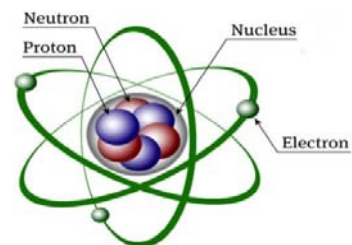


National Institute of Open Schooling
Senior Secondary Course: Chemistry
Chapter-2 (Atomic Structure)
Worksheet-2



1. What experimental evidence shows the dual nature of light?
 - (a) Calculate the energy of the FM radio signal transmitted at a frequency of 100 MHz.
 - (b) What is the energy of the red colored wave with 670 nm wavelength?
2. How is the Bohr model superior to the Rutherford model?
3. Wavelength of green light is 535 millimeters. Calculate the energy of green photons.
4. How did the wave mechanics model of Atom develop?
5. Calculate the wavelength corresponding to the Balmer line $n=3$.
6. If a 380 gram cricket ball is thrown at a speed of 140 kilometers per hour, calculate the de Broglie wavelength.
7. Describe the Hund's rule of maximum multiplicity with five examples.
8. Which oxidation state is more stable and why?
 - (a) Fe^{2+} or Fe^{3+}
 - (b) Mn^{2+} or Mn^{3+}
 - (c) Electronic configuration of Cr is $[\text{Ar}] 3d^5, 4s^1$ and not $3d^4, 4s^2$
9. Which of the following class has the first ionization potential and why?
 - (a) 2p or 3s
 - (b) 3d or 4p
 - (c) 4s or 3d
10. What is the significance of the azimuthal magnetic and spinning quantum numbers?
 - (a) Write all the four quantum numbers for, $3p^3$ (3rd electron), $4d^5$ (4th electron), $6s^2$ (2nd electron).
 - (b) How many electrons are $s=+1/2$ and $m_l=0$ for $n=4$