NEET ANSWER KEY & SOLUTIONS

SUBJECT :- CHEMISTRY

CLASS :- 12th **PAPER CODE :- CWT-4**

CHAPTER :- P-BLOCK

ANSWER KEY

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

SOLUTIONS

SECTION-A

1. (D)

Sol. Melting point $\propto$ heat of atomization $\propto$ strength of metallic bond

Strength of metallic bond depends on number of mobile electrons per atom and size of atom.

2. (D)

Sol. $H_3\overset{3+}{P}O_3 \longrightarrow H_3\overset{5+}{P}O_4 + \overset{3-}{P}H_3$

3. (B)

Sol. Statement is correct .

4. (B)

Sol. From top to bottom in group 15, reducing character of hydrides increases due to decrease in thermal stability.

5. (A)

Sol. Oxidation state of molecular sulphur S_8 is zero

Oxidation state of sulphur in S_2F_2 = 2x + 2(–1) = 0 ; 2x = +2 or x = 1

Oxidation state of sulphur in H_2S = 2(+1) + x = 0 or x = – 2.

6. (D)

Sol. Black phosphorus is thermodynamically most stable form of phosphorus as it is a highly polymerised form of phosphorus. Hence it is least reactive.

7. (C)

Sol. Sb_4O_6 reacts with NaOH forming arsenite as well as HCl forming $SbCl_3$.

8. (B)

Sol. Down the group the X–H bond length increases with increase in size of atom. So bond dissociation energies decrease and thererfore, thermal stability decrease. Hence the correct decreasing order is $NH_3 > PH_3 > AsH_3 > SbH_3 > BiH_3$.

9. (C)

Sol. 47

10. (B)

Sol. $NH_4NO_3 \xrightarrow{\Delta} N_2O + 2H_2O$.

11. (A)

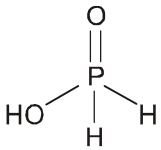
Sol. $H_2N_2O_2$ (two replaceable hydrogen) and thus form two series of salts.

12. (D)

Sol. Phosphide ion (P^{3-}) has electronic structure similar to that of chloride ion (Cl^-) i.e. 2, 8, 8.

13. (A)

Sol.



It has one replaceable hydrogen.

14. (C)

Sol. Increases from O to Te with increasing atomic number.

15. (C)

Sol. N_2O

16. (C)

Sol. BiOCl

17. (C)

Sol. O_3

18. (D)

Sol. KO_2 exists as K^+ and O_2^- ; so it is superoxide.

$2KO_2 + 2H_2O \longrightarrow 2KOH + H_2O_2 + O_2$

19. (B)

Sol. As water has H-bonding due to the presence of highly electronegative oxygen but H_2S does not (electronegativity of sulphur is low).

20. (C)

Sol. Factual

21. (D)

Sol. $AgNO_3 \xrightarrow{\Delta} Ag + NO_2 + ½O_2$;

$2BaO_2 \xrightarrow{800°C} 2BaO + O_2$.

$Pb(NO_3)_2 \xrightarrow{\Delta} PbO + 2NO_2 + 1/2O_2$

22. (A)

Sol. There is ozone layer high above the earth atmosphere which prevents the UV rays of the sun reaching the earth surface.

23. (D)

Sol. SO_2 acts as reducing agent only in presence of strong oxidising agent.

24. (A)

Sol. Mn is in +6 oxidation state and can be oxidised to +7, remaining salts can not be oxidised as central atoms are in their highest oxidation states.

25. (A)

Sol. HF has highest boiling point on account of intermolecular hydrogen bonding. But from HCl to HI the boiling point show a regular increase due to a corresponding increase in the magnitude of van der Waal's force of attraction as the size of the halogen increases.

26. (D)

Sol. Vulcanization is a chemical process that converts natural rubber and other polydiene elastomers into cross-linked polymers. The most common vulcanization agent is sulfur. It forms bridges between individual polymer molecules when heated with rubber.

27. (D)

Sol. According to their SRP.

28. (C)

Sol. Bond length $\propto$ 1/(bond dissociaton energy) and bond dissociation energy $\propto$ bond strength.

29. (D)

Sol. As the size of anion increases the distance between the nucleus and valence shell electrons increases resulting into weak force of attraction between them. This leads to increase in the ease of the donation of electrons in the order $F^- < Cl^- < Br^- < I^-$. Hence I^- acts as a strongest reducing agent.

30. (C)

Sol. ionization potential

31. (D)

Sol. s-block & p-block elements collectively comprise the representative elements. The valence shell electronic configuration of halogen is ns^2 np^5 and the last electron enters in p-subshell. Thus, halogens belongs to p-block elements.

32. (C)

Sol. (C) is correct chemical composition of bleaching powder.

33. (B)

Sol. (A) $SO_3^{2-} + H^+ \longrightarrow SO_2\uparrow + H_2O$

(B) $CO_3^{2-} + H^+ \longrightarrow CO_2\uparrow + H_2O$

(C) $NH_3 + HCl \longrightarrow NH_4Cl\uparrow$

(D) Conc. H_2SO_4 is used as it does not react with HCl.

34. (C)

Sol. Chlorine gas reacts with CaO, NaOH and NH_3 ; so chlorine gas cannot be dried by passing over these compounds. H_2SO_4 have great affinity for water and therefore it is used for drying Cl_2.

35. (D)

Sol. $Ca(OH)_2$ (dry slaked lime) + $Cl_2 \longrightarrow CaOCl_2 + H_2O$

SECTION-B

36. (D)

Sol. $2ClO_2 + H_2O \longrightarrow HClO_2 + HClO_3$

37. (B)

Sol. XeF_5 does not exist at all.

38. (C)

Sol. $XeF_6 + 3H_2O \longrightarrow XeO_3 + 6HF$

39. (A)

Sol. It is factual.

40. (B)

Sol. PF_5 is a fluoride ion acceptor so it yields cationic species with xenon fluorides.

$XeF_2 + PF_5 \longrightarrow [XeF]^+ [PF_6]^-$

41. (A)

Sol. Fluorine on account of low bond dissociation energy and high enthalpy of hydration of F^- acts as strong oxidising agent ; being the most electronegative, it exhibits only – 1 oxidation state.

42. (D)

Sol. ClO_2^- and ClF_2^+ both have 34 electrons and therefore are isoelectronic species.

43. (A)

Sol. Both are halogen

44. (B)

Sol. Halide ion is derived from the smaller halogen and a hypohalite (when XX'), halite (when XX'_3), halate (when XX'_5) and perhalate (when XX'_7).

45. (B)

Sol. $XeO_3 + 2XeF_6 \longrightarrow 3XeOF_4$

46. (A)

Sol. In HNO_3 due to presence of two *N-O* bonds it is a stronger acid than HNO_2 .

47. (C)

Sol. Bleaching action of chlorine carried by oxidation while bleaching action of SO_2 carried by reduction.

48. (A)

Sol. It is fact that halogens are highly reactive as they have seven electrons in their outermost orbit and they want to stabilize by acquiring an electron. Therefor, they do not occur in free state. Here both assertion and reason are true and the reason is the correct explanation of assertion.

49. (A)

Sol. Liquid NH_3 is used for refrigeration is true and it is due to the fact that is vaporises quickly and for vaporisation it takes up heat and cool the refrigerator. Hence assertion and reason both are true.

50. (A)

Sol. Both assertion and reason are true and reason is the correct explanation of assertion.

Ozone is considered to be a resonance hybrid of the following two forms.