NEET : CHAPTER WISE TEST-2

SUBJECT :- CHEMISTRY **DATE.....**
CLASS :- 11th **NAME.....**
CHAPTER :- ATOMIC STRUCTURE **SECTION.....**

(SECTION-A)

1. Cathode ray are :
(A) stream of electrons
(B) stream of α-particles
(C) radiation
(D) stream of cations

2. Which of the following rays are affected by electric field :
(A) Anode rays (B) Cathode rays
(C) Both (A) and (B) (D) None of these

3. The e/m ratio for Anode rays :
(A) varies with the element forming the anode in the discharge tube.
(B) varies with the gas filled in the discharge tube.
(C) is constant.
(D) Both (A) & (B).

4. The charge on the atom having 17 protons, 18 neutrons and 18 electrons is
(A) + 1 (B) – 1
(C) – 2 (D) zero

5. Number of protons, neutrons and electrons in the element $^{281}_{89}Ac$ are respectively :
(A) 89, 231, 89 (B) 89, 89, 242
(C) 89, 142, 89 (D) 89, 192, 89

6. Which of the following are isoelectronic with one another ?
(A) Na^+ and Ne (B) K^+ and O
(C) Ne and O (D) Na^+ and K^+

7. When atoms are bombarded with alpha particles, only a few in million suffer deflection, others pass out undeflected. This is because
(A) The force of repulsion on the moving alpha particle is small
(B) The force of attraction on the alpha particle to the oppositely charged electrons is very small
(C) There is only one nucleus and large number of electrons
(D) The nucleus occupies much smaller volume compared to the volume of the atom

8. Photon of which light has maximum energy :
(A) red (B) blue
(C) violet (D) green

9. The frequency of yellow light having wavelength 600 nm is :
(A) 5.0×10^{14} Hz (B) 2.5×10^{7} Hz
(C) 5.0×10^{7} Hz (D) 2.5×10^{14} Hz

10. Which one of the following is not the characteristic of Planck's quantum theory of radiation-
(A) The energy is not absorbed or emitted in whole number multiple of quantum.
(B) Radiation is associated with energy.
(C) Radiation energy is not emitted or absorbed continously but in the form of small packets called quanta.
(D) This magnitude of energy associated with a quantum is proportional to the frequency.

11. Light of wavelength λ falls on metal having work function hc/λ_0. Photoelectric effect will take place only if :
(A) $\lambda \geq \lambda_0$ (B) $\lambda \geq 2\lambda_0$
(C) $\lambda \leq \lambda_0$ (D) $\lambda \leq \lambda_0/2$

12. The energy of a photon is 3.03×10^{-19} J, then wavelength of this photon is:

(Given, h = 6.63×10^{-34} Js, c = 3.00×10^{8} ms^{-1})
(A) 6.56 nm (B) 65.6 nm
(C) 656 nm (D) 0.656 nm

13. Ratio of radii of second and first Bohr orbits of H atom is :
(A) 2 (B) 4 (C) 3 (D) 5

14. The ratio of radii of second orbits of He^{+}, Li^{2+} and Be^{3+} is **:**
(A) 1 : 2 : 3 (B) 6 : 4 : 3
(C) 3 : 4 : 6 (D) none of these

15. If the radius of I^{st} orbit of hydrogen atom is 0.53 Å then radius of I^{st} orbit of He^{+} is :
(A) 1.27 Å (B) 0.265 Å
(C) 1.59 Å (D) 0.132 Å

16. If the velocity of the electron in first orbit of H atom is 2.18×10^{6} m/s,what is its value in third orbit ?
(A) 7.27×10^{5} m/s
(B) 4.36×10^{6} m/s
(C) 1.24×10^{5} m/s
(D) 1.09×10^{6} m/s

17. When an electron drops from a higher energy level to a low energy level, then :
(A) energy is absorbed
(B) energy is emitted
(C) atomic number increases
(D) atomic number decreases

18. The maximum energy of an electron in an atom will be at :
(A) Nucleus
(B) Ground state
(C) First excited state
(D) Infinite distance from the nucleus

19. The ionization energy of H-atom is 13.6 eV. The ionization energy of Li^{+2} ion will be :
(A) 54.4 eV (B) 122.4 eV
(C) 13.6 eV (D) 27.2 eV

20. Correct relation between total energy (TE) and potential energy (PE)
(A) $PE = \frac{TE}{2}$ (B) TE = PE
(C) $TE = \frac{PE}{4}$ (D) $TE = \frac{PE}{2}$

21. The wavelength of a spectral line for an electronic transition is inversly related to :
(A) No. of electrons undergoing transition
(B) The nuclear charge of the atom
(C) The velocity of an electron undergoing transition
(D) The difference in the energy levels involved in the transition

22. The spectral lines corresponding to the radiation emitted by an electron jumping from 6th, 5th and 4th orbits to second orbit belong to :
(A) Lyman series (B) Balmer series
(C) Paschen series (D) Pfund series

23. Wavelength of first line of Balmer series in hydrogen spectrum is :
(A) 6656 Å (B) 6266 Å
(C) 6626 Å (D) 6566 Å

24. Maximum number of spectral lines in Lyman series will be if electron makes transistion from n^{th} orbit :
(A) n (B) n – 1
(C) n – 2 (D) n (n + 1)

25. The de Broglie equation suggests that an electron has
(A) Particle nature
(B) Wave nature
(C) Both Particle & wave nature
(D) Radiation behaviour

26. The wavelength of a charged particle _____the square root of the potential difference through which it is accelerated :
(A) is inversely proportional to
(B) is directly proportional to

(C) is independent of
(D) is unrelated with

27. The de-broglie wavelength associated with a ball of mass 1 kg having kinetic energy 0.5 Joule is.
(A) 6.626×10^{-34} m
(B) 13.20×10^{-34} m
(C) 10.38×10^{-21} m
(D) 6.626×10^{-34} Å

28. What possibly can be the ratio of the de Broglie wavelengths for two electrons each having zero initial energy and accelerated through 50 volts and 200 volts ?
(A) 3 : 10 (B) 10 : 3
(C) 1 : 2 (D) 2 : 1

29. A helium molecule is moving with a velocity of 2.40 x 10^{2} ms^{-1} at 300K. The de-Broglie wave length is about
(A) 0.416 nm (B) 0.83 nm
(C) 803 Å (D) 8000 Å

30. If wavelength is equal to the distance travelled by the electron in one second, then -
(A) $\lambda = \frac{p}{h}$ (B) $\lambda = \frac{h}{m}$
(C) $\lambda = \sqrt{\frac{h}{p}}$ (D) $\lambda = \sqrt{\frac{h}{m}}$

31. Select the incorrect relationship among the following :
(A) $\Delta x \times \Delta p \geq \frac{h}{4\pi}$
(B) $\Delta x \times \Delta p \geq \frac{h}{4\pi m}$
(C) $\Delta x \times \Delta V \geq \frac{h}{4\pi m}$
(D) $\Delta E \times \Delta t \geq \frac{h}{4\pi}$

32. Heisenberg uncertainty principle is not valid for
(A) moving electron
(B) motar car
(C) Stationary particle
(D) Both (B) and (C)

33. Magnetic quantum number specifies -
(A) Size of orbitals
(B) Shape of orbitals
(C) Orientation of orbitals
(D) Nuclear stability

34. A p-orbital can accommodate
(A) 4 electrons
(B) 6 electrons
(C) 2 electrons with parallel spins
(D) 2 electrons with opposite spins

35. A given orbital is labeled by the magnetic quantum number m = –1. This could not be
(A) s - orbital (B) p-orbital
(C) d-orbital (D) f-orbital

(SECTION-B)

36. The electrons present in K-shell of the atom will differ in
(A) principal quantum number
(B) azimuthal quantum number
(C) magnetic quantum number
(D) spin quantum number

37. The maximum number of 3d-electrons that can have s = $-\frac{1}{2}$, are
(A) 10 (B) 3 (C) 5 (D) 7

38. A correct set of four quantum numbers for unpaired electron in Cl-atom :

	n	l	m	s
(A)	3	2	0	+½
(B)	3	1	0	+½
(C)	3	1	+1	0
(D)	3	0	–1	+½

39. Spin angular momentum for an electron is given as :

(A) $\sqrt{s(s+1)}\ \frac{h}{2\pi}$

(B) $\sqrt{2s\ (s+1)}\ \frac{h}{2\pi}$

(C) $\sqrt{s\ (s+2)}\ \frac{h}{2\pi}$

(D) None

40. The orbital angular momentum of an electron in 2s-orbital is -

(A) $\frac{h}{4\pi}$ (B) zero

(C) $\frac{h}{2\pi}$ (D) $\sqrt{2}\ \frac{h}{2\pi}$

41. Which of the following principles limits the maximum number of electrons in an orbital to two

(A) Aufbau principle
(B) Pauli's exclusion principle
(C) Hund's rule of maximum multiplicity
(D) Heisenberg's uncertainty principle

42. Nitrogen has the electronic configuration $1s^2, 2s^2 2p_x^1 2p_y^1 2p_z^1$ and not $1s^2, 2s^2 2p_x^2 2p_y^1 2p_z^0$ which is determined by

(A) Aufbau's principle
(B) Pauli's exclusion principle
(C) Hund's rule
(D) Uncertainty principle

43. For sodium atom the number of electrons with m = 0 will be :

(A) 2 (B) 7 (C) 9 (D) 8

44. Which of the following ions has the maximum number of unpaired d-electrons?

(A) Zn^{2+} (B) Fe^{2+}
(C) Ni^{3+} (D) Cu^{+}

45. The total spin resulting from a d^7 configuration is :

(A) 1 (B) 2 (C) 5/2 (D) 3/2

46. Which orbital is non-directional

(A) s (B) p (C) d (D) All

47. A 3p-orbital has

(A) Two non-spherical nodes
(B) Two spherical nodes
(C) One spherical and one Radial nodes
(D) One spherical and two non spherical nodes

48. Match the following :

Column-I
Sub-atomic particles
(1) Electron
(2) Proton
(3) Neutron
(4) Nucleus
Column-II
Persons responsible for discovery
(p) James Chadwick
(q) J.J. Thomson
(r) Rutherford
(s) Goldstein

(A) (1 - q, 2 - s, 3 - r, 4 - p)
(B) (1 - p, 2 - p, 3 - q, 4 - s)
(C) (1 - r, 2 - s, 3 - p, 4 - q)
(D) (1 - q, 2 - s, 3 - p, 4 - r)

49. **A :** It is not essential that all the lines available in the emission spectrum will also be available in the absorption spectrum
R : The spectrum of hydrogen atom is only absorption spectrum
(A) Both (A) and (R) are true and (R) is the correct explanation of (A)
(B) Both (A) and (R) are true and (R) is not the correct explanation of (A)
(C) (A) is true but (R) is false
(D) (A) is false but (R) is true

50. **A :** deBroglie equation has significance for any microscopic or submicroscopic particles

R : deBroglie wavelength is inversely proportional to the mass of the object.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A)

(B) Both (A) and (R) are true and (R) is not the correct explanation of (A)

(C) (A) is true but (R) is false

(D) (A) is false but (R) is true