red
d. None of these
Ans: c

Q. 50. If P = 0, then _____ alkalinities are present.
a. OH^-
b. HCO_3^{--}
c. CO_3^{--}
d. OH^- and CO_3^{--}
Ans: b

Q. 51. If P = ½ M, then _____alkalinities are present.
a. OH^-
b. HCO_3^{--}
c. CO_3^{--}
d. OH^- and CO_3^{--}
Ans: c

Q. 52. If P = M, then _____alkalinities are present.
a. OH^-
b. HCO_3^{--}
c. CO_3^{--}
d. OH^- and CO_3^{--}
Ans: a

Q. 53. If P < ½ M, then _____alkalinities are present.
a. OH^-
b. HCO_3^{--}
c. CO_3^{--}
d. HCO_3^{--} and CO_3^{--}
Ans: d

Q. 54. If P > ½ M, then _____alkalinities are present.
a. OH^-
b. HCO_3^{--}
c. CO_3^{--}
d. OH^- and CO_3^{--}
Ans: d

Q. 55. Determination of Alkalinity is _____type of titration.
a. Precipitation
b. Redox

c. Complexometric
d. Acid-base
Ans: d

Q.56.Hardness determination is _____type of titration.
a. Precipitation
b. Redox
c. Complexometric
d. Acid-base
Ans: c

Q. 57. The process of removing _____from water is called Desalination.
a. KCl
b. NaCl
c. $CaCl_2$
d. $BaCl_2$
Ans: b

Q. 58. In _____method concentration of brine decreases by applying direct electric current.
a. Ion exchange
b. Zeolite
c. Electrodialysis
d. Osmosis
Ans: c

Q. 59. Desalinated brine is removed from _____compartment.
a. Central
b. First
c. Last
d. None of these
Ans: a

Q. 60. In osmosis flow of liquid is from _____ solution.
a. Dilute to concentrated
b. Concentrated to dilute
c. Top to bottom
d. None of these
Ans: a

Q. 61. In reverse osmosis flow of liquid is from _____ solution.
a. Dilute to concentrated
b. Concentrated to dilute
c. Top to bottom
d. None of these
Ans: b

Q. 62. In reverse osmosis the direction of the flow is getting reversed as hydrostatic pressure is _____than osmotic pressure.
a. Low
b. Very low
c. Greater
d. None of these.
Ans: c

Q. 63. In osmosis process, after completion, in the tank _____ is present.
a. Pure water
b. Mixture
c. Contaminated water
d. None of these
Ans: c

Q. 64. In the preparation of adipic acid traditionally _____is used.
a. Benzene
b. Chlorobenzene
c. Glucose
d. None of these
Ans: a

Q. 65. In the preparation of adipic acid by using green and clean technology _____used.
a. Benzene
b. Chlorobenzene
c. Glucose
d. None of these
Ans: c

Q. 66. In urathanes, isocynates and polycarbonate synthesis traditionally _____is used

a. Chloride
b. Phosgene
c. H_2S
d. CO_2
Ans: b

Q. 67. By green chemistry route, urathanes, isocynates and polycarbonate are prepared by using _____.
a. Chloride
b. Phosgene
c. H_2S
d. CO_2
Ans: d

Q. 68. Traditional way of synthesizing indigo is with _____as starting material.
a. Benzene
b. Aniline
c. Chlorobenzene
d. None of these
Ans: b

Q. 69. In green chemistry approach, aniline is replaced by _____in the preparation of indigo.
a. Chlorobenzene
b. Benzene
c. L-tryptophan
d. Aniline.
Ans: c

Q. 70. The concept of Green Chemistry was developed by _____.
a. Bragg
b. Paul Anestas
c. Mendeleef
d. Dalton
Ans: b

Q. 71. Alkalinity of water is due to _____.
a. OH^-
b. CO_3^{--}
c. HCO_3^-
d. All of these
Ans: d

Q. 72. In reverse osmosis, _____.
a. Sewage water is purified
b. Industrial waste water is purified
c. Sea water is purified
d. River water is purified
Ans: c

Q. 73. Reverse osmosis is also known as _____.
a. Super filtration
b. Hyper filtration
c. Pressure filtration
d. Molecular sieve filtration
Ans: b

Q. 74. Electrodilysis is a method adopted to _____.
a. Remove high concentration of ions in saline water
b. Remove pathogenic bacteria
c. Remove salts
d. Purify water
Ans: a

Q. 75. Salts responsible for hardness are in _____ form.
a. Insoluble
b. Soluble
c. Partly soluble
d. None of these
Ans: b

Q. 76. Carbonate hardness =_____ hardness.
a. Permanent
b. Mild
c. Temporary
d. None of these
Ans: c

Q. 77. Unit for hardness is _____ = ppm.
a. gm / lit
b. lit/gm

c. mg/lit
d. mg/ml
Ans: c

Q. 78. Due to scale and sludge deposition in boiler efficiency of boiler _____.
a. Increases
b. Decreases
c. Remains same
d. All of these
Ans: b

Q. 79. In EDTA method, buffer solution is used to make water alkaline is a mixture of _____ + _____.
a. $NH_4Cl + NH_4OH$
b. $NH_4Cl + H_2O$
c. $NH_4OH + KCl$
d. All of these
Ans: a

Q. 80. In EDTA method, pH of the buffer solution is _____.
a. 5
b. 8
c. 10
d. 7
Ans: c

Q. 81. To remove _____ impurities from water internal/external treatments are to be given.
a. Colloidal
b. Suspended
c. Biological
d. Dissolved
Ans: b

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