NEET ANSWER KEY & SOLUTIONS

SUBJECT :- CHEMISTRY

CLASS :- 11th **PAPER CODE :- CWT-2**

CHAPTER :- ATOMIC STRUCTURE

ANSWER KEY

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

SOLUTIONS

SECTION-A

1. (A)

2. (C)

3. (B)

4. (B)

Sol. Net charge is –1. (17 e+ 18 p)

5. (D)

6. (A)

Sol. Isoelectronic species should have same number of electrons.

7. (D)

Sol. It is fact.

8. (C)

Sol. Violet colour has minimum wavelength so maximum energy.

9. (A)

Sol. $\nu = \frac{c}{\lambda} = \frac{3\times10^{8}\ \ ms^{-1}}{600\times10^{-9}m} = 5.0\times10^{14}Hz$

10. (A)

11. (C)

Sol. For photoelectric effect to take place, $E_{light} \geq W \ \therefore \ \frac{hc}{\lambda} \geq \frac{hc}{\lambda_0}$ or $\lambda \leq \lambda_0$.

12. (C)

Sol. According to formula, $E = \frac{hc}{\lambda}$

$3.03 \times 10^{-19} = \frac{hc}{\lambda}$

$\lambda = \frac{6.63\times10^{-34}\times3.00\times10^{8}}{3.03\times10^{-19}}$

$= 6.56 \times 10^{-7}$ m

$= 6.56 \times 10^{-7} \times 10^{9}$ nm

$= 6.56 \times 10^{2}$ nm = 256 nm

13. (B)

Sol. Bohr radius $= \frac{r_2}{r_1} = \frac{(2)^2}{(1)^2} = 4$

14. (B)

15. (B)

Sol. Radius of He^{+} is = $\frac{0.53}{2} = 0.265Å$

16. (A)

Sol. $v_3 = v_1 \times \left(\frac{Z}{n}\right)$

$v_3 = 2.18 \times 10^{6} \times \left(\frac{1}{3}\right) = 7.27 \times 10^{5}$ m/s

17. (B)

18. (D)

Sol. It is fact.

19. (B)

Sol. E_1 for Li^{+2} = E_1 for H × Z^2 [for Li, Z = 3]

= 13.6 × 9 = **122.4 eV**

20. (D)

21. (D)

22. (B)

23. (D)

Sol. For 1st line of Balmer series (3 → 2)

$E_3 - E_2 = \frac{hc}{\lambda}$

24. (B)

Sol. When electron falls from n to 1, total possible number of lines = n – 1.

25. (C)

Sol. An electron has particle and wave nature both.

26. (A)

Sol. For a charged particle $\lambda = \frac{h}{\sqrt{2mqV}}$, $\therefore$

$$\lambda \propto \frac{1}{\sqrt{V}}.$$

27. (A)

Sol. $\lambda = \frac{h}{\sqrt{2mkE}}$

$= \frac{6.6\times10^{-34}}{\sqrt{2\times1\times0.5}} = 6.62 \times 10^{-34}$

28. (D)

Sol. $\frac{\lambda_1}{\lambda_2} = \sqrt{\frac{V_2}{V_1}} = \sqrt{\frac{200}{50}} = \frac{2}{1}.$

29. (A)

Sol. $\lambda = \frac{h}{mv} = 0.416$ nm

30. (D)

Sol. $\lambda = v$

then $\lambda = \frac{h}{mV}$ or $\lambda^2 = \frac{h}{m}$

So, $\lambda = \sqrt{\frac{h}{m}}$.

31. (B)

32. (D)

33. (C)

34. (D)

Sol. Any orbital can accommodate only 2 electrons with opposite spins.

35. (A)

SECTION-B

36. (D)

Sol. Two electrons in K shell will differ in spin quantum number s = + $\frac{1}{2}$ or – $\frac{1}{2}$.

37. (C)

Sol. 3d shell can have maximum number of 10 electrons in 5 orbitals and according to Pauli's exclusion principle half of the electron in an orbital will have s= +1/2 spin and the other half will have s= -1/2 spin respectively. So, in 3d shell electrons having s=+1/2 will be 5.

38. (B)

39. (A)

40. (B)

Sol. Orbital angular momentun = $\frac{h}{2\pi}\sqrt{\ell\ (\ell+1)}$

For 2s-orbital $\ell = 0 \Rightarrow$ Orbital angular momentun = 0

41. (B)

Sol. No two electrons in an atom can have identical set of all the four quantum numbers.

42. (C)

Sol. Hund's rule states that pairing of electrons in the orbitals of a subshell (orbitals of equal energy) starts when each of them is singly filled.

43. (B)

Sol. $1s^2\ 2s^2\ 2p^6\ 3s^1$

m = 0 is for 2 + 2 + 2 + 1 electrons = 7 e^-

44. (B)

Sol. Zn^{2+} : [Ar] $3d^{10}$ (0 unpaired electrons).

Fe^{2+} : [Ar] $3d^6$ (4 unpaired electrons) maximum.

Ni^{3+} : [Ar] $3d^7$ (3 unpaired electrons).

Cu^{+} : [Ar] $3d^{10}$ (0 unpaired electrons).

45. (D)

Sol. d^7 : 3 unpaired electrons. $\therefore$

Total spin = $\pm\frac{n}{2} = \pm\frac{3}{2}$.

46. (A)

Sol. s orbital is spherical so non-directional.

47. (C)

Sol. Spherical node = n $-\ell - 1$

non spherical = ℓ

48. (D)

49. (C)

Sol. The minimum frequency required to eject an electron from the surface of metal is called threshold frequency.

50. (A)

Sol. $\lambda = \frac{h}{mv}$