DPP-01 : Cathode rays, Anode rays, Basic definations and Rutherford model

1. Cathode ray are :
(1) stream of electrons (2) stream of α-particles
(3) radiation (4) stream of cations

2. Which of the following statement is wrong about anode rays :
(1) They travel in straight line (2) They produce heating effect
(3) They carry positive charge (4) None of these

3. Which of the following is/are affected by electric field :
(1) Anode rays (2) Cathode rays (3) Both (1) and (2) (4) None of these

4. The e/m ratio for Anode rays :
(1) varies with the element forming the anode in the discharge tube.
(2) varies with the gas in the discharge tube.
(3) is constant.
(4) Both (1) & (2).

5. Millikan's oil drop expriments is used to find -
(1) e/m ratio of an electron (2) Charge of an electron
(3) Mass of an electron (4) Velocity of an electron

6. Match the following :

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

(1) (1 - q, 2 - s, 3 - r, 4 - p) (2) (1 - p, 2 - p, 3 - q, 4 - s)
(3) (1 - r, 2 - s, 3 - p, 4 - q) (4) (1 - q, 2 - s, 3 - p, 4 - r)

7. An element having atomic number 25 and atomic weight 55 will have –
(1) 25 protons and 30 neutrons (2) 25 neutrons and 30 protons
(3) 55 protons (4) 55 neutrons

8. Which of the following is isoelectronic with N_2O :
(1) NO (2) N_2O_5 (3) CO_2 (4) CO

9. The charge on the atom having 17 protons, 18 neutrons and 18 electrons is
(1) + 1 (2) – 1 (3) – 2 (4) zero

10. Number of protons, neutrons and electrons in the element $^{281}_{89}Ac$ are respectively :
(1) 89, 231, 89 (2) 89, 89, 242 (3) 89, 142, 89 (4) 89, 192, 89

11. An isotone of $^{16}_{8}O$ is :

(i) $^{17}_{8}O$ (ii) $^{12}_{6}C$ (iii) $^{14}_{6}C$ (iv) $^{32}_{16}S$

(1) (ii & iii) (2) (i & ii) (3) (iii) (4) (ii & iii & iv)

12. Which of the following are isoelectronic with one another ?

(1) Na^+ and Ne (2) K^+ and O (3) Ne and O (4) Na^+ and K^+

13. Rutherford's experiment on scattering of particles showed for the first time that the atom has

(1) Electrons (2) Protons (3) Nucleus (4) Neutrons

14. When atoms are bombarded with alpha particles, only a few in million suffer deflection, others pass out undeflected. This is because

(1) The force of repulsion on the moving alpha particle is small

(2) The force of attraction on the alpha particle to the oppositely charged electrons is very small

(3) There is only one nucleus and large number of electrons

(4) The nucleus occupies much smaller volume compared to the volume of the atom

DPP-02 : Nature of Light and photoelectric effects

1. A photon in X region is more energetic than in the visible region ; X is :

(1) IR (2) UV (3) Microwave (4) Radio wave

2. Photon of which light has maximum energy :

(1) red (2) blue (3) violet (4) green

3. The frequency of yellow light having wavelength 600 nm is :

(1) 5.0×10^{14} Hz (2) 2.5×10^{7} Hz (3) 5.0×10^{7} Hz (4) 2.5×10^{14} Hz

4. Wave number of radiations having frequency of 4×10^4 Hz will be :

(1) 1.33×10^{-6} cm^{-1} (2) 1.33×10^{-7} cm^{-1} (3) 9×10^{-11} cm^{-1} (4) 4×10^{-5} cm^{-1}

5. A wavelength of 400 nm of an electromagnetic radiation is not correspond to :

(1) frequency $= 7.5 \times 10^{14}$ Hz (2) wave number = 2.5×10^{6} m^{-1}.

(3) velocity = 3×10^{8} ms^{-1} (4) $\lambda = 40$ Å

6. Which one of the following is not the characteristic of Planck's quantum theory of radiation-

(1) The energy is not absorbed or emitted in whole number multiple of quantum.

(2) Radiation is associated with energy.

(3) Radiation energy is not emitted or absorbed continously but in the form of small packets called quanta.

(4) This magnitude of energy associated with a quantum is proportional to the frequency.

7. Wavelength of a photon having an energy of 2 eV. will be :

(1) 6.2×10^{-7} m (2) 6.2×10^{-6} m (3) 6.2×10^{-9} m (4) 6.2×10^{-8} m

8. One quantum is absorbed per gaseous molecule of X_2 for converting it into X atoms. If light absorbed has wave length 1240Å, then bond energy of X_2 will be :

(1) 10 eV/molecule (2) 20 J/mole (3) 48 eV/molecule (4) 184 J/mol

9. The work function for a metal is 4 eV. To eject a photoelectron of zero velocity from the surface of the metal, the wavelength of incident light should be above :
(1) 310 Å (2) 1550 Å (3) 155 Å (4) 3100 Å

10. The energy required to remove an electron from a metal X is 3.31×10^{-20} J. Wavelength/s of light that can not photoeject an electron from metal X is/are
(1) 4 μm (2) 6 μm (3) 7 μm (4) 5 μm

11. Light of wavelength λ falls on metal having work function hc/λ_0. Photoelectric effect will take place only if :
(1) $\lambda \geq \lambda_0$ (2) $\lambda \geq 2\lambda_0$ (3) $\lambda \leq \lambda_0$ (4) $\lambda \leq \lambda_0/2$

12. Cu metal (work function = 4.8 eV) can show photoelectric effect if wavelength of photon is :
(1) λ = 5000 Å (2) λ = 6000 Å (3) λ = 2000 Å (4) λ = 4000 Å

13. Maximum kinetic energy of photoelectron using photon of wavelength 2000Å at Cu metal will be (If work function of Cu is 4.8 eV.) :
(1) 2.4 ev (2) 1.4 ev (3) 1.9 ev (4) 3.4 ev

14. When the frequency of light incident on a metallic plate is doubled, the maximum KE of the emitted photoelectrons will be :
(1) Doubled
(2) Halved
(3) Increased but more than double of the initial maximum KE
(4) Unchanged

15. The number of photoelectrons emitted depends upon :
(1) The intensity of the incident radiation
(2) The frequency of the incident radiation
(3) The product of intensity and frequency of incident radiation
(4) None of these

DPP-03 : Bohr's Model

1. The expression for Bohr's radius of an atom is
(1) $r = \frac{n^2h^2}{4\pi^2me^4z^2}$ (2) $r = \frac{n^2h^2}{4\pi^2me^2z}$ (3) $r = \frac{n^2h^2}{4\pi^2me^2z^2}$ (4) $r = \frac{n^2h^2}{4\pi^2m^2e^2z^2}$

2. Ratio of radii of second and first Bohr orbits of H atom is :
(1) 2 (2) 4 (3) 3 (4) 5

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

4. If r is the radius of first orbit, the radius of n^{th} orbit of H atom is given by -
(1) r n (2) $r\ n^2$ (3) r/n (4) $r^2\ n^2$

5. If the speed of electron in second orbit of He^+ is "v", then the speed of electron in first Bohr orbit of hydrogen atom will be :
(1) v/2 (2) 2v (3) v (4) 4v

6. What is the ratio of speeds of electrons in Ist orbit of H-atom to IVth orbit of He^+ ion .
(1) 2 : 1 (2) 8 : 3 (3) 3 : 2 (4) 27 : 5

7. If the radius of I^{st} orbit of hydrogen atom is 0.53 Å then radius of I^{st} orbit of He^+ is :
(1) 1.27 Å (2) 0.265 Å (3) 1.59 Å (4) 0.132 Å

8. Which state of the triply ionized Beryllium (Be^{3+}) has the same orbit radius as that of the ground state of hydrogen atom ?
(1) 1 (2) 2 (3) 3 (4) 4

9. 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 ?
(1) 7.27×10^5 m/s (2) 4.36×10^6 m/s (3) 1.24×10^5 m/s (4) 1.09×10^6 m/s

10. The difference in angular momentum associated with the electron in two successive orbits of hydrogen atom is :
(1) h/π (2) $h/2\pi$ (3) $h/2$ (4) $(n-1)h/2\pi$

11. The angular momentum of an electron in a given orbit is J, Its kinetic energy will be :
(1) $\frac{1}{2}\frac{J^2}{mr^2}$ (2) $\frac{Jv}{r}$ (3) $\frac{J^2}{2m}$ (4) $\frac{J^2}{2\pi}$

12. Angular momentum in 2^{nd} Bohr orbit of H-atom is x. Then angular momentum of electron in I^{st} excited state of Li^{+2} is :
(1) 3x (2) 9x (3) $\frac{x}{2}$ (4) x

13. When an electron drops from a higher energy level to a low energy level, then :
(1) energy is absorbed (2) energy is emitted
(3) atomic number increases (4) atomic number decreases

14. The maximum energy of an electron in an atom will be at :
(1) Nucleus (2) Ground state
(3) First excited state (4) Infinite distance from the nucleus

15. The ratio of potential energy and total energy of an electron in a Bohr orbit of hydrogen like species is :
(1) 2 (2) –2 (3) 1 (4) –1

16. The ratio of energies of hydrogen atom for first and second excited state is :
(1) 4/1 (2) 1/4 (3) 4/9 (4) 9/4

17. In hydrogen atom, energy of first excited state is – 3.4 eV. Then, KE of same orbit of hydrogen atom is:
(1) + 3.4 eV (2) + 6.8 eV (3) – 13.6 eV (4) + 13.6 eV

18. Potential energy of electron is – 27.2 eV in 2^{nd} orbit of He^+. Then total energy of electron in first excited state of Hydrogen atom will be :
(1) –3.4 eV (2) –13.6 eV (3) 3.4 eV (4) 13.6 eV

19. If the potential energy of electron in hydrogen atom is –3.02eV then in which of the following excited level is electron present :
(1) 1^{st} (2) 2^{nd} (3) 3^{rd} (4) 4^{th}

20. The ionisation energy for the H-atom is 13.6 eV. Then the required energy in eV to excite the electron it from the ground state to next higher state will be : (in eV)
(1) 3.4 (2) 10.2 (3) 12.1 (4) 1.5

21. The energy of an electron in an excited H-atom is –1.51 eV. Angular momentum of electron in the given orbit will be
(1) $3h/\pi$ (2) $3h/2\pi$ (3) $2h/\pi$ (4) h/π

22. The ionization energy of H-atom is 13.6 eV. The ionization energy of Li^{+2} ion will be :
(1) 54.4 eV (2) 122.4 eV (3) 13.6 eV (4) 27.2 eV

23. If the binding energy of 3rd orbit of a H-like species is 13.6 eV, then the species must be :
(1) Be^{3+} (2) Li^{+} (3) He^{+} (4) None of these

24. In which excited state that a hydrogen atom sample already in ground state can reach when it is bombarded with photons of energy 12.75 eV, will be :
(1) 4 (2) 2 (3) 3 (4) No transition will occur.

25. If the binding energy of first excited state of a hydrogen like sample is 54.4 eV, then determine the atomic number Z of the H-like species :
(1) 1 (2) 2 (3) 3 (4) 4

26. The excitation energy of first excited state of a hydrogen like atom is 40.8 eV. The energy needed to remove the electron from ground state of the ion is :
(1) 54.4 eV (2) 122.4 eV (3) 40.8 eV (4) 13.6 eV

27. Match the following

(1) Energy of ground state of He^{+}	(i) + 6.04 eV
(2) Potential energy of I orbit of H-atom	(ii) –27.2 eV
(3) Kinetic energy of II excited state of He^{+}	(iii) 54.4 V
(4) Ionisation potential of He^{+}	(iv) – 54.4 eV

(1) A – (i), B – (ii), C – (iii), D – (iv) (2) A – (iv), B – (iii), C – (ii), D – (i)
(3) A – (iv), B – (ii), C – (i), D – (iii) (4) A – (ii), B – (iii), C – (i), D – (iv)

DPP-04 : Atomic Spectrum

1. The wavelength of a spectral line for an electronic transition is inversly related to :
(1) No. of electrons undergoing transition
(2) The nuclear charge of the atom
(3) The velocity of an electron undergoing transition
(4) The difference in the energy levels involved in the transition

2. Different lines in Lyman series of hydrogen spectrum lie in :
(1) UV (2) Visible (3) IR (4) None of these

3. The spectral lines corresponding to the radiation emitted by an electron jumping from 6th, 5th and 4th orbits to second orbit belong to :
(1) Lyman series (2) Balmer series (3) Paschen series (4) Pfund series

4. The transition of electron in H-atom that will emit maximum energy is :
(1) $n_3 \rightarrow n_2$ (2) $n_4 \rightarrow n_3$ (3) $n_5 \rightarrow n_4$ (4) All have same energy

5. Which transition emits photon of maximum frequency in hydrogen like species :
(1) 2^{nd} spectral line of Balmer series (2) 2^{nd} spectral line of Paschen series
(3) 5^{th} spectral line of Humphery series (4) 5^{th} spectral line of Lymen series

6. The shortest λ for the Brakett series for H is : (Given $R_H = 109678\ cm^{-1}$)
(1) 1459 Å (2) 4052 Å (3) 4052 nm (4) 1459 nm

7. Wavelength of 1^{st} line of Balmer series in hydrogen spectrum is :
(1) 6656 Å (2) 6266 Å (3) 6626 Å (4) 6566 Å

8. When an electron in an excited hydrogen atom jumps 5^{th} orbit to 3^{rd} orbit the spectral line is observed in the .....region and in .....series of the hydrogen spectrum.
(1) Visible, Balmer (2) Visible, Lyman (3) Infrared, Paschen (4) Infrared, Balmer

9. No. of visible lines when an electron returns from 5th orbit to ground state in H spectrum -
(1) 5 (2) 4 (3) 3 (4) 10

10. Maximum number of spectral lines in Lyman series will be if electron makes transistion from n^{th} orbit :
(1) n (2) n – 1 (3) n – 2 (4) n (n + 1)

11. In a isolated H-atom, electron transits from 6^{th} orbit to 2^{nd} orbit maximum number of spectral lines will be
(1) 6 (2) 10 (3) 4 (4) 0

12. The wave number of first line of Balmer series of hydrogen atom is 15200 cm^{-1}. What is the wave number of first line of Balmer series of Li^{2+} ion:
(1) 15200 cm^{-1} (2) 13680000 m^{-1} (3) 76000 cm^{-1} (4) 13680 cm^{-1}

13. Calculate number of possible spectral lines which may be emitted in bracket series in H atom, if electrons present in 9^{th} excited level returns to ground level.
(1) 4 (2) 5 (3) 6 (4) 7

14. Ratio of wavelength of second line of Lyman series to that of series limit of Paschen series of H-atom.
(1) 1/8 (2) 1/9 (3) 8/9 (4) 9/8

DPP-05 : de-Broglie concept & Heisenbergs uncertainity principle

1. The de Broglie equation suggests that an electron has
(1) Particle nature (2) Wave nature
(3) Both Particle & wave nature (4) Radiation behaviour

2. The wavelength of a charged particle _____the square root of the potential difference through which it is accelerated :
(1) is inversely proportional to (2) is directly proportional to
(3) is independent of (4) is unrelated with

3. If the kinetic energy of an electron is increased 4 times, the wavelength of the de-Broglie wave associated with it would become :
(1) four times (2) two times (3) half times (4) one fourth times

4. A 0.66 kg ball is moving with a speed of 100 m/s. The associated wavelength will be : ($h = 6.6 \times 10^{-34}$ Js)
(1) 6.6×10^{-32} m (2) 6.6×10^{-34} m (3) 1.0×10^{-35} m (4) 1.0×10^{-32} m

5. The de-broglie wavelength associated with a ball of mass 1 kg having kinetic energy 0.5 J is.
(1) 6.626×10^{-34} m (2) 13.20×10^{-34}m (3) 10.38×10^{-21} m (4) 6.626×10^{-34} Å

6. The speed of a proton is one hundredth of the speed of light in vacuum. What is its de-Broglie of proton wavelength? Assume that one mole of protons has a mass equal to one gram [$h = 6.626 \times 10^{-27}$ erg sec] :
(1) 13.31×10^{-3} Å (2) 1.33×10^{-3} Å (3) 13.13×10^{-2} Å (4) 1.31×10^{-2} Å

7. 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 ?
(1) 3 : 10 (2) 10 : 3 (3) 1 : 2 (4) 2 : 1

8. A helium molecule is moving with a velocity of 2.40×10^2 ms^{-1} at 300K. The de-Broglie wave length is about
(1) 0.416 nm (2) 0.83 nm (3) 803 Å (4) 8000 Å

9. If wavelength is equal to the distance travelled by the electron in one second, then -
(1) $\lambda = \frac{p}{h}$ (2) $\lambda = \frac{h}{m}$ (3) $\lambda = \sqrt{\frac{h}{p}}$ (4) $\lambda = \sqrt{\frac{h}{m}}$

10. de-Broglie wavelength of electron in second orbit of Li^{2+} ion will be equal to de-Broglie of wavelength of electron in
(1) n = 3 of H-atom (2) n = 4 of C^{5+} ion (3) n = 6 of Be^{3+} ion (4) n = 3 of He^{+} ion

11. What is the de-Broglie wavelength associated with the electron in 3rd orbit of hydrogen :
(1) 9.96×10^{-10}cm (2) 9.96×10^{-8}cm (3) 9.96×10^{4}cm (4) 9.96×10^{8}cm

12. Select the incorrect relationship among the following :
(1) $\Delta x \times \Delta p \geq \frac{h}{4\pi}$ (2) $\Delta x \times \Delta p \geq \frac{h}{4\pi m}$ (3) $\Delta x \times \Delta V \geq \frac{h}{4\pi m}$ (4) $\Delta E \times \Delta t \geq \frac{h}{4\pi}$

13. It the uncertainity in position of a moving particle is 0 then uncertainity in momentum will be :
(1) 0 (2) 1 (3) ∞ (4) Can not predict

14. The Uncertainity in the momentum of an electron is 1.0×10^{-10} kg m s^{-1} . The Uncertainity in its position will be: ($h = 6.62 \times 10^{-34}$ Js)
(1) 1.05×10^{-28} m (2) 1.05×10^{-26} m (3) 5.27×10^{-25} m (4) 5.25×10^{-28} m

15. What is the minimum uncertainty in position of a proton whose velocity is given by $1.5 \times 10^6 \pm 1500$ m/s
(1) 21 m (2) 21 cm (3) 21 μm (4) 21 pm

DPP-06 : Quantum Numbers and Electronic configuration

1. Magnetic quantum number specifies -
(1) Size of orbitals (2) Shape of orbitals
(3) Orientation of orbitals (4) Nuclear stability

2. A p-orbital can accommodate

(1) 4 electrons (2) 6 electrons

(3) 2 electrons with parallel spins (4) 2 electrons with opposite spins

3. A given orbital is labeled by the magnetic quantum number m = –1. This could not be

(1) s - orbital (2) p-orbital (3) d-orbital (4) f-orbital

4. Which of the following represents the correct set of quantum numbers of a 4d electron ?

(1) 4, 3, 2, + $\frac{1}{2}$ (2) 4, 2, 1, 0 (3) 4, 3, – 2, + $\frac{1}{2}$ (4) 4, 2, 1, – $\frac{1}{2}$

5. An orbital containing electron having quantum number n = 4, l = 3, m = 0 and s = – $\frac{1}{2}$ is called

(1) 3s orbital (2) 3p orbital (3) 4d orbital (4) 4f orbital

6. The maximum number of electrons in a subshell is given by the expression

(1) $4l - 2$ (2) $4l + 2$ (3) $2l + 2$ (4) $2n^2$

7. The electrons present in K-shell of the atom will differ in

(1) principal quantum number (2) azimuthal quantum number

(3) magnetic quantum number (4) spin quantum number

8. The maximum number of 3d-electrons that can have s = – $\frac{1}{2}$, are

(1) 10 (2) 3 (3) 5 (4) 7

9. If n and ℓ are respectively the principal and azimuthal quantum numbers, then the expression for calculating the total number of electrons in any orbit is -

(1) $\sum_{\ell=1}^{\ell=n} 2\ (2\ell+1)$ (2) $\sum_{\ell=1}^{\ell=n-1} 2\ (2\ell+1)$ (3) $\sum_{\ell=0}^{\ell=n+1} 2(2\ell+1)$ (4) $\sum_{\ell=0}^{\ell=n-1} 2(2\ell+1)$

10. Number of electrons having ℓ = 1 and m=0 in P-atom in its ground state :

(1) 3 (2) 1 (3) 2 (4) 0

11. Maximum number of electrons that can have n = 3, ℓ = 2, m = +2, s = +½ in an atom are :

(1) 18 (2) 6 (3) 24 (4) 1

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

	n	l	m	s
(1)	3	2	0	+½
(2)	3	1	0	+½
(3)	3	1	+1	0
(4)	3	0	–1	+½

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

(1) $\sqrt{s(s+1)}\ \frac{h}{2\pi}$ (2) $\sqrt{2s\ (s+1)}\ \frac{h}{2\pi}$ (3) $\sqrt{s\ (s+2)}\ \frac{h}{2\pi}$ (4) None

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

(1) $\frac{h}{4\pi}$ (2) zero (3) $\frac{h}{2\pi}$ (4) $\sqrt{2}\ \frac{h}{2\pi}$

15. Which of the following set of quantum numbers is permitted

(1) n = 3, l = 2, m = – 2, s = +1/2 (2) n = 3, l = 2, m = – 1, s = 0

(3) n = 2, l = 2, m = +1, s = – 1/2 (4) n = 2, l = 2, m = +1, s = – 1/2

16. Which of the following principles/rules limits the maximum number of electrons in an orbital to two

(1) Aufbau principle (2) Pauli's exclusion principle

(3) Hund's rule of maximum multiplicity (4) Heisenberg's uncertainty principle

17. Which is not correct for an electron having n = 5, m = 2 :

(1) $\ell = 4$ (2) $\ell = 0, 1, 2, 3$ (3) $\ell = 3$ (4) $\ell = 2, 3, 4$

18. Which of the following orbital quantum number value is not possible for an electron present in 4d subshell:

(1) n = 4 (2) $\ell = 1$ (3) m = 1 (4) m = 2

19. The atomic number of an element is 17. The number of orbitals containing electron pairs in the valency shell in its ground state are is :

(1) 8 (2) 2 (3) 3 (4) **6**

20. 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

(1) Aufbau's principle (2) Pauli's exclusion principle

(3) Hund's rule (4) Uncertainty principle

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

(1) 2 (2) 7 (3) 9 (4) 8

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

(1) Zn^{2+} (2) Fe^{2+} (3) Ni^{3+} (4) Cu^{+}

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

(1) 1 (2) 2 (3) 5/2 (4) 3/2

24. In hydrogen atom, which is incorrect order of their energies.

(1) 1s < 2p (2) 2p = 2s (3) 2p > 2s (4) 2p < 3s

25. For a given subshell let maximum number of electrons with same spin be x and number of possible m_ℓ values be y.

(1) x = 2y (2) x = y (3) $\frac{x}{2} = y$ (4) $x = \frac{y}{2}$

26. Ratio of number of unpaired electrons in Fe^{2+} to that of Ti is

(1) 1.2 (2) 3 (3) 2 (4) 4

27. Orbital angular momentum of 2s orbital is

(1) $\frac{h}{2\pi}$ (2) $\frac{\sqrt{2}h}{2\pi}$ (3) $\frac{\sqrt{3}h}{2\pi}$ (4) Zero

DPP-07 : Shape of orbitals

1. Which orbital is non-directional

(1) s (2) p (3) d (4) All

2. An orbital with $\ell = 0$ is symmetrical about the :

(1) x-axis only (2) y-axis only (3) z-axis only (4) All

3. Which orbital has two angular nodal planes.

(1) s (2) p (3) d (4) f

4. Which d-orbital does not have four lobes

(1) $d_{x^2-y^2}$ (2) d_{xy} (3) d_{z^2} (4) d_{xz}

5. The number of radial nodes of 5s atomic orbital are

(1) 1 (2) 2 (3) 3 (4) 4

6. The number of angular nodes of $3d_{yz}$ atomic orbital are

(1) 1 (2) 2 (3) 3 (4) 4

7. The sum of angular nodes and radial nodes of $4d_{xy}$ atomic orbital are

(1) 1 (2) 2 (3) 3 (4) 4

8. The number of angular nodes of 3p atomic orbital are

(1) 1 (2) 2 (3) 3 (4) 4

9. $3p_y$ orbital has.....nodal plane :

(1) XY (2) YZ (3) ZX (4) All of these

10. A 3p-orbital has

(1) Two non-spherical nodes (2) Two spherical nodes

(3) One spherical and one non spherical nodes (4) One spherical and two non spherical nodes

11. The permissible solution to the schrodinger wave equation gave an ideal of ..... quantum number

(1) 4 (2) 3 (3) 2 (4) 1

ANSWER KEY

DPP-01

1.	(1)	**2.**	(4)	**3.**	(3)	**4.**	(2)	**5.**	(2)	**6.**	(4)	**7.**	(1)
8.	(3)	**9.**	(2)	**10.**	(4)	**11.**	(3)	**12.**	(1)	**13.**	(3)	**14.**	(4)

DPP-02

1.	(2)	**2.**	(3)	**3.**	(1)	**4.**	(1)	**5.**	(4)	**6.**	(1)	**7.**	(1)
8.	(1)	**9.**	(4)	**10.**	(3)	**11.**	(3)	**12.**	(3)	**13.**	(2)	**14.**	(3)
15.	(1)												

DPP-03

1.	(2)	**2.**	(2)	**3.**	(2)	**4.**	(2)	**5.**	(3)	**6.**	(1)	**7.**	(2)
8.	(2)	**9.**	(1)	**10.**	(2)	**11.**	(1)	**12.**	(4)	**13.**	(2)	**14.**	(4)
15.	(1)	**16.**	(4)	**17.**	(1)	**18.**	(1)	**19.**	(2)	**20.**	(2)	**21.**	(2)
22.	(2)	**23.**	(4)	**24.**	(3)	**25.**	(4)	**26.**	(1)	**27.**	(3)		

DPP-04

1.	(4)	**2.**	(1)	**3.**	(2)	**4.**	(1)	**5.**	(4)	**6.**	(4)	**7.**	(4)
8.	(3)	**9.**	(3)	**10.**	(2)	**11.**	(3)	**12.**	(2)	**13.**	(3)	**14.**	(1)

DPP-05

1.	(3)	**2.**	(1)	**3.**	(3)	**4.**	(3)	**5.**	(1)	**6.**	(2)	**7.**	(4)
8.	(1)	**9.**	(4)	**10.**	(2)	**11.**	(2)	**12.**	(2)	**13.**	(3)	**14.**	(3)
15.	(4)												

DPP-06

1.	(3)	**2.**	(4)	**3.**	(1)	**4.**	(4)	**5.**	(4)	**6.**	(2)	**7.**	(4)
8.	(3)	**9.**	(4)	**10.**	(1)	**11.**	(4)	**12.**	(2)	**13.**	(1)	**14.**	(2)
15.	(1)	**16.**	(2)	**17.**	(2)	**18.**	(2)	**19.**	(3)	**20.**	(3)	**21.**	(2)
22.	(2)	**23.**	(4)	**24.**	(3)	**25.**	(2)	**26.**	(3)	**27.**	(4)		

DPP-07

1.	(1)	**2.**	(4)	**3.**	(3)	**4.**	(3)	**5.**	(4)	**6.**	(2)	**7.**	(3)
8.	(1)	**9.**	(3)	**10.**	(3)	**11.**	(2)						