NIOS/Acad./2020/312/24/E

National Institute of Open Schooling
Senior Secondary
Lesson 24 – Structure of Atom
WORKSHEET – 24

Q1. If the energy of electron associated with the first orbit in hydrogen atom is -2.17×10^{-18} J. Find out the energy associated with fourth orbit? Also, calculate the radius of fourth orbit.

Q2. Calculate the ratio of longest and shortest wavelength of Balmer series.

Q3. Find out the wavelength of light emitted when an electron in hydrogen atom makes transition from fifth orbit to ground state. Also find the energy difference between these states.

Q4. Explain applications of X-rays in medical science.

Q5. What is the origin of line spectra? Can you observe any difference between white light spectra obtained from the sun light passing through prism and that of hydrogen spectra?

Q6. Suggest a phenomenon opposite to X-ray production. Justify your answer.

Q7. Calculate the velocity of electron in a hydrogen atom in ground state. Compare it with the velocity of light.

Q8. Can you observe hydrogen spectrum in your laboratory? Give one suggestion.

Q9. Explain the limitations of Rutherford's atomic model?

Q10. Suppose the wavelength of X-rays is 0.2 nm. Calculate the kinetic energy in (eV) of the incident electron which produced such X-rays.