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SET 3 –

1. Shielding effect is caused by –
   a) Inner shell electrons
   b) Outer shell electrons
   c) Valence electrons
   d) Nucleus

2. Shielding effect is also known as –
   a) Screening effect
   b) Penetration effect
   c) Electron repulsion
   d) Nuclear attraction

3. Shielding effect increases with –
   a) Increase in number of inner electrons
   b) Increase in atomic number only
   c) Increase in nuclear charge
   d) None

4. Effective nuclear charge is the –
   a) Net positive charge experienced by outermost electrons
   b) Total charge of nucleus
   c) Charge on all protons
   d) Charge on inner electrons

5. Effective nuclear charge (Zeff) is calculated as –
   a) $Z_{eff} = Z - \sigma$
   b) $Z_{eff} = Z + \sigma$
   c) $Z_{eff} = \sigma - Z$
   d) $Z_{eff} = Z \times \sigma$

6. Higher the effective nuclear charge –
   a) Smaller the atomic size
   b) Larger the atomic size
   c) No change in size
   d) None

7. Across a period, effective nuclear charge –
   a) Increases
   b) Decreases
   c) Remains constant
   d) None

8. Down a group, effective nuclear charge –
   a) Remains nearly constant

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b) Increases sharply
c) Decreases drastically
d) None

9. Which subshell provides maximum shielding effect?
a) s b) p c) d d) f

10. Which subshell provides minimum shielding effect?
a) f b) s c) p d) d

11. An element showing both metallic and non-metallic character is –
a) Metalloid b) Transition metal c) Alkali metal d) Noble gas

12. Which of the following is a metalloid?
a) Silicon b) Sulphur c) Magnesium d) Aluminum

13. Which of the following is not a metalloid?
a) Boron b) Silicon c) Phosphorus d) Arsenic

14. The element showing maximum metallic character in period 3 is –
a) Sodium b) Aluminum c) Magnesium d) Silicon

15. The element showing maximum non-metallic character in period 3 is –
a) Chlorine b) Sulphur c) Phosphorus d) Argon

16. Diagonal relationship exists between –
a) Lithium and Magnesium
b) Sodium and Calcium
c) Potassium and Zinc
d) None

17. Diagonal relationship is observed between elements of –
a) 2nd and 3rd periods
b) 1st and 2nd periods
c) 3rd and 4th periods
d) 4th and 5th periods

18. The reason for diagonal relationship is –
a) Similar charge/radius ratio
b) Same atomic mass
c) Same atomic number
d) Same number of shells

19. Which of the following pairs shows diagonal relationship?
a) Be and Al b) Na and K c) Li and Na d) B and N

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20. Which of the following does not show diagonal relationship?
    a) Na–Mg b) Li–Mg c) Be–Al d) B–Si

21. The order of reactivity of alkali metals with water is –
    a) Li < Na < K < Rb < Cs
    b) Cs < Rb < K < Na < Li
    c) Na < K < Li < Rb < Cs
    d) K < Li < Cs < Na < Rb

22. Reactivity of alkaline earth metals with water –
    a) Increases down the group
    b) Decreases down the group
    c) Remains same
    d) None

23. Non-metals react with oxygen to form –
    a) Acidic oxides b) Basic oxides c) Neutral oxides d) Amphoteric oxides

24. Metals react with oxygen to form –
    a) Basic oxides b) Acidic oxides c) Amphoteric oxides d) Neutral oxides

25. Amphoteric oxides react with –
    a) Both acids and bases
    b) Only acids
    c) Only bases
    d) None

26. Which of the following is amphoteric?
    a) Al_2O_3 b) Na_2O c) MgO d) SO_2

27. Which oxide is neutral?
    a) CO b) SO_2 c) MgO d) Al_2O_3

28. Which oxide is acidic?
    a) SO_3 b) MgO c) Na_2O d) CaO

29. The metallic character of elements increases –
    a) Down a group b) Across a period from right to left
    c) Both (a) and (b) d) None

30. The non-metallic character increases –
    a) Across a period from left to right
    b) Down a group
    c) Remains constant
    d) None

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31. The first element of each group shows –
    a) Anomalous behavior
    b) Similar behavior as rest
    c) No difference
    d) None

32. Anomalous behavior of first element is due to –
    a) Small size and high ionization enthalpy
    b) Large size
    c) Low electronegativity
    d) High atomic mass

33. Lithium shows diagonal relationship with –
    a) Magnesium b) Sodium c) Calcium d) Aluminum

34. Beryllium shows diagonal relationship with –
    a) Aluminum b) Sodium c) Magnesium d) Calcium

35. The oxide of beryllium is –
    a) Amphoteric b) Acidic c) Basic d) Neutral

36. The oxide of magnesium is –
    a) Basic b) Acidic c) Amphoteric d) Neutral

37. The oxide of aluminum is –
    a) Amphoteric b) Basic c) Acidic d) Neutral

38. The oxide of sodium is –
    a) Basic b) Acidic c) Neutral d) Amphoteric

39. The oxide of sulfur is –
    a) Acidic b) Basic c) Amphoteric d) Neutral

40. The oxide of nitrogen is –
    a) Acidic b) Basic c) Amphoteric d) Neutral

41. The electron affinity of noble gases is –
    a) Positive b) Negative c) Zero d) Very high

42. The ionization enthalpy of noble gases is –
    a) Very high b) Very low c) Moderate d) None

43. Atomic size increases sharply from –
    a) Noble gas to alkali metal
    b) Halogen to noble gas
    c) Alkaline earth to halogen

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d) None

44. Valency of elements in a group –
    a) Remains same
    b) Increases
    c) Decreases
    d) None

45. The number of valence electrons in Group 16 elements is –
    a) 6 b) 5 c) 4 d) 7

46. The number of valence electrons in Group 17 elements is –
    a) 7 b) 6 c) 5 d) 8

47. The number of valence electrons in Group 18 elements is –
    a) 8 b) 7 c) 6 d) 5

48. The first ionization enthalpy is lowest for –
    a) Alkali metals b) Halogens c) Noble gases d) Alkaline earth metals

49. The electron affinity is highest for –
    a) Halogens b) Noble gases c) Alkali metals d) Transition metals

50. Elements showing highest non-metallic character are –
    a) Halogens b) Noble gases c) Alkali metals d) Transition elements

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✅ Answer Key – Set 3

1–a 2–a 3–a 4–a 5–a 6–a 7–a 8–a 9–a 10–a
11–a 12–a 13–c 14–a 15–a 16–a 17–a 18–a 19–a 20–a
21–a 22–a 23–a 24–a 25–a 26–a 27–a 28–a 29–c 30–a
31–a 32–a 33–a 34–a 35–a 36–a 37–a 38–a 39–a 40–a
41–c 42–a 43–a 44–a 45–a 46–a 47–a 48–a 49–a 50–a

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