

SURAJ SCHOOL

REWARI

A vibrant holiday-themed graphic for an announcement. The central focus is a wooden sign with the text 'Holiday Homework' in a bold, red, rounded font with a white outline. The sign is surrounded by various summer and science-related icons: a glowing lightbulb, a beach umbrella, a beach ball, sunglasses, starfish, flip-flops, and various tropical leaves and flowers. In the background, there are faint, light-colored icons of school-related items like a microscope, a book, a pencil, and a globe. The overall color palette is bright and cheerful, dominated by oranges, reds, yellows, and greens.

Holiday Homework

प्रकाशमय कल के लिए

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Class 11th, Chemistry

- The element having no neutron in the nucleus of its atom is-
 (A) hydrogen (B) nitrogen (C) helium (D) boron
 - The particles present in the nucleus of an atom are-
 (A) the proton and the electron (B) the electron and the neutron
 (C) the proton and the neutron (D) none of these
 - The fraction of volume occupied by the nucleus with respect to the total volume of an atom is- (A) 10^{-15}
 (B) 10^{-5} (C) 10^{-30} (D) 10^{-10}
 - Which of the following is iso-electronic with neon-
 (A) O^{2-} (B) F^+ (C) Mg
 (D) Na
 - The approximate size of the nucleus of ${}^{64}_{28}\text{Ni}$ is-
 (A) 3 fm (B) 4 fm (C) 5 fm (D) 2 fm
 - Which is true about an electron-
 (A) rest mass of electron is 9.1×10^{-28} g
 (B) mass of electron increases with the increase in velocity
 (C) molar mass of electron is 5.48×10^{-4} g/mole
 (D) e/m of electron is 1.7×10^8 coulomb/g
- An isotone of ${}^{76}_{32}\text{Ge}$ is-
- ${}^{77}_{32}\text{Ge}$ (B) ${}^{77}_{33}\text{As}$ (C) ${}^{77}_{34}\text{Se}$ (D) ${}^{78}_{34}\text{Se}$
 - When alpha particles are sent through a thin metal foil, most of them go straight through the foil because-
 (A) alpha particles are much heavier than electrons
 (B) alpha particles are positively charged
 (C) most part of the atom is empty space
 (D) alpha particles move with high speed
 - Many elements have nonintegral atomic masses because-
 (A) they have isotopes
 (B) their isotopes have non-integral masses
 (C) their isotopes have different masses
 (D) the constituents, neutrons, protons and electrons combine to give fractional masses
 - The MRI (magnetic resonance imaging) body scanners used in hospitals operate with 400 MHz radio frequency energy. The wavelength corresponding to this radio frequency is-
 (A) 0.75 m (B) 0.75 cm (C) 1.5 m (D) 2 cm
 - Photon of which light has maximum energy-
 (A) Red (B) Blue (C) Violet (D) Green
 - The value of Planck's constant is 6.63×10^{-34} Js. The velocity of light is 3×10^8 m/sec. Which value is closest to the wavelength in nanometer of a quantum of light with frequency of 8×10^{15} sec⁻¹-
 (A) 5×10^{-18} (B) 4×10^1 (C) 3×10^7 (D) 2×10^{-25}

13. Bohr's theory is not applicable to-

(A) He

(B) Li^{2+}

(C) He^{2+}

(D) the H-atom

14. What is likely to be principal quantum number for a circular orbit of diameter 20 nm of the hydrogen atom if we assume Bohr orbit to be the same as that represented by the principal quantum number?
 (A) 10 (B) 14 (C) 12 (D) 16
15. Which is the correct relationship-
 (A) $E_1(H) = 1/2 E_2(He^+) = 1/3 E_3(Li^{2+}) = 1/4 E_4(Be^{3+})$
 (B) $E_1(H) = E_2(He^+) = E_3(Li^{2+}) = E_4(Be^{3+})$
 (C) $E_1(H) = 2E_2(He^+) = 3E_3(Li^{2+}) = 4E_4(Be^{3+})$
 (D) No relation
16. If the value of $E = -78.4 \text{ kcal/mole}$, the order of the orbit in hydrogen atom is-
 (A) 4 (B) 3 (C) 2 (D) 1
17. If velocity of an electron in 1st orbit of H atom is V , what will be the velocity of 3rd orbit of Li^{2+} -
 (A) V (B) $V/3$ (C) $3V$ (D) $9V$
18. In a certain electronic transition in the hydrogen atoms from an initial state (1) to a final state (2), the difference in the orbit radius ($r_2 - r_1$) is 24 times the first Bohr radius. Identify the transition-
 (A) $5 \rightarrow 1$ (B) $25 \rightarrow 1$ (C) $8 \rightarrow 3$ (D) $7 \rightarrow 5$
19. Match the following-
 (a) Energy of ground state of He^+ (i) -6.04 eV
 (b) Potential energy of I orbit of H-atom (ii) -27.2 eV
 (c) Kinetic energy of II excited state of He^+ (iii) $8.7 \times 10^{-18} \text{ J}$
 (d) Ionisation potential of He^+ (iv) -54.4 eV
 (A) A-(i), B-(ii), C-(iii), D-(iv) (B) A-(iv), B-(iii), C-(ii), D-(i)
 (C) A-(iv), B-(ii), C-(i), D-(iii) (D) A-(ii), B-(iii), C-(i), D-(iv)
20. The energy of hydrogen atom in its ground state is -13.6 eV . The energy of the level corresponding to $n = 5$ -
 (A) -0.54 eV (B) -5.40 eV (C) -0.85 eV (D) -2.72 eV
21. Total no. of lines in Lyman series of H spectrum will be-
 (where $n = \text{no. of orbits}$)
 (A) n (B) $n-1$ (C) $n-2$ (D) $n(n+1)$
22. The spectrum of He^+ is expected to be similar to that of-
 (A) Li^+ (B) He (C) H (D) Na
23. What possibly can the ratio be of the de Broglie wavelengths for two electrons having the same initial energy and accelerated through 50 volts and 200 volts?
 (A) 3:10 (B) 10:3 (C) 1:2 (D) 2:1
24. The uncertainty in the momentum of an electron is $1.0 \times 10^{-5} \text{ kg m s}^{-1}$. The uncertainty of its position will be ($h = 6.626 \times 10^{-34} \text{ kg m}^2 \text{ s}^{-1}$) -
 (A) $1.05 \times 10^{-28} \text{ m}$ (B) $1.05 \times 10^{-26} \text{ m}$ (C) $5.27 \times 10^{-30} \text{ m}$ (D) $5.25 \times 10^{-28} \text{ m}$
25. An α -particle is accelerated through a potential difference of V volts from rest. The de-Broglie's wavelength associated with it is-
 (A) $\sqrt{\frac{150}{V}} \text{ \AA}$ (B) $\frac{0.286}{\sqrt{V}} \text{ \AA}$ (C) $\frac{0.101}{\sqrt{V}} \text{ \AA}$ (D) $\frac{0.983}{\sqrt{V}} \text{ \AA}$
26. The orbital with zero angular momentum is-
 (A) s (B) p (C) d (D) f

27. Which of the following is the electronic configuration of Cu^{2+} ($Z=29$) -
 (A) $[\text{Ar}]4s^13d^8$ (B) $[\text{Ar}]4s^23d^{10}4p^1$ (C) $[\text{Ar}]4s^13d^{10}$ (D) $[\text{Ar}]3d^9$
28. The electronic configuration of the Mn^{4+} ion is -
 (A) $3d^44s^0$ (B) $3d^24s^1$ (C) $3d^14s^2$ (D) $3d^34s^0$
29. Which of the following ions has the maximum number of unpaired d-electrons -
 (A) Zn^{2+} (B) Fe^{2+} (C) Ni^{3+}
 (D) Cu^+
30. The total spin resulting from a d^7 configuration is -
 (A) 1 (B) 2 (C) $5/2$ (D) $3/2$
31. Given
- | | | | |
|---|---|----|---|
| K | L | M | N |
| 2 | 8 | 11 | 2 |
- The number of electrons present in $n = 2$ is -
 (A) 3 (B) 6 (C) 5 (D) 4
32. The configuration $1s^22s^22p^53s^1$ shows the -
 (A) ground state of the fluorine atom (B) excited state of the fluorine atom
 (C) excited state of the neon atom (D) excited state of O^{2-} ion
33. The value of l and m for the last electron in the Cl^- ion are -
 (A) 1 and 2 (B) 2 and +1 (C) 3 and -1 (D) 1 and -1
34. In which transition, one quantum of energy is emitted -
 (A) $n = 4 \rightarrow n = 2$ (B) $n = 3 \rightarrow n = 1$ (C) $n = 4 \rightarrow n = 1$ (D) $n = 2 \rightarrow n = 1$
35. Choose the correct relation on the basis of Bohr's theory -
 (A) velocity of electron $\propto \frac{1}{n}$ (B) frequency of revolution $\propto \frac{Z^2}{n^3}$
 (C) radius of orbit $\propto n^2$ (D) force on electron $\propto \frac{Z^3}{n^4}$
36. The magnitude of the spin angular momentum of an electron is given by -
 (A) $S = \frac{\sqrt{s(s+1)}h}{2\pi}$ (B) $S = s \frac{h}{2\pi}$ (C) $S = \frac{3h}{2} \times \frac{h}{2\pi}$ (D) $S = \pm \frac{1}{2} \times \frac{h}{2\pi}$
37. The change in orbital angular momentum corresponding to an electron transition inside a hydrogen atom can be -
 (A) $\frac{h}{4\pi}$ (B) $\frac{h}{\pi}$ (C) $\frac{h}{2\pi}$ (D) $\frac{h}{8\pi}$

38. In which of these options do both constituents of the pair have the same magnetic moment-

