



CHEMISTRY NMDCAT

PMC TOPIC WISE TEST (UNIT-2)

TOPICS

✓ ATOMIC STRUCTURE

- Q.1 Cations are formed by loss of electron from neutral atom and anions are formed by the gain of electron. The mass of ions and neutral atom will be related as
 A. cations > Anions > Neutral atom
 B. Anions > cations > Neutral atom
 C. Neutral atom > cations > Anions
 D. Anions = Cations = Neutral atom
- Q.2 e/m value for positive rays (having same charge) is minimum for
 A. Helium
 B. Hydrogen
 C. Oxygen
 D. Nitrogen
- Q.3 Point out incorrect electronic configuration.
 A. $K = [Ar]4s^1$
 B. $Cu = [Ar]3d^9, 4s^2$
 C. $Mn = [Ar]3d^5, 4s^2$
 D. $Co = [Ar]3d^7, 4s^2$
- Q.4 The value of four quantum numbers of valence electron of an element are $n = 3, \ell = 0, m = 0$ and $s = +1/2$. The element is.
 A. Li
 B. K
 C. Na
 D. Sc
- Q.5 Set of iso-electronic species is.
 A. H_2, CO_2, CN^-
 B. N_2, CO, CN^-
 C. N_2, H_2S, CO
 D. Ca, Mg, Cl
- Q.6 A di-positive cation has 16 electrons in its M shell. The element is.
 A. Manganese
 B. Chromium
 C. Nickel
 D. Iron
- Q.7 $\ell = 3$ then the values of magnetic quantum numbers are.
 A. $0, \pm 1, \pm 2, \pm 3$
 B. $0, 1, 2, 3$
 C. $0, 1, -2, -3$
 D. $0, \pm 1, \pm 2$
- Q.8 The atomic number of an element is 35. How many s, p and d-electrons ($3d^{10}, 4s^2, 4p^5$) respectively it possesses in ground state?
 A. 8, 19, 8
 B. 8, 17, 10
 C. 10, 15, 10
 D. 6, 18, 11
- Q.9 Which of the following is not possible?
 A. $n = 2, \ell = 0, m = 1$
 B. $n = 3, \ell = 0, m = 0$
 C. $n = 2, \ell = 1, m = -1$
 D. $n = 3, \ell = 1, m = -1$
- Q.10 The principal quantum number of an atom is related to.
 A. Orientation of orbital in space
 B. Spin of electron around its own axis
 C. Size of the orbital
 D. Shape of orbital
- Q.11 A p-orbital can accommodate up to.
 A. Six electrons with opposite spin
 B. Two electrons with opposite spin
 C. Four electrons with opposite spin
 D. Two electrons with parallel spin
- Q.12 The ground state electronic configuration of nitrogen atom can be represented as.
 A. $1s^2, 2s^2, 2p_x^2, 2p_y^1, 2p_z^0$
 B. $1s^2, 2s^2, 2p_x^1, 2p_y^1, 2p_z^1$
 C. $1s^2, 2s^2, 2p_x^1, 2p_y^2, 2p_z^0$
 D. $1s^2, 2s^1, 2p_x^2, 2p_y^1, 2p_z^1$
- Q.13 The set of elements which violates Auf bau principle is.
 A. Cr and Co
 B. Cu and Co
 C. Cr and Cu
 D. Cr and Mn

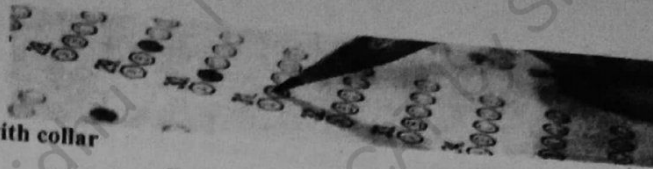






- Q.14 The electrons identified by quantum number n and ℓ
- (i) $n = 4, \ell = 1$ (ii) $n = 4, \ell = 0$
 (iii) $n = 3, \ell = 2$ (iv) $n = 3, \ell = 1$
- Can be placed in order of increasing energy from the lowest to highest as
- A. $iv < ii < iii < i$ B. $i < iii < ii < iv$
 C. $ii < iv < i < iii$ D. $iii < i < iv < ii$
- Q.15 The number of unpaired d electrons retained in Cu^{2+} (At. Number of $Cu=29$) ions is.
- A. 2 B. 5
 C. 0 D. 1
- Q.16 Which of the following sets of quantum number is correct for an electron in 4f orbital?
- A. $n = 4, \ell = 3, m = +4$ B. $n = 4, \ell = 3, m = +1$
 C. $n = 4, \ell = 4, m = -4$ D. $n = 3, \ell = 2, m = -2$
- Q.17 Consider the ground state of Cr atom ($Z=24$). The number of electrons with the azimuthal quantum numbers, $\ell = 1$ and 2 respectively are.
- A. 12 and 4 B. 16 and 4
 C. 12 and 5 D. 16 and 5
- Q.18 Indicate incorrect statement regarding subatomic particles of an atom.
- A. Mass of electron is $9.1095 \times 10^{-31} Kg$
 B. A proton has 1836 times greater mass than an electron
 C. Mass of proton is $1.6726 \times 10^{-24} g$
 D. Canal rays do not show deflection in electric field
- Q.19 An increasing order (lowest first) for the e/m values for electron(e), proton (P) and α particle is
- A. α, p, e B. p, e, α
 C. e, p, α D. p, α, e
- Q.20 Which is not deflected by electric field
- A. Neutron B. Proton
 C. Alpha particles D. Electron
- Q.21 For a given value of azimuthal quantum number ℓ , the total number of values for magnetic quantum number 'm' are given by
- A. $\ell + 1$ B. $2\ell + 1$
 C. $2\ell - 1$ D. $\ell + 2$
- Q.22 The magnetic quantum number for the valence electron of K ($Z=19$) is.
- A. 2 B. Any number between +2 and -2
 C. -3 D. Zero
- Q.23 Quantum number which describe space orientation of orbitals.
- A. Principal quantum number B. Azimuthal quantum number
 C. Magnetic quantum number D. Spin quantum number
- Q.24 The electronic configuration of a dipositive ion is 2,8,17 and atomic mass is 65. The number of neutrons in the nucleus would.
- A. 38 B. 65
 C. 36 D. 29
- Q.25 With the increase in value of principal quantum number which one will not change
- A. Size of s orbitals B. Energy of p-orbitals
 C. Shape of p-orbitals D. Size of p-orbitals
- Q.26 Match list I and list II and pick the correct matching from given codes.

I	II
A) Non directional character	1) $2p_x, 2p_y, 2p_z$
B) Application of Hund's rule	2) Zero electron density
C) Nodal surface	3) s-orbital
D) Degenerate orbital	4) $3p_x^2, 3p_y^1, 3p_z^1$

- A. A-1, B-3, C-4, D-2
 C. A-3, B-4, C-2, D-1

- B. A-3, B-1, C-4, D-2
 D. A-1, B-3, C-2, D-4



- Q.27 Which one orbital is bilobed with collar
A. $d_{x^2-y^2}$
C. d_{xy}
B. d_{z^2}
D. d_{yz}
- Q.28 Which of the following does not correctly relate the arrangement of electrons
A. Arrangement of sub shell is given by $(n + l)$ rule
B. Filling of electrons in degenerate orbitals is given by Hund's rule
C. Filling of electrons in an orbital is given by Pauli's exclusion principle
D. Two electron in an orbital can have same value of four quantum numbers
- Q.29 How many total d-electrons are present in an atom with $Z = 29$ with clockwise spin
A. Two
C. Six
B. Five
D. Eight
- Q.30 Without applying Hund's rule the electronic configuration of one of the following cannot be justified
A. Fluorine
C. Sodium
B. Neon
D. Phosphorous
- Q.31 The space between 1s and 2s where the probability of finding an electron is zero
A. Free space
C. Node
B. Orbital
D. Orbit
- Q.32 Wavelength of a photon of light emitted by a certain source is 200 \AA . The wave number will be
A. $5 \times 10^{-3} \text{ m}^{-1}$
C. $5 \times 10^7 \text{ m}^{-1}$
B. 500 nm^{-1}
D. $500 \times 10^7 \text{ m}^{-1}$
- Q.33 Two different electron can never have same values of all four Quantum numbers, this is stated by
A. Heisenberg's Principle
C. Hund's rule
B. Auf Bau Principle
D. Pauli exclusion Principle
- Q.34 Every atom in excited states violates
A. Heisenberg's Principle
C. Hund's rule
B. Auf Bau Principle
D. Pauli exclusion Principle
- Q.35 The shape of 1s, 2s and 3s is
A. Different
C. Similar
B. Linear
D. Flate
- Q.36 A photon of light moving with energy $3.3 \times 10^{-30} \text{ J}$. The frequency of photon is ($h = 6.6 \times 10^{-34} \text{ Js}$)
A. 500 Hz
C. 5000 Hz
B. $0.5 \times 10^{-30} \text{ Hz}$
D. $2.5 \times 10^{-4} \text{ Hz}$
- Q.37 According to Planck's Quantum theory, greater the energy of electromagnetic radiation, lesser will be the _____
A. Wavelength
C. Wave number
B. Frequency
D. Both "B" and "C"
- Q.38 Which of the following is the shape of one of the d-orbital
A. 
C. 
B. 
D. 
- Q.39 Total fundamental sub atomic particles are present in alpha particle:
A. 1
C. 3
B. 2
D. 4



- Q.40 A di-valent cation having 18 electrons and 20 neutrons. The nucleon number of atom will be
 A. 38
 B. 40
 C. 36
 D. 37
- Q.41 Which violates the Auf-Bau principle
 A. $\uparrow\downarrow$ $\uparrow\uparrow\uparrow\uparrow$
 B. \uparrow $\uparrow\uparrow\uparrow\uparrow$
 C. $\uparrow\downarrow$ $\uparrow\uparrow\uparrow\uparrow$
 D. $\uparrow\downarrow$ $\uparrow\uparrow\uparrow\uparrow$
- Q.42 Which is not correct representation of Planck's quantum theory
 A. $E = hv$
 B. $E = \frac{hc}{\lambda}$
 C. $E = hc\nu$
 D. $E = hc$
- Q.43 Which is not basic postulate of Bohr's atomic model
 A. Electron Revolve only in those orbits having a fixed angular momentum
 B. Electron Revolves in one of the circular orbits outside the nucleus
 C. Energy is emitted or absorbed only when electron jumps from one orbit to another
 D. Electron always remain in fixed orbit and does not change orbit even by absorption of energy
- Q.44 The nature of the positive rays depend on
 A. The nature of the electrode
 B. The nature of the discharge tube
 C. The nature of the residual gas
 D. All of the above
- Q.45 Which of the following sub-shell does not exist
 A. 4f
 B. 5p
 C. 3d
 D. 3f
- Q.46 An electron in a hydrogen atom makes a transition from an energy level E_1 to one with energy E_2 and simultaneously emits a photon. The wavelength of the emitted photon is
 A. $\frac{hc}{E_2 - E_1}$
 B. $\frac{h}{E_2 - E_1}$
 C. $\frac{h}{c(E_2 - E_1)}$
 D. $\frac{(E_2 - E_1)}{hc}$
- Q.47 In the main postulates of Bohr atomic theory, the angular momentum of electron in hydrogen atom is given by the relationship
 A. $mv = \frac{h}{2\pi}$
 B. $r = \frac{Ze^2}{4\pi\epsilon_0 mv}$
 C. $mvr = \frac{nh}{2\pi}$
 D. hvc
- Q.48 Energy emitted or absorbed by a body in form of quanta. This is
 A. Planck's quantum theory
 B. Bohr atomic model
 C. Rutherford atomic model
 D. Pauli exclusion principle
- Q.49 Unit of Planck's constant is
 A. J/Sec
 B. J.Sec
 C. J.m
 D. J/m
- Q.50 The third electron of Li atom will have quantum number values.
- | n | l | m | s |
|------|---|---|------|
| A. 1 | 0 | 0 | +1/2 |
| B. 2 | 0 | 0 | +1/2 |
| C. 2 | 1 | 0 | +1/2 |
| D. 1 | 1 | 1 | +1/2 |

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1. Use Blue Ball Point Pen Only
2. Please Fill In The Roll No. Correctly
3. It is Important That The Circle Is Filled Completely And Correctly As Shown In The Example Below, Otherwise

Correct Example: ✓

Incorrect Examples: X
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CTS (unit - 2)

CHAPTER/TEST# CHEMISTRY DATE: 5 August

NAME: _____

ROLL NO. (IN WORDS): _____

CLASS/SESSION: _____

CANDIDATE'S SIGNATURE: _____

X

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