

Applied & Modern Chemistry: Basic to Advanced

1. The oxidation state of Co in $[\text{Co}(\text{NH}_3)_6]\text{Cl}$ is:

- A) +2
- B) +3
- C) 0
- D) +1

■ **Correct Answer: B**

■ **Explanation:** The oxidation state of Co in $[\text{Co}(\text{NH}_3)_6]\text{Cl}$ is: Correct option B follows modern chemical principles or applications.

2. Gravimetric analysis involves:

- A) Mass measurement
- B) Volume measurement
- C) Color change
- D) pH change

■ **Correct Answer: A**

■ **Explanation:** Gravimetric analysis involves: Correct option A follows modern chemical principles or applications.

3. Energy released in nuclear reaction is given by:

- A) $E = mc^2$
- B) $PV = nRT$
- C) $F = ma$
- D) $E = hf$

■ **Correct Answer: A**

■ **Explanation:** Energy released in nuclear reaction is given by: Correct option A follows modern chemical principles or applications.

4. Vitamin C is also known as:

- A) Ascorbic acid
- B) Citric acid
- C) Niacin
- D) Folic acid

■ **Correct Answer: A**

■ **Explanation:** Vitamin C is also known as: Correct option A follows modern chemical principles or applications.

5. Vitamin C is also known as:

- A) Ascorbic acid
- B) Citric acid
- C) Niacin
- D) Folic acid

■ **Correct Answer: A**

■ **Explanation:** Vitamin C is also known as: Correct option A follows modern chemical principles or applications.

6. The main component of Portland cement is:

- A) CaO
- B) $\text{Ca}(\text{OH})_2$
- C) CaCO_3
- D) CaSiO_3

■ **Correct Answer: D**

■ **Explanation:** The main component of Portland cement is: Correct option D follows modern chemical principles or applications.

7. Atom economy means:

- A) Efficient use of atoms
- B) Low atom count
- C) More steps
- D) Less reactants

■ **Correct Answer: A**

■ **Explanation:** Atom economy means: Correct option A follows modern chemical principles or applications.

8. Electrolytic refining of copper uses electrolyte:

- A) $\text{CuSO}_4 + \text{H}_2\text{SO}_4$
- B) NaCl
- C) HCl
- D) KOH

■ **Correct Answer: A**

■ **Explanation:** Electrolytic refining of copper uses electrolyte: Correct option A follows modern chemical principles or applications.

9. Catalysts in green chemistry are used to:

- A) Lower activation energy
- B) Increase toxicity
- C) Reduce yield
- D) Slow reaction

■ **Correct Answer: A**

■ **Explanation:** Catalysts in green chemistry are used to: Correct option A follows modern chemical principles or applications.

10. Quantum dots are used in:

- A) Displays
- B) Batteries
- C) Cement
- D) Lubricants

■ **Correct Answer: A**

■ **Explanation:** Quantum dots are used in: Correct option A follows modern chemical principles or applications.

11. The main component of Portland cement is:

- A) CaO
- B) $\text{Ca}(\text{OH})_2$
- C) CaCO_3
- D) Ca_3SiO_5

■ **Correct Answer: D**

■ **Explanation:** The main component of Portland cement is: Correct option D follows modern chemical principles or applications.

12. The oxidation state of Co in $[\text{Co}(\text{NH}_3)_6]\text{Cl}_2$ is:

- A) +2
- B) +3
- C) 0
- D) +1

■ **Correct Answer: B**

■ **Explanation:** The oxidation state of Co in $[\text{Co}(\text{NH}_3)_6]\text{Cl}_2$ is: Correct option B follows modern chemical principles or applications.

13. The oxidation state of Co in $[\text{Co}(\text{NH}_3)_6]\text{Cl}$ is:

- A) +2
- B) +3
- C) 0
- D) +1

■ **Correct Answer: B**

■ **Explanation:** The oxidation state of Co in $[\text{Co}(\text{NH}_3)_6]\text{Cl}$ is: Correct option B follows modern chemical principles or applications.

14. Nanochemistry deals with particles of size:

- A) 1–100 nm
- B) 1–10 μm
- C) 1–10 cm
- D) 1–10 $\text{\AA}$

■ **Correct Answer: A**

■ **Explanation:** Nanochemistry deals with particles of size: Correct option A follows modern chemical principles or applications.

15. The gas responsible for acid rain is:

- A) CO_2
- B) SO_2
- C) N_2
- D) O_2

■ **Correct Answer: B**

■ **Explanation:** The gas responsible for acid rain is: Correct option B follows modern chemical principles or applications.

16. Energy released in nuclear reaction is given by:

- A) $E = mc^2$
- B) $PV = nRT$
- C) $F = ma$
- D) $E = hf$

■ **Correct Answer: A**

■ **Explanation:** Energy released in nuclear reaction is given by: Correct option A follows modern chemical principles or applications.

17. The indicator used in acid-base titration is:

- A) Phenolphthalein
- B) Starch
- C) Methyl orange
- D) Both A and C

■ **Correct Answer: D**

■ **Explanation:** The indicator used in acid-base titration is: Correct option D follows modern chemical principles or applications.

18. Gravimetric analysis involves:

- A) Mass measurement
- B) Volume measurement
- C) Color change
- D) pH change

■ **Correct Answer: A**

■ **Explanation:** Gravimetric analysis involves: Correct option A follows modern chemical principles or applications.

19. Energy released in nuclear reaction is given by:

- A) $E = mc^2$
- B) $PV = nRT$
- C) $F = ma$
- D) $E = hf$

■ **Correct Answer: A**

■ **Explanation:** Energy released in nuclear reaction is given by: Correct option A follows modern chemical principles or applications.

20. UV spectroscopy involves transitions between:

- A) Electronic energy levels
- B) Vibrational levels
- C) Rotational levels
- D) None

■ **Correct Answer: A**

■ **Explanation:** UV spectroscopy involves transitions between: Correct option A follows modern chemical principles or applications.

21. Fuel used in nuclear reactor is:

- A) U-235
- B) C-12
- C) Fe-56
- D) H-2

■ **Correct Answer: A**

■ **Explanation:** Fuel used in nuclear reactor is: Correct option A follows modern chemical principles or applications.

22. The oxidation state of Co in $[\text{Co}(\text{NH}_3)_4]\text{Cl}$ is:

- A) +2
- B) +3
- C) 0
- D) +1

■ **Correct Answer: B**

■ **Explanation:** The oxidation state of Co in $[\text{Co}(\text{NH}_3)_4]\text{Cl}$ is: Correct option B follows modern chemical principles or applications.

23. Mass spectrometry separates ions by:

- A) Mass/charge ratio
- B) Polarity
- C) Size
- D) Energy

■ **Correct Answer: A**

■ **Explanation:** Mass spectrometry separates ions by: Correct option A follows modern chemical principles or applications.

24. Electrolytic refining of copper uses electrolyte:

- A) $\text{CuSO}_4 + \text{H}_2\text{SO}_4$
- B) NaCl
- C) HCl
- D) KOH

■ **Correct Answer: A**

■ **Explanation:** Electrolytic refining of copper uses electrolyte: Correct option A follows modern chemical principles or applications.

25. The indicator used in acid-base titration is:

- A) Phenolphthalein
- B) Starch
- C) Methyl orange
- D) Both A and C

■ **Correct Answer: D**

■ **Explanation:** The indicator used in acid-base titration is: Correct option D follows modern chemical principles or applications.

26. In electroplating, the object to be plated is:

- A) Cathode
- B) Anode
- C) Electrolyte
- D) Salt bridge

■ **Correct Answer: A**

■ **Explanation:** In electroplating, the object to be plated is: Correct option A follows modern chemical principles or applications.

27. Half-life is the time required for:

- A) Complete decay
- B) Half of nuclei to decay
- C) 1/4 to decay
- D) All to stabilize

■ **Correct Answer: B**

■ **Explanation:** Half-life is the time required for: Correct option B follows modern chemical principles or applications.

28. Fuel cell converts:

- A) Chemical energy → Electrical
- B) Electrical → Chemical
- C) Mechanical → Heat
- D) Heat → Chemical

■ **Correct Answer: A**

■ **Explanation:** Fuel cell converts: Correct option A follows modern chemical principles or applications.

29. The color of complex is due to:

- A) Charge transfer
- B) d–d transitions
- C) Lattice energy
- D) Ionization

■ **Correct Answer: B**

■ **Explanation:** The color of complex is due to: Correct option B follows modern chemical principles or applications.

30. Quantum dots are used in:

- A) Displays
- B) Batteries
- C) Cement
- D) Lubricants

■ **Correct Answer: A**

■ **Explanation:** Quantum dots are used in: Correct option A follows modern chemical principles or applications.

31. Aspirin is chemically:

- A) Acetylsalicylic acid
- B) Benzoic acid
- C) Sulfanilic acid
- D) Citric acid

■ **Correct Answer: A**

■ **Explanation:** Aspirin is chemically: Correct option A follows modern chemical principles or applications.

32. EDTA is used in complexometric titration to estimate:

- A) Hardness of water
- B) Acid strength
- C) Base strength
- D) Chlorides

■ **Correct Answer: A**

■ **Explanation:** EDTA is used in complexometric titration to estimate: Correct option A follows modern chemical principles or applications.

33. Gravimetric analysis involves:

- A) Mass measurement
- B) Volume measurement
- C) Color change

D) pH change

■ **Correct Answer: A**

■ **Explanation:** Gravimetric analysis involves: Correct option A follows modern chemical principles or applications.

34. IR spectroscopy is mainly used for:

A) Functional group detection

B) Elemental analysis

C) Mass determination

D) Purity test

■ **Correct Answer: A**

■ **Explanation:** IR spectroscopy is mainly used for: Correct option A follows modern chemical principles or applications.

35. Mass spectrometry separates ions by:

A) Mass/charge ratio

B) Polarity

C) Size

D) Energy

■ **Correct Answer: A**

■ **Explanation:** Mass spectrometry separates ions by: Correct option A follows modern chemical principles or applications.

36. Catalysts in green chemistry are used to:

A) Lower activation energy

B) Increase toxicity

C) Reduce yield

D) Slow reaction

■ **Correct Answer: A**

■ **Explanation:** Catalysts in green chemistry are used to: Correct option A follows modern chemical principles or applications.

37. Carbon nanotubes are composed of:

A) Graphite layers

B) Diamond chains

C) Silica sheets

D) Protein fibers

■ **Correct Answer: A**

■ **Explanation:** Carbon nanotubes are composed of: Correct option A follows modern chemical principles or applications.

38. Atom economy means:

A) Efficient use of atoms

B) Low atom count

C) More steps

D) Less reactants

■ **Correct Answer: A**

■ **Explanation:** Atom economy means: Correct option A follows modern chemical principles or applications.

39. IR spectroscopy is mainly used for:

A) Functional group detection

B) Elemental analysis

C) Mass determination

D) Purity test

■ **Correct Answer: A**

■ **Explanation:** IR spectroscopy is mainly used for: Correct option A follows modern chemical principles or applications.

40. Carbon nanotubes are composed of:

- A) Graphite layers
- B) Diamond chains
- C) Silica sheets
- D) Protein fibers

■ **Correct Answer: A**

■ **Explanation:** Carbon nanotubes are composed of: Correct option A follows modern chemical principles or applications.

41. Catalysts in green chemistry are used to:

- A) Lower activation energy
- B) Increase toxicity
- C) Reduce yield
- D) Slow reaction

■ **Correct Answer: A**

■ **Explanation:** Catalysts in green chemistry are used to: Correct option A follows modern chemical principles or applications.

42. Contact process is used for manufacturing:

- A) H_2SO_4
- B) NH_3
- C) Na_2CO_3
- D) HNO_3

■ **Correct Answer: A**

■ **Explanation:** Contact process is used for manufacturing: Correct option A follows modern chemical principles or applications.

43. Mass spectrometry separates ions by:

- A) Mass/charge ratio
- B) Polarity
- C) Size
- D) Energy

■ **Correct Answer: A**

■ **Explanation:** Mass spectrometry separates ions by: Correct option A follows modern chemical principles or applications.

44. The gas responsible for acid rain is:

- A) CO_2
- B) SO_2
- C) N_2
- D) O_2

■ **Correct Answer: B**

■ **Explanation:** The gas responsible for acid rain is: Correct option B follows modern chemical principles or applications.

45. The gas responsible for acid rain is:

- A) CO_2
- B) SO_2
- C) N_2
- D) O_2

■ **Correct Answer: B**

■ **Explanation:** The gas responsible for acid rain is: Correct option B follows modern chemical principles or applications.

46. IR spectroscopy is mainly used for:

- A) Functional group detection
- B) Elemental analysis
- C) Mass determination
- D) Purity test

■ **Correct Answer: A**

■ **Explanation:** IR spectroscopy is mainly used for: Correct option A follows modern chemical principles or applications.

47. Energy released in nuclear reaction is given by:

- A) $E = mc^2$
- B) $PV = nRT$
- C) $F = ma$
- D) $E = hf$

■ **Correct Answer: A**

■ **Explanation:** Energy released in nuclear reaction is given by: Correct option A follows modern chemical principles or applications.

48. EDTA acts as:

- A) Monodentate
- B) Bidentate
- C) Hexadentate
- D) Tridentate

■ **Correct Answer: C**

■ **Explanation:** EDTA acts as: Correct option C follows modern chemical principles or applications.

49. Fuel cell converts:

- A) Chemical energy → Electrical
- B) Electrical → Chemical
- C) Mechanical → Heat
- D) Heat → Chemical

■ **Correct Answer: A**

■ **Explanation:** Fuel cell converts: Correct option A follows modern chemical principles or applications.

50. Aspirin is chemically:

- A) Acetylsalicylic acid
- B) Benzoic acid
- C) Sulfanilic acid
- D) Citric acid

■ **Correct Answer: A**

■ **Explanation:** Aspirin is chemically: Correct option A follows modern chemical principles or applications.

51. Carbon nanotubes are composed of:

- A) Graphite layers
- B) Diamond chains
- C) Silica sheets
- D) Protein fibers

■ **Correct Answer: A**

■ **Explanation:** Carbon nanotubes are composed of: Correct option A follows modern chemical principles or applications.

52. Electrolytic refining of copper uses electrolyte:

- A) $\text{CuSO}_4 + \text{H}_2\text{SO}_4$
- B) NaCl
- C) HCl
- D) KOH

■ **Correct Answer: A**

■ **Explanation:** Electrolytic refining of copper uses electrolyte: Correct option A follows modern chemical principles or applications.

53. Nanochemistry deals with particles of size:

- A) 1–100 nm
- B) 1–10 μm
- C) 1–10 cm
- D) 1–10 $\text{\AA}$

■ **Correct Answer: A**

■ **Explanation:** Nanochemistry deals with particles of size: Correct option A follows modern chemical principles or applications.

54. UV spectroscopy involves transitions between:

- A) Electronic energy levels
- B) Vibrational levels
- C) Rotational levels
- D) None

■ **Correct Answer: A**

■ **Explanation:** UV spectroscopy involves transitions between: Correct option A follows modern chemical principles or applications.

55. Half-life is the time required for:

- A) Complete decay
- B) Half of nuclei to decay
- C) 1/4 to decay
- D) All to stabilize

■ **Correct Answer: B**

■ **Explanation:** Half-life is the time required for: Correct option B follows modern chemical principles or applications.

56. The oxidation state of Co in $[\text{Co}(\text{NH}_3)_4\text{Cl}]$ is:

- A) +2
- B) +3
- C) 0
- D) +1

■ **Correct Answer: B**

■ **Explanation:** The oxidation state of Co in $[\text{Co}(\text{NH}_3)_4\text{Cl}]$ is: Correct option B follows modern chemical principles or applications.

57. In electroplating, the object to be plated is:

- A) Cathode
- B) Anode
- C) Electrolyte
- D) Salt bridge

■ **Correct Answer: A**

■ **Explanation:** In electroplating, the object to be plated is: Correct option A follows modern chemical principles or applications.

58. Vitamin C is also known as:

- A) Ascorbic acid
- B) Citric acid
- C) Niacin
- D) Folic acid

■ **Correct Answer: A**

■ **Explanation:** Vitamin C is also known as: Correct option A follows modern chemical principles or applications.

59. Vitamin C is also known as:

- A) Ascorbic acid
- B) Citric acid
- C) Niacin
- D) Folic acid

■ **Correct Answer: A**

■ **Explanation:** Vitamin C is also known as: Correct option A follows modern chemical principles or applications.

60. Monosodium glutamate (MSG) is used as:

- A) Flavor enhancer
- B) Preservative
- C) Sweetener
- D) Coloring agent

■ **Correct Answer:** A

■ **Explanation:** Monosodium glutamate (MSG) is used as: Correct option A follows modern chemical principles or applications.

61. Fuel used in nuclear reactor is:

- A) U-235
- B) C-12
- C) Fe-56
- D) H-2

■ **Correct Answer: A**

■ **Explanation:** Fuel used in nuclear reactor is: Correct option A follows modern chemical principles or applications.

62. Atom economy means:

- A) Efficient use of atoms
- B) Low atom count
- C) More steps
- D) Less reactants

■ **Correct Answer: A**

■ **Explanation:** Atom economy means: Correct option A follows modern chemical principles or applications.

63. Quantum dots are used in:

- A) Displays
- B) Batteries
- C) Cement
- D) Lubricants

■ **Correct Answer: A**

■ **Explanation:** Quantum dots are used in: Correct option A follows modern chemical principles or applications.

64. Green chemistry emphasizes:

- A) Pollution prevention
- B) New elements
- C) Nuclear reactions
- D) Synthetic fuels

■ **Correct Answer: A**

■ **Explanation:** Green chemistry emphasizes: Correct option A follows modern chemical principles or applications.

65. Aspirin is chemically:

- A) Acetylsalicylic acid
- B) Benzoic acid
- C) Sulfanilic acid
- D) Citric acid

■ **Correct Answer: A**

■ **Explanation:** Aspirin is chemically: Correct option A follows modern chemical principles or applications.

66. Aspirin is chemically:

- A) Acetylsalicylic acid
- B) Benzoic acid
- C) Sulfanilic acid
- D) Citric acid

■ **Correct Answer: A**

■ **Explanation:** Aspirin is chemically: Correct option A follows modern chemical principles or applications.

67. Fuel used in nuclear reactor is:

- A) U-235
- B) C-12

- C) Fe-56
- D) H-2

■ **Correct Answer: A**

■ **Explanation:** Fuel used in nuclear reactor is: Correct option A follows modern chemical principles or applications.

68. Quantum dots are used in:

- A) Displays
- B) Batteries
- C) Cement
- D) Lubricants

■ **Correct Answer: A**

■ **Explanation:** Quantum dots are used in: Correct option A follows modern chemical principles or applications.

69. Fuel used in nuclear reactor is:

- A) U-235
- B) C-12
- C) Fe-56
- D) H-2

■ **Correct Answer: A**

■ **Explanation:** Fuel used in nuclear reactor is: Correct option A follows modern chemical principles or applications.

70. Energy released in nuclear reaction is given by:

- A) $E = mc^2$
- B) $PV = nRT$
- C) $F = ma$
- D) $E = hf$

■ **Correct Answer: A**

■ **Explanation:** Energy released in nuclear reaction is given by: Correct option A follows modern chemical principles or applications.

71. The main component of Portland cement is:

- A) CaO
- B) Ca(OH)■
- C) CaCO■
- D) Ca■SiO■

■ **Correct Answer: D**

■ **Explanation:** The main component of Portland cement is: Correct option D follows modern chemical principles or applications.

72. The main component of Portland cement is:

- A) CaO
- B) Ca(OH)■
- C) CaCO■
- D) Ca■SiO■

■ **Correct Answer: D**

■ **Explanation:** The main component of Portland cement is: Correct option D follows modern chemical principles or applications.

73. EDTA acts as:

- A) Monodentate
- B) Bidentate

- C) Hexadentate
- D) Tridentate

■ **Correct Answer: C**

■ **Explanation:** EDTA acts as: Correct option C follows modern chemical principles or applications.

74. Green chemistry emphasizes:

- A) Pollution prevention
- B) New elements
- C) Nuclear reactions
- D) Synthetic fuels

■ **Correct Answer: A**

■ **Explanation:** Green chemistry emphasizes: Correct option A follows modern chemical principles or applications.

75. Nanochemistry deals with particles of size:

- A) 1–100 nm
- B) 1–10 μm
- C) 1–10 cm
- D) 1–10 $\text{\AA}$

■ **Correct Answer: A**

■ **Explanation:** Nanochemistry deals with particles of size: Correct option A follows modern chemical principles or applications.

76. Energy released in nuclear reaction is given by:

- A) $E = mc^2$
- B) $PV = nRT$
- C) $F = ma$
- D) $E = hf$

■ **Correct Answer: A**

■ **Explanation:** Energy released in nuclear reaction is given by: Correct option A follows modern chemical principles or applications.

77. Gravimetric analysis involves:

- A) Mass measurement
- B) Volume measurement
- C) Color change
- D) pH change

■ **Correct Answer: A**

■ **Explanation:** Gravimetric analysis involves: Correct option A follows modern chemical principles or applications.

78. Nanochemistry deals with particles of size:

- A) 1–100 nm
- B) 1–10 μm
- C) 1–10 cm
- D) 1–10 $\text{\AA}$

■ **Correct Answer: A**

■ **Explanation:** Nanochemistry deals with particles of size: Correct option A follows modern chemical principles or applications.

79. IR spectroscopy is mainly used for:

- A) Functional group detection
- B) Elemental analysis
- C) Mass determination

D) Purity test

■ **Correct Answer: A**

■ **Explanation:** IR spectroscopy is mainly used for: Correct option A follows modern chemical principles or applications.

80. IR spectroscopy is mainly used for:

A) Functional group detection

B) Elemental analysis

C) Mass determination

D) Purity test

■ **Correct Answer: A**

■ **Explanation:** IR spectroscopy is mainly used for: Correct option A follows modern chemical principles or applications.

81. Green chemistry emphasizes:

- A) Pollution prevention
- B) New elements
- C) Nuclear reactions
- D) Synthetic fuels

■ **Correct Answer: A**

■ **Explanation:** Green chemistry emphasizes: Correct option A follows modern chemical principles or applications.

82. EDTA acts as:

- A) Monodentate
- B) Bidentate
- C) Hexadentate
- D) Tridentate

■ **Correct Answer: C**

■ **Explanation:** EDTA acts as: Correct option C follows modern chemical principles or applications.

83. The color of complex is due to:

- A) Charge transfer
- B) d–d transitions
- C) Lattice energy
- D) Ionization

■ **Correct Answer: B**

■ **Explanation:** The color of complex is due to: Correct option B follows modern chemical principles or applications.

84. Contact process is used for manufacturing:

- A) H_2SO_4
- B) NH_3
- C) Na_2CO_3
- D) HNO_3

■ **Correct Answer: A**

■ **Explanation:** Contact process is used for manufacturing: Correct option A follows modern chemical principles or applications.

85. The color of complex is due to:

- A) Charge transfer
- B) d–d transitions
- C) Lattice energy
- D) Ionization

■ **Correct Answer: B**

■ **Explanation:** The color of complex is due to: Correct option B follows modern chemical principles or applications.

86. Quantum dots are used in:

- A) Displays
- B) Batteries
- C) Cement
- D) Lubricants

■ **Correct Answer: A**

■ **Explanation:** Quantum dots are used in: Correct option A follows modern chemical principles or applications.

87. EDTA acts as:

- A) Monodentate
- B) Bidentate
- C) Hexadentate
- D) Tridentate

■ **Correct Answer: C**

■ **Explanation:** EDTA acts as: Correct option C follows modern chemical principles or applications.

88. UV spectroscopy involves transitions between:

- A) Electronic energy levels
- B) Vibrational levels
- C) Rotational levels
- D) None

■ **Correct Answer: A**

■ **Explanation:** UV spectroscopy involves transitions between: Correct option A follows modern chemical principles or applications.

89. The indicator used in acid-base titration is:

- A) Phenolphthalein
- B) Starch
- C) Methyl orange
- D) Both A and C

■ **Correct Answer: D**

■ **Explanation:** The indicator used in acid-base titration is: Correct option D follows modern chemical principles or applications.

90. Catalysts in green chemistry are used to:

- A) Lower activation energy
- B) Increase toxicity
- C) Reduce yield
- D) Slow reaction

■ **Correct Answer: A**

■ **Explanation:** Catalysts in green chemistry are used to: Correct option A follows modern chemical principles or applications.

91. Quantum dots are used in:

- A) Displays
- B) Batteries
- C) Cement
- D) Lubricants

■ **Correct Answer: A**

■ **Explanation:** Quantum dots are used in: Correct option A follows modern chemical principles or applications.

92. Catalysts in green chemistry are used to:

- A) Lower activation energy
- B) Increase toxicity
- C) Reduce yield
- D) Slow reaction

■ **Correct Answer: A**

■ **Explanation:** Catalysts in green chemistry are used to: Correct option A follows modern chemical principles or applications.

93. UV spectroscopy involves transitions between:

- A) Electronic energy levels
- B) Vibrational levels

- C) Rotational levels
- D) None

■ **Correct Answer: A**

■ **Explanation:** UV spectroscopy involves transitions between: Correct option A follows modern chemical principles or applications.

94. Fuel used in nuclear reactor is:

- A) U-235
- B) C-12
- C) Fe-56
- D) H-2

■ **Correct Answer: A**

■ **Explanation:** Fuel used in nuclear reactor is: Correct option A follows modern chemical principles or applications.

95. Atom economy means:

- A) Efficient use of atoms
- B) Low atom count
- C) More steps
- D) Less reactants

■ **Correct Answer: A**

■ **Explanation:** Atom economy means: Correct option A follows modern chemical principles or applications.

96. Nanochemistry deals with particles of size:

- A) 1–100 nm
- B) 1–10 μm
- C) 1–10 cm
- D) 1–10 $\text{\AA}$

■ **Correct Answer: A**

■ **Explanation:** Nanochemistry deals with particles of size: Correct option A follows modern chemical principles or applications.

97. Quantum dots are used in:

- A) Displays
- B) Batteries
- C) Cement
- D) Lubricants

■ **Correct Answer: A**

■ **Explanation:** Quantum dots are used in: Correct option A follows modern chemical principles or applications.

98. Quantum dots are used in:

- A) Displays
- B) Batteries
- C) Cement
- D) Lubricants

■ **Correct Answer: A**

■ **Explanation:** Quantum dots are used in: Correct option A follows modern chemical principles or applications.

99. Fuel cell converts:

- A) Chemical energy $\rightarrow$ Electrical
- B) Electrical $\rightarrow$ Chemical
- C) Mechanical $\rightarrow$ Heat

D) Heat → Chemical

■ **Correct Answer: A**

■ **Explanation:** Fuel cell converts: Correct option A follows modern chemical principles or applications.

100. The color of complex is due to:

A) Charge transfer

B) d–d transitions

C) Lattice energy

D) Ionization

■ **Correct Answer: B**

■ **Explanation:** The color of complex is due to: Correct option B follows modern chemical principles or applications.

101. EDTA is used in complexometric titration to estimate:

- A) Hardness of water
- B) Acid strength
- C) Base strength
- D) Chlorides

■ **Correct Answer: A**

■ **Explanation:** EDTA is used in complexometric titration to estimate: Correct option A follows modern chemical principles or applications.

102. EDTA is used in complexometric titration to estimate:

- A) Hardness of water
- B) Acid strength
- C) Base strength
- D) Chlorides

■ **Correct Answer: A**

■ **Explanation:** EDTA is used in complexometric titration to estimate: Correct option A follows modern chemical principles or applications.

103. Quantum dots are used in:

- A) Displays
- B) Batteries
- C) Cement
- D) Lubricants

■ **Correct Answer: A**

■ **Explanation:** Quantum dots are used in: Correct option A follows modern chemical principles or applications.

104. Gravimetric analysis involves:

- A) Mass measurement
- B) Volume measurement
- C) Color change
- D) pH change

■ **Correct Answer: A**

■ **Explanation:** Gravimetric analysis involves: Correct option A follows modern chemical principles or applications.

105. The color of complex is due to:

- A) Charge transfer
- B) d–d transitions
- C) Lattice energy
- D) Ionization

■ **Correct Answer: B**

■ **Explanation:** The color of complex is due to: Correct option B follows modern chemical principles or applications.

106. Mass spectrometry separates ions by:

- A) Mass/charge ratio
- B) Polarity
- C) Size
- D) Energy

■ **Correct Answer: A**

■ **Explanation:** Mass spectrometry separates ions by: Correct option A follows modern chemical principles or applications.

107. Fuel used in nuclear reactor is:

- A) U-235
- B) C-12
- C) Fe-56
- D) H-2

■ **Correct Answer: A**

■ **Explanation:** Fuel used in nuclear reactor is: Correct option A follows modern chemical principles or applications.

108. Vitamin C is also known as:

- A) Ascorbic acid
- B) Citric acid
- C) Niacin
- D) Folic acid

■ **Correct Answer: A**

■ **Explanation:** Vitamin C is also known as: Correct option A follows modern chemical principles or applications.

109. The main component of Portland cement is:

- A) CaO
- B) Ca(OH)■
- C) CaCO■
- D) Ca■SiO■

■ **Correct Answer: D**

■ **Explanation:** The main component of Portland cement is: Correct option D follows modern chemical principles or applications.

110. The color of complex is due to:

- A) Charge transfer
- B) d–d transitions
- C) Lattice energy
- D) Ionization

■ **Correct Answer: B**

■ **Explanation:** The color of complex is due to: Correct option B follows modern chemical principles or applications.

111. Fuel used in nuclear reactor is:

- A) U-235
- B) C-12
- C) Fe-56
- D) H-2

■ **Correct Answer: A**

■ **Explanation:** Fuel used in nuclear reactor is: Correct option A follows modern chemical principles or applications.

112. Contact process is used for manufacturing:

- A) H■SO■
- B) NH■
- C) Na■CO■
- D) HNO■

■ **Correct Answer: A**

■ **Explanation:** Contact process is used for manufacturing: Correct option A follows modern chemical principles or applications.

113. IR spectroscopy is mainly used for:

- A) Functional group detection
- B) Elemental analysis
- C) Mass determination
- D) Purity test

■ **Correct Answer: A**

■ **Explanation:** IR spectroscopy is mainly used for: Correct option A follows modern chemical principles or applications.

114. Contact process is used for manufacturing:

- A) H_2SO_4
- B) NH_3
- C) Na_2CO_3
- D) HNO_3

■ **Correct Answer: A**

■ **Explanation:** Contact process is used for manufacturing: Correct option A follows modern chemical principles or applications.

115. Catalysts in green chemistry are used to:

- A) Lower activation energy
- B) Increase toxicity
- C) Reduce yield
- D) Slow reaction

■ **Correct Answer: A**

■ **Explanation:** Catalysts in green chemistry are used to: Correct option A follows modern chemical principles or applications.

116. Monosodium glutamate (MSG) is used as:

- A) Flavor enhancer
- B) Preservative
- C) Sweetener
- D) Coloring agent

■ **Correct Answer: A**

■ **Explanation:** Monosodium glutamate (MSG) is used as: Correct option A follows modern chemical principles or applications.

117. IR spectroscopy is mainly used for:

- A) Functional group detection
- B) Elemental analysis
- C) Mass determination
- D) Purity test

■ **Correct Answer: A**

■ **Explanation:** IR spectroscopy is mainly used for: Correct option A follows modern chemical principles or applications.

118. The color of complex is due to:

- A) Charge transfer
- B) d-d transitions
- C) Lattice energy
- D) Ionization

■ **Correct Answer: B**

■ **Explanation:** The color of complex is due to: Correct option B follows modern chemical principles or applications.

119. Half-life is the time required for:

- A) Complete decay
- B) Half of nuclei to decay
- C) 1/4 to decay
- D) All to stabilize

■ **Correct Answer: B**

■ **Explanation:** Half-life is the time required for: Correct option B follows modern chemical principles or applications.

120. Half-life is the time required for:

- A) Complete decay
- B) Half of nuclei to decay
- C) 1/4 to decay
- D) All to stabilize

■ **Correct Answer: B**

■ **Explanation:** Half-life is the time required for: Correct option B follows modern chemical principles or applications.

121. Atom economy means:

- A) Efficient use of atoms
- B) Low atom count
- C) More steps
- D) Less reactants

■ **Correct Answer: A**

■ **Explanation:** Atom economy means: Correct option A follows modern chemical principles or applications.

122. Monosodium glutamate (MSG) is used as:

- A) Flavor enhancer
- B) Preservative
- C) Sweetener
- D) Coloring agent

■ **Correct Answer: A**

■ **Explanation:** Monosodium glutamate (MSG) is used as: Correct option A follows modern chemical principles or applications.

123. In electroplating, the object to be plated is:

- A) Cathode
- B) Anode
- C) Electrolyte
- D) Salt bridge

■ **Correct Answer: A**

■ **Explanation:** In electroplating, the object to be plated is: Correct option A follows modern chemical principles or applications.

124. EDTA acts as:

- A) Monodentate
- B) Bidentate
- C) Hexadentate
- D) Tridentate

■ **Correct Answer: C**

■ **Explanation:** EDTA acts as: Correct option C follows modern chemical principles or applications.

125. Fuel cell converts:

- A) Chemical energy → Electrical
- B) Electrical → Chemical
- C) Mechanical → Heat
- D) Heat → Chemical

■ **Correct Answer: A**

■ **Explanation:** Fuel cell converts: Correct option A follows modern chemical principles or applications.

126. The gas responsible for acid rain is:

- A) CO■
- B) SO■
- C) N■
- D) O■

■ **Correct Answer: B**

■ **Explanation:** The gas responsible for acid rain is: Correct option B follows modern chemical principles or applications.

127. Gravimetric analysis involves:

- A) Mass measurement
- B) Volume measurement

- C) Color change
- D) pH change

■ **Correct Answer: A**

■ **Explanation:** Gravimetric analysis involves: Correct option A follows modern chemical principles or applications.

128. Energy released in nuclear reaction is given by:

- A) $E = mc^2$
- B) $PV = nRT$
- C) $F = ma$
- D) $E = hf$

■ **Correct Answer: A**

■ **Explanation:** Energy released in nuclear reaction is given by: Correct option A follows modern chemical principles or applications.

129. The color of complex is due to:

- A) Charge transfer
- B) d–d transitions
- C) Lattice energy
- D) Ionization

■ **Correct Answer: B**

■ **Explanation:** The color of complex is due to: Correct option B follows modern chemical principles or applications.

130. Electrolytic refining of copper uses electrolyte:

- A) $\text{CuSO}_4 + \text{H}_2\text{SO}_4$
- B) NaCl
- C) HCl
- D) KOH

■ **Correct Answer: A**

■ **Explanation:** Electrolytic refining of copper uses electrolyte: Correct option A follows modern chemical principles or applications.

131. The color of complex is due to:

- A) Charge transfer
- B) d–d transitions
- C) Lattice energy
- D) Ionization

■ **Correct Answer: B**

■ **Explanation:** The color of complex is due to: Correct option B follows modern chemical principles or applications.

132. Carbon nanotubes are composed of:

- A) Graphite layers
- B) Diamond chains
- C) Silica sheets
- D) Protein fibers

■ **Correct Answer: A**

■ **Explanation:** Carbon nanotubes are composed of: Correct option A follows modern chemical principles or applications.

133. The gas responsible for acid rain is:

- A) CO_2
- B) SO_2

- C) N■
D) O■

■ **Correct Answer: B**

■ **Explanation:** The gas responsible for acid rain is: Correct option B follows modern chemical principles or applications.

134. In electroplating, the object to be plated is:

- A) Cathode
B) Anode
C) Electrolyte
D) Salt bridge

■ **Correct Answer: A**

■ **Explanation:** In electroplating, the object to be plated is: Correct option A follows modern chemical principles or applications.

135. Half-life is the time required for:

- A) Complete decay
B) Half of nuclei to decay
C) 1/4 to decay
D) All to stabilize

■ **Correct Answer: B**

■ **Explanation:** Half-life is the time required for: Correct option B follows modern chemical principles or applications.

136. The main component of Portland cement is:

- A) CaO
B) Ca(OH)■
C) CaCO■
D) Ca■SiO■

■ **Correct Answer: D**

■ **Explanation:** The main component of Portland cement is: Correct option D follows modern chemical principles or applications.

137. UV spectroscopy involves transitions between:

- A) Electronic energy levels
B) Vibrational levels
C) Rotational levels
D) None

■ **Correct Answer: A**

■ **Explanation:** UV spectroscopy involves transitions between: Correct option A follows modern chemical principles or applications.

138. Carbon nanotubes are composed of:

- A) Graphite layers
B) Diamond chains
C) Silica sheets
D) Protein fibers

■ **Correct Answer: A**

■ **Explanation:** Carbon nanotubes are composed of: Correct option A follows modern chemical principles or applications.

139. EDTA acts as:

- A) Monodentate
B) Bidentate

- C) Hexadentate
- D) Tridentate

■ **Correct Answer: C**

■ **Explanation:** EDTA acts as: Correct option C follows modern chemical principles or applications.

140. Vitamin C is also known as:

- A) Ascorbic acid
- B) Citric acid
- C) Niacin
- D) Folic acid

■ **Correct Answer: A**

■ **Explanation:** Vitamin C is also known as: Correct option A follows modern chemical principles or applications.

141. Fuel used in nuclear reactor is:

- A) U-235
- B) C-12
- C) Fe-56
- D) H-2

■ **Correct Answer: A**

■ **Explanation:** Fuel used in nuclear reactor is: Correct option A follows modern chemical principles or applications.

142. Fuel cell converts:

- A) Chemical energy → Electrical
- B) Electrical → Chemical
- C) Mechanical → Heat
- D) Heat → Chemical

■ **Correct Answer: A**

■ **Explanation:** Fuel cell converts: Correct option A follows modern chemical principles or applications.

143. Monosodium glutamate (MSG) is used as:

- A) Flavor enhancer
- B) Preservative
- C) Sweetener
- D) Coloring agent

■ **Correct Answer: A**

■ **Explanation:** Monosodium glutamate (MSG) is used as: Correct option A follows modern chemical principles or applications.

144. The color of complex is due to:

- A) Charge transfer
- B) d–d transitions
- C) Lattice energy
- D) Ionization

■ **Correct Answer: B**

■ **Explanation:** The color of complex is due to: Correct option B follows modern chemical principles or applications.

145. Catalysts in green chemistry are used to:

- A) Lower activation energy
- B) Increase toxicity
- C) Reduce yield
- D) Slow reaction

■ **Correct Answer: A**

■ **Explanation:** Catalysts in green chemistry are used to: Correct option A follows modern chemical principles or applications.

146. Gravimetric analysis involves:

- A) Mass measurement
- B) Volume measurement
- C) Color change
- D) pH change

■ **Correct Answer: A**

■ **Explanation:** Gravimetric analysis involves: Correct option A follows modern chemical principles or applications.

147. The color of complex is due to:

- A) Charge transfer
- B) d–d transitions
- C) Lattice energy
- D) Ionization

■ **Correct Answer: B**

■ **Explanation:** The color of complex is due to: Correct option B follows modern chemical principles or applications.

148. Contact process is used for manufacturing:

- A) H_2SO_4
- B) NH_3
- C) Na_2CO_3
- D) HNO_3

■ **Correct Answer: A**

■ **Explanation:** Contact process is used for manufacturing: Correct option A follows modern chemical principles or applications.

149. EDTA acts as:

- A) Monodentate
- B) Bidentate
- C) Hexadentate
- D) Tridentate

■ **Correct Answer: C**

■ **Explanation:** EDTA acts as: Correct option C follows modern chemical principles or applications.

150. Nanochemistry deals with particles of size:

- A) 1–100 nm
- B) 1–10 μm
- C) 1–10 cm
- D) 1–10 $\text{\AA}$

■ **Correct Answer: A**

■ **Explanation:** Nanochemistry deals with particles of size: Correct option A follows modern chemical principles or applications.

151. Fuel used in nuclear reactor is:

- A) U-235
- B) C-12
- C) Fe-56
- D) H-2

■ **Correct Answer: A**

■ **Explanation:** Fuel used in nuclear reactor is: Correct option A follows modern chemical principles or applications.

152. Contact process is used for manufacturing:

- A) H_2SO_4
- B) NH_3
- C) Na_2CO_3
- D) HNO_3

■ **Correct Answer: A**

■ **Explanation:** Contact process is used for manufacturing: Correct option A follows modern chemical principles or applications.

153. Carbon nanotubes are composed of:

- A) Graphite layers
- B) Diamond chains

- C) Silica sheets
- D) Protein fibers

■ **Correct Answer: A**

■ **Explanation:** Carbon nanotubes are composed of: Correct option A follows modern chemical principles or applications.

154. The main component of Portland cement is:

- A) CaO
- B) Ca(OH)■
- C) CaCO■
- D) Ca■SiO■

■ **Correct Answer: D**

■ **Explanation:** The main component of Portland cement is: Correct option D follows modern chemical principles or applications.

155. The indicator used in acid-base titration is:

- A) Phenolphthalein
- B) Starch
- C) Methyl orange
- D) Both A and C

■ **Correct Answer: D**

■ **Explanation:** The indicator used in acid-base titration is: Correct option D follows modern chemical principles or applications.

156. The oxidation state of Co in [Co(NH■)■]Cl■ is:

- A) +2
- B) +3
- C) 0
- D) +1

■ **Correct Answer: B**

■ **Explanation:** The oxidation state of Co in [Co(NH■)■]Cl■ is: Correct option B follows modern chemical principles or applications.

157. Energy released in nuclear reaction is given by:

- A) $E = mc^2$
- B) $PV = nRT$
- C) $F = ma$
- D) $E = hf$

■ **Correct Answer: A**

■ **Explanation:** Energy released in nuclear reaction is given by: Correct option A follows modern chemical principles or applications.

158. Fuel used in nuclear reactor is:

- A) U-235
- B) C-12
- C) Fe-56
- D) H-2

■ **Correct Answer: A**

■ **Explanation:** Fuel used in nuclear reactor is: Correct option A follows modern chemical principles or applications.

159. IR spectroscopy is mainly used for:

- A) Functional group detection
- B) Elemental analysis

- C) Mass determination
- D) Purity test

■ **Correct Answer: A**

■ **Explanation:** IR spectroscopy is mainly used for: Correct option A follows modern chemical principles or applications.

160. Atom economy means:

- A) Efficient use of atoms
- B) Low atom count
- C) More steps
- D) Less reactants

■ **Correct Answer: A**

■ **Explanation:** Atom economy means: Correct option A follows modern chemical principles or applications.

161. Green chemistry emphasizes:

- A) Pollution prevention
- B) New elements
- C) Nuclear reactions
- D) Synthetic fuels

■ **Correct Answer: A**

■ **Explanation:** Green chemistry emphasizes: Correct option A follows modern chemical principles or applications.

162. The oxidation state of Co in $[\text{Co}(\text{NH}_3)_6]\text{Cl}_2$ is:

- A) +2
- B) +3
- C) 0
- D) +1

■ **Correct Answer: B**

■ **Explanation:** The oxidation state of Co in $[\text{Co}(\text{NH}_3)_6]\text{Cl}_2$ is: Correct option B follows modern chemical principles or applications.

163. The oxidation state of Co in $[\text{Co}(\text{NH}_3)_6]\text{Cl}_2$ is:

- A) +2
- B) +3
- C) 0
- D) +1

■ **Correct Answer: B**

■ **Explanation:** The oxidation state of Co in $[\text{Co}(\text{NH}_3)_6]\text{Cl}_2$ is: Correct option B follows modern chemical principles or applications.

164. Carbon nanotubes are composed of:

- A) Graphite layers
- B) Diamond chains
- C) Silica sheets
- D) Protein fibers

■ **Correct Answer: A**

■ **Explanation:** Carbon nanotubes are composed of: Correct option A follows modern chemical principles or applications.

165. Contact process is used for manufacturing:

- A) H_2SO_4
- B) NH_3
- C) Na_2CO_3
- D) HNO_3

■ **Correct Answer: A**

■ **Explanation:** Contact process is used for manufacturing: Correct option A follows modern chemical principles or applications.

166. The color of complex is due to:

- A) Charge transfer
- B) d-d transitions
- C) Lattice energy
- D) Ionization

■ **Correct Answer: B**

■ **Explanation:** The color of complex is due to: Correct option B follows modern chemical principles or applications.

167. Fuel cell converts:

- A) Chemical energy → Electrical
- B) Electrical → Chemical
- C) Mechanical → Heat
- D) Heat → Chemical

■ **Correct Answer: A**

■ **Explanation:** Fuel cell converts: Correct option A follows modern chemical principles or applications.

168. Half-life is the time required for:

- A) Complete decay
- B) Half of nuclei to decay
- C) 1/4 to decay
- D) All to stabilize

■ **Correct Answer: B**

■ **Explanation:** Half-life is the time required for: Correct option B follows modern chemical principles or applications.

169. Contact process is used for manufacturing:

- A) H_2SO_4
- B) NH_3
- C) Na_2CO_3
- D) HNO_3

■ **Correct Answer: A**

■ **Explanation:** Contact process is used for manufacturing: Correct option A follows modern chemical principles or applications.

170. The color of complex is due to:

- A) Charge transfer
- B) d-d transitions
- C) Lattice energy
- D) Ionization

■ **Correct Answer: B**

■ **Explanation:** The color of complex is due to: Correct option B follows modern chemical principles or applications.

171. The oxidation state of Co in $[\text{Co}(\text{NH}_3)_6]\text{Cl}_2$ is:

- A) +2
- B) +3
- C) 0
- D) +1

■ **Correct Answer: B**

■ **Explanation:** The oxidation state of Co in $[\text{Co}(\text{NH}_3)_6]\text{Cl}_2$ is: Correct option B follows modern chemical principles or applications.

172. The indicator used in acid-base titration is:

- A) Phenolphthalein
- B) Starch
- C) Methyl orange
- D) Both A and C

■ **Correct Answer: D**

■ **Explanation:** The indicator used in acid-base titration is: Correct option D follows modern chemical principles or applications.

173. Contact process is used for manufacturing:

- A) H_2SO_4
- B) NH_3

C) Na_2CO_3

D) HNO_3

■ **Correct Answer: A**

■ **Explanation:** Contact process is used for manufacturing: Correct option A follows modern chemical principles or applications.

174. Monosodium glutamate (MSG) is used as:

A) Flavor enhancer

B) Preservative

C) Sweetener

D) Coloring agent

■ **Correct Answer: A**

■ **Explanation:** Monosodium glutamate (MSG) is used as: Correct option A follows modern chemical principles or applications.

175. Carbon nanotubes are composed of:

A) Graphite layers

B) Diamond chains

C) Silica sheets

D) Protein fibers

■ **Correct Answer: A**

■ **Explanation:** Carbon nanotubes are composed of: Correct option A follows modern chemical principles or applications.

176. Monosodium glutamate (MSG) is used as:

A) Flavor enhancer

B) Preservative

C) Sweetener

D) Coloring agent

■ **Correct Answer: A**

■ **Explanation:** Monosodium glutamate (MSG) is used as: Correct option A follows modern chemical principles or applications.

177. Green chemistry emphasizes:

A) Pollution prevention

B) New elements

C) Nuclear reactions

D) Synthetic fuels

■ **Correct Answer: A**

■ **Explanation:** Green chemistry emphasizes: Correct option A follows modern chemical principles or applications.

178. Half-life is the time required for:

A) Complete decay

B) Half of nuclei to decay

C) 1/4 to decay

D) All to stabilize

■ **Correct Answer: B**

■ **Explanation:** Half-life is the time required for: Correct option B follows modern chemical principles or applications.

179. Nanochemistry deals with particles of size:

A) 1–100 nm

B) 1–10 μm

C) 1–10 cm

D) 1–10 Å

■ **Correct Answer: A**

■ **Explanation:** Nanochemistry deals with particles of size: Correct option A follows modern chemical principles or applications.

180. EDTA acts as:

A) Monodentate

B) Bidentate

C) Hexadentate

D) Tridentate

■ **Correct Answer: C**

■ **Explanation:** EDTA acts as: Correct option C follows modern chemical principles or applications.

181. Monosodium glutamate (MSG) is used as:

- A) Flavor enhancer
- B) Preservative
- C) Sweetener
- D) Coloring agent

■ **Correct Answer: A**

■ **Explanation:** Monosodium glutamate (MSG) is used as: Correct option A follows modern chemical principles or applications.

182. Half-life is the time required for:

- A) Complete decay
- B) Half of nuclei to decay
- C) 1/4 to decay
- D) All to stabilize

■ **Correct Answer: B**

■ **Explanation:** Half-life is the time required for: Correct option B follows modern chemical principles or applications.

183. Fuel used in nuclear reactor is:

- A) U-235
- B) C-12
- C) Fe-56
- D) H-2

■ **Correct Answer: A**

■ **Explanation:** Fuel used in nuclear reactor is: Correct option A follows modern chemical principles or applications.

184. Contact process is used for manufacturing:

- A) H_2SO_4
- B) NH_3
- C) Na_2CO_3
- D) HNO_3

■ **Correct Answer: A**

■ **Explanation:** Contact process is used for manufacturing: Correct option A follows modern chemical principles or applications.

185. Green chemistry emphasizes:

- A) Pollution prevention
- B) New elements
- C) Nuclear reactions
- D) Synthetic fuels

■ **Correct Answer: A**

■ **Explanation:** Green chemistry emphasizes: Correct option A follows modern chemical principles or applications.

186. Atom economy means:

- A) Efficient use of atoms
- B) Low atom count
- C) More steps
- D) Less reactants

■ **Correct Answer: A**

■ **Explanation:** Atom economy means: Correct option A follows modern chemical principles or applications.

187. Mass spectrometry separates ions by:

- A) Mass/charge ratio
- B) Polarity
- C) Size
- D) Energy

■ **Correct Answer: A**

■ **Explanation:** Mass spectrometry separates ions by: Correct option A follows modern chemical principles or applications.

188. Nanochemistry deals with particles of size:

- A) 1–100 nm
- B) 1–10 μm
- C) 1–10 cm
- D) 1–10 $\text{\AA}$

■ **Correct Answer: A**

■ **Explanation:** Nanochemistry deals with particles of size: Correct option A follows modern chemical principles or applications.

189. Quantum dots are used in:

- A) Displays
- B) Batteries
- C) Cement
- D) Lubricants

■ **Correct Answer: A**

■ **Explanation:** Quantum dots are used in: Correct option A follows modern chemical principles or applications.

190. Nanochemistry deals with particles of size:

- A) 1–100 nm
- B) 1–10 μm
- C) 1–10 cm
- D) 1–10 $\text{\AA}$

■ **Correct Answer: A**

■ **Explanation:** Nanochemistry deals with particles of size: Correct option A follows modern chemical principles or applications.

191. Atom economy means:

- A) Efficient use of atoms
- B) Low atom count
- C) More steps
- D) Less reactants

■ **Correct Answer: A**

■ **Explanation:** Atom economy means: Correct option A follows modern chemical principles or applications.

192. The gas responsible for acid rain is:

- A) CO ■
- B) SO_2 ■
- C) N_2 ■
- D) O_2 ■

■ **Correct Answer: B**

■ **Explanation:** The gas responsible for acid rain is: Correct option B follows modern chemical principles or applications.

193. Aspirin is chemically:

- A) Acetylsalicylic acid
- B) Benzoic acid

- C) Sulfanilic acid
- D) Citric acid

■ **Correct Answer: A**

■ **Explanation:** Aspirin is chemically: Correct option A follows modern chemical principles or applications.

194. Fuel cell converts:

- A) Chemical energy → Electrical
- B) Electrical → Chemical
- C) Mechanical → Heat
- D) Heat → Chemical

■ **Correct Answer: A**

■ **Explanation:** Fuel cell converts: Correct option A follows modern chemical principles or applications.

195. EDTA acts as:

- A) Monodentate
- B) Bidentate
- C) Hexadentate
- D) Tridentate

■ **Correct Answer: C**

■ **Explanation:** EDTA acts as: Correct option C follows modern chemical principles or applications.

196. Green chemistry emphasizes:

- A) Pollution prevention
- B) New elements
- C) Nuclear reactions
- D) Synthetic fuels

■ **Correct Answer: A**

■ **Explanation:** Green chemistry emphasizes: Correct option A follows modern chemical principles or applications.

197. EDTA acts as:

- A) Monodentate
- B) Bidentate
- C) Hexadentate
- D) Tridentate

■ **Correct Answer: C**

■ **Explanation:** EDTA acts as: Correct option C follows modern chemical principles or applications.

198. Green chemistry emphasizes:

- A) Pollution prevention
- B) New elements
- C) Nuclear reactions
- D) Synthetic fuels

■ **Correct Answer: A**

■ **Explanation:** Green chemistry emphasizes: Correct option A follows modern chemical principles or applications.

199. The gas responsible for acid rain is:

- A) CO■
- B) SO■
- C) N■
- D) O■

■ **Correct Answer: B**

■ **Explanation:** The gas responsible for acid rain is: Correct option B follows modern chemical principles or applications.

200. Half-life is the time required for:

- A) Complete decay
- B) Half of nuclei to decay
- C) 1/4 to decay
- D) All to stabilize

■ **Correct Answer: B**

■ **Explanation:** Half-life is the time required for: Correct option B follows modern chemical principles or applications.

201. Energy released in nuclear reaction is given by:

- A) $E = mc^2$
- B) $PV = nRT$
- C) $F = ma$
- D) $E = hf$

■ **Correct Answer: A**

■ **Explanation:** Energy released in nuclear reaction is given by: Correct option A follows modern chemical principles or applications.

202. The gas responsible for acid rain is:

- A) CO■
- B) SO■
- C) N■
- D) O■

■ **Correct Answer: B**

■ **Explanation:** The gas responsible for acid rain is: Correct option B follows modern chemical principles or applications.

203. Gravimetric analysis involves:

- A) Mass measurement
- B) Volume measurement
- C) Color change
- D) pH change

■ **Correct Answer: A**

■ **Explanation:** Gravimetric analysis involves: Correct option A follows modern chemical principles or applications.

204. Carbon nanotubes are composed of:

- A) Graphite layers
- B) Diamond chains
- C) Silica sheets
- D) Protein fibers

■ **Correct Answer: A**

■ **Explanation:** Carbon nanotubes are composed of: Correct option A follows modern chemical principles or applications.

205. Mass spectrometry separates ions by:

- A) Mass/charge ratio
- B) Polarity
- C) Size
- D) Energy

■ **Correct Answer: A**

■ **Explanation:** Mass spectrometry separates ions by: Correct option A follows modern chemical principles or applications.

206. The gas responsible for acid rain is:

- A) CO■
- B) SO■
- C) N■
- D) O■

■ **Correct Answer: B**

■ **Explanation:** The gas responsible for acid rain is: Correct option B follows modern chemical principles or applications.

207. Energy released in nuclear reaction is given by:

- A) $E = mc^2$
- B) $PV = nRT$
- C) $F = ma$
- D) $E = hf$

■ **Correct Answer: A**

■ **Explanation:** Energy released in nuclear reaction is given by: Correct option A follows modern chemical principles or applications.

208. Vitamin C is also known as:

- A) Ascorbic acid
- B) Citric acid
- C) Niacin
- D) Folic acid

■ **Correct Answer: A**

■ **Explanation:** Vitamin C is also known as: Correct option A follows modern chemical principles or applications.

209. Nanochemistry deals with particles of size:

- A) 1–100 nm
- B) 1–10 μm
- C) 1–10 cm
- D) 1–10 $\text{\AA}$

■ **Correct Answer: A**

■ **Explanation:** Nanochemistry deals with particles of size: Correct option A follows modern chemical principles or applications.

210. Half-life is the time required for:

- A) Complete decay
- B) Half of nuclei to decay
- C) 1/4 to decay
- D) All to stabilize

■ **Correct Answer: B**

■ **Explanation:** Half-life is the time required for: Correct option B follows modern chemical principles or applications.

211. The main component of Portland cement is:

- A) CaO
- B) Ca(OH)_2
- C) CaCO_3
- D) Ca_3SiO_5

■ **Correct Answer: D**

■ **Explanation:** The main component of Portland cement is: Correct option D follows modern chemical principles or applications.

212. Monosodium glutamate (MSG) is used as:

- A) Flavor enhancer
- B) Preservative
- C) Sweetener
- D) Coloring agent

■ **Correct Answer: A**

■ **Explanation:** Monosodium glutamate (MSG) is used as: Correct option A follows modern chemical principles or applications.

213. In electroplating, the object to be plated is:

- A) Cathode
- B) Anode
- C) Electrolyte
- D) Salt bridge

■ **Correct Answer: A**

■ **Explanation:** In electroplating, the object to be plated is: Correct option A follows modern chemical principles or applications.

214. Carbon nanotubes are composed of:

- A) Graphite layers
- B) Diamond chains
- C) Silica sheets
- D) Protein fibers

■ **Correct Answer: A**

■ **Explanation:** Carbon nanotubes are composed of: Correct option A follows modern chemical principles or applications.

215. The main component of Portland cement is:

- A) CaO
- B) Ca(OH)■
- C) CaCO■
- D) Ca■SiO■

■ **Correct Answer: D**

■ **Explanation:** The main component of Portland cement is: Correct option D follows modern chemical principles or applications.

216. Nanochemistry deals with particles of size:

- A) 1–100 nm
- B) 1–10 μm
- C) 1–10 cm
- D) 1–10 $\text{\AA}$

■ **Correct Answer: A**

■ **Explanation:** Nanochemistry deals with particles of size: Correct option A follows modern chemical principles or applications.

217. Catalysts in green chemistry are used to:

- A) Lower activation energy
- B) Increase toxicity
- C) Reduce yield
- D) Slow reaction

■ **Correct Answer: A**

■ **Explanation:** Catalysts in green chemistry are used to: Correct option A follows modern chemical principles or applications.

218. In electroplating, the object to be plated is:

- A) Cathode
- B) Anode
- C) Electrolyte
- D) Salt bridge

■ **Correct Answer: A**

■ **Explanation:** In electroplating, the object to be plated is: Correct option A follows modern chemical principles or applications.

219. The color of complex is due to:

- A) Charge transfer
- B) d–d transitions
- C) Lattice energy
- D) Ionization

■ **Correct Answer: B**

■ **Explanation:** The color of complex is due to: Correct option B follows modern chemical principles or applications.

220. Contact process is used for manufacturing:

- A) H_2SO_4
- B) NH_3
- C) Na_2CO_3
- D) HNO_3

■ **Correct Answer: A**

■ **Explanation:** Contact process is used for manufacturing: Correct option A follows modern chemical principles or applications.

221. Fuel used in nuclear reactor is:

- A) U-235
- B) C-12
- C) Fe-56
- D) H-2

■ **Correct Answer: A**

■ **Explanation:** Fuel used in nuclear reactor is: Correct option A follows modern chemical principles or applications.

222. Catalysts in green chemistry are used to:

- A) Lower activation energy
- B) Increase toxicity
- C) Reduce yield
- D) Slow reaction

■ **Correct Answer: A**

■ **Explanation:** Catalysts in green chemistry are used to: Correct option A follows modern chemical principles or applications.

223. Fuel used in nuclear reactor is:

- A) U-235
- B) C-12
- C) Fe-56
- D) H-2

■ **Correct Answer: A**

■ **Explanation:** Fuel used in nuclear reactor is: Correct option A follows modern chemical principles or applications.

224. Energy released in nuclear reaction is given by:

- A) $E = mc^2$
- B) $PV = nRT$
- C) $F = ma$
- D) $E = hf$

■ **Correct Answer: A**

■ **Explanation:** Energy released in nuclear reaction is given by: Correct option A follows modern chemical principles or applications.

225. Atom economy means:

- A) Efficient use of atoms
- B) Low atom count
- C) More steps
- D) Less reactants

■ **Correct Answer: A**

■ **Explanation:** Atom economy means: Correct option A follows modern chemical principles or applications.

226. The main component of Portland cement is:

- A) CaO
- B) Ca(OH)_2
- C) CaCO_3
- D) Ca_3SiO_5

■ **Correct Answer: D**

■ **Explanation:** The main component of Portland cement is: Correct option D follows modern chemical principles or applications.

227. Aspirin is chemically:

- A) Acetylsalicylic acid
- B) Benzoic acid
- C) Sulfanilic acid
- D) Citric acid

■ **Correct Answer: A**

■ **Explanation:** Aspirin is chemically: Correct option A follows modern chemical principles or applications.

228. Mass spectrometry separates ions by:

- A) Mass/charge ratio
- B) Polarity
- C) Size
- D) Energy

■ **Correct Answer: A**

■ **Explanation:** Mass spectrometry separates ions by: Correct option A follows modern chemical principles or applications.

229. Electrolytic refining of copper uses electrolyte:

- A) $\text{CuSO}_4 + \text{H}_2\text{SO}_4$
- B) NaCl
- C) HCl
- D) KOH

■ **Correct Answer: A**

■ **Explanation:** Electrolytic refining of copper uses electrolyte: Correct option A follows modern chemical principles or applications.

230. UV spectroscopy involves transitions between:

- A) Electronic energy levels
- B) Vibrational levels
- C) Rotational levels
- D) None

■ **Correct Answer: A**

■ **Explanation:** UV spectroscopy involves transitions between: Correct option A follows modern chemical principles or applications.

231. EDTA acts as:

- A) Monodentate
- B) Bidentate
- C) Hexadentate
- D) Tridentate

■ **Correct Answer: C**

■ **Explanation:** EDTA acts as: Correct option C follows modern chemical principles or applications.

232. Quantum dots are used in:

- A) Displays
- B) Batteries
- C) Cement
- D) Lubricants

■ **Correct Answer: A**

■ **Explanation:** Quantum dots are used in: Correct option A follows modern chemical principles or applications.

233. Green chemistry emphasizes:

- A) Pollution prevention
- B) New elements
- C) Nuclear reactions

D) Synthetic fuels

■ **Correct Answer: A**

■ **Explanation:** Green chemistry emphasizes: Correct option A follows modern chemical principles or applications.

234. Fuel used in nuclear reactor is:

A) U-235

B) C-12

C) Fe-56

D) H-2

■ **Correct Answer: A**

■ **Explanation:** Fuel used in nuclear reactor is: Correct option A follows modern chemical principles or applications.

235. EDTA is used in complexometric titration to estimate:

A) Hardness of water

B) Acid strength

C) Base strength

D) Chlorides

■ **Correct Answer: A**

■ **Explanation:** EDTA is used in complexometric titration to estimate: Correct option A follows modern chemical principles or applications.

236. In electroplating, the object to be plated is:

A) Cathode

B) Anode

C) Electrolyte

D) Salt bridge

■ **Correct Answer: A**

■ **Explanation:** In electroplating, the object to be plated is: Correct option A follows modern chemical principles or applications.

237. Energy released in nuclear reaction is given by:

A) $E = mc^2$

B) $PV = nRT$

C) $F = ma$

D) $E = hf$

■ **Correct Answer: A**

■ **Explanation:** Energy released in nuclear reaction is given by: Correct option A follows modern chemical principles or applications.

238. In electroplating, the object to be plated is:

A) Cathode

B) Anode

C) Electrolyte

D) Salt bridge

■ **Correct Answer: A**

■ **Explanation:** In electroplating, the object to be plated is: Correct option A follows modern chemical principles or applications.

239. Carbon nanotubes are composed of:

A) Graphite layers

B) Diamond chains

C) Silica sheets

D) Protein fibers

■ **Correct Answer: A**

■ **Explanation:** Carbon nanotubes are composed of: Correct option A follows modern chemical principles or applications.

240. In electroplating, the object to be plated is:

A) Cathode

B) Anode

C) Electrolyte

D) Salt bridge

■ **Correct Answer: A**

■ **Explanation:** In electroplating, the object to be plated is: Correct option A follows modern chemical principles or applications.

241. Carbon nanotubes are composed of:

- A) Graphite layers
- B) Diamond chains
- C) Silica sheets
- D) Protein fibers

■ **Correct Answer: A**

■ **Explanation:** Carbon nanotubes are composed of: Correct option A follows modern chemical principles or applications.

242. Half-life is the time required for:

- A) Complete decay
- B) Half of nuclei to decay
- C) 1/4 to decay
- D) All to stabilize

■ **Correct Answer: B**

■ **Explanation:** Half-life is the time required for: Correct option B follows modern chemical principles or applications.

243. The main component of Portland cement is:

- A) CaO
- B) Ca(OH)■
- C) CaCO■
- D) Ca■SiO■

■ **Correct Answer: D**

■ **Explanation:** The main component of Portland cement is: Correct option D follows modern chemical principles or applications.

244. Carbon nanotubes are composed of:

- A) Graphite layers
- B) Diamond chains
- C) Silica sheets
- D) Protein fibers

■ **Correct Answer: A**

■ **Explanation:** Carbon nanotubes are composed of: Correct option A follows modern chemical principles or applications.

245. Nanochemistry deals with particles of size:

- A) 1–100 nm
- B) 1–10 μm
- C) 1–10 cm
- D) 1–10 $\text{\AA}$

■ **Correct Answer: A**

■ **Explanation:** Nanochemistry deals with particles of size: Correct option A follows modern chemical principles or applications.

246. Mass spectrometry separates ions by:

- A) Mass/charge ratio
- B) Polarity
- C) Size
- D) Energy

■ **Correct Answer: A**

■ **Explanation:** Mass spectrometry separates ions by: Correct option A follows modern chemical principles or applications.

247. The indicator used in acid-base titration is:

- A) Phenolphthalein
- B) Starch
- C) Methyl orange
- D) Both A and C

■ **Correct Answer: D**

■ **Explanation:** The indicator used in acid-base titration is: Correct option D follows modern chemical principles or applications.

248. The gas responsible for acid rain is:

- A) CO■
- B) SO■
- C) N■
- D) O■

■ **Correct Answer: B**

■ **Explanation:** The gas responsible for acid rain is: Correct option B follows modern chemical principles or applications.

249. The gas responsible for acid rain is:

- A) CO■
- B) SO■
- C) N■
- D) O■

■ **Correct Answer: B**

■ **Explanation:** The gas responsible for acid rain is: Correct option B follows modern chemical principles or applications.

250. Carbon nanotubes are composed of:

- A) Graphite layers
- B) Diamond chains
- C) Silica sheets
- D) Protein fibers

■ **Correct Answer: A**

■ **Explanation:** Carbon nanotubes are composed of: Correct option A follows modern chemical principles or applications.