Name:		Roll No.		Subject	Physics
Test Type	MCQs, Short & Long question	Class	12	Date	
Chapter	20 Complete	Unit	20	Time	

Q. No. 1 Tick the best option **18**

1. The radiations emitted from hydrogen filled discharge tube shows
   (a) Band spectrum (b) Line spectrum
   (c) Continuous spectrum (d) Absorption spectrum
2. According to Bohr's theory of the hydrogen atom, only those orbits around the nucleus are allowed along which angular momentum of electron is
   (a) n (h/2π) (b) n (2π/h) (c) 2π/nh (d) nh/2π
3. The radius of the nth Bohr's orbit for hydrogen atom in which electron revolves is given by the relation
   (a) $rn = nh/4\pi^2meK$ (b) $rn = n^2h^2/4\pi^2me^2K$
   (c) $rn = 4\pi^2me^2k/n^2h^2$ (d) $rn = n^2h^2/4\pi me^2 K$
4. If the radius of first orbit of hydrogen atom is $0.53A^0$, the radius of second orbit will be
   (a) $2.120\ A^0$ (b) $0.2120\ A^0$ (c) $21.200\ A^0$ (d) $0.142\ A^0$
5. The electric P.E of an electron in an orbit at a distance rn from the positive charge
   (a) Ke/r^2 (b) Ke^2/r^2 (c) Ke^2/r^2 (d) $-Ke^2/rn$
6. The energy in electron volt necessary to remove the most loosely bound electron from the neutral atom is known as the
   (a) Critical energy (b) Excitation energy (c) Ionization energy (d) Threshold energy
7. The transitions of inner shell electron in heavy atoms give rise to the emission of
   (a) High energy γ – rays (b) Low energy γ – rays
   (c) High energy photons or X – rays (d) Low energy photons or X – rays
8. X – rays exhibit the phenomenon of
   (a) Interference (b) Diffraction (c) Polarization (d) All of these
9. The rest of X – ray photon is
   (a) Infinite (b) 9.1×10^{-31} K g (c) 1.67×10^{-27} K g (d) Zero
10. Life time of excited states (Meta stable) is
    (a) 10^{-5} (b) 10^{-3} s (c) 10^{-8} s (d) 10^{-2} s
11. The properties of Laser light are
    (a) Co–herent (b) Monochromatic (c) Plane wave front (d) All of these
12. When the electron in hydrogen atom jumps from higher orbit into third orbit, the set of lines emitted is called
    (a) Balmer series (b) Bracket series (c) Paschen series (d) P fund series
13. According to Bohr, the angular momentum of an electron in the allowed orbit is given by
    (a) h/2π (b) h/2πn (c) nh/2π (d) 2π/nh
14. SI unit of Rydberg constant is
    (a) m^{-2} (b) m–S (c) m–1 (d) ms^{-1}
15. The maximum frequency f_{max} of X – rays produced by the electrons accelerated by potential of V_0 volts can be expressed by
    (a) $f_{max} = h/Ve$ (b) $f_{max} = ve/h$ (c) $f_{max} = hV$ (d) $f_{max} = V/he$
16. Atomic spectra are
    (a) Band spectrum (b) Line spectrum (c) Continuous spectrum (d) Diffused spectrum

Q. No. 2 Write the short answer of these following questions **3 x 2 = 06**

1) Explain why glowing gas gives only certain wavelength of light and why that is capable of absorbing the same wavelength? Give a reason why it is transparent to other wavelengths?
2) What is spectroscopy?
3) Why do solid give rise to continuous spectrum, while hot gas give rise to line spectrum?

Q. No. 3 Long question

1) Explain de–Broglie hypothesis? How De Broglie proved Bohr atomic model? **05**
2) Calculate longest wave length of radiation for Paschen series? **03**
3) The wavelengths of K – X ray from copper is 1.377×10^{-10} m what is energy difference between the two levels from which this transition results? **03**