18.7 QUESTIONS FROM PAST PAPERS:

Bohr's Atomic Theory:

Year 2011:

Q. Why does Hydrogen spectrum contains a large number of spectral lines although it has only one electron?

Ans. Normally, Hydrogen atom is in the ground state, but by supplying a certain amount of energy, it can be excited. The excited electron will not stay there longer and falls back to the ground state in one or in a series of transitions. During each transition radiation of definite wavelength and frequency emitted. Since there are a large number of atoms in excited states so, different transition take place simultaneously and radiations of many different wavelengths are emitted.

Year 2010:

Q. State the basic postulates of Bohr's Theory of atomic structure. Derive an expression for the radius of n^{th} orbit of Hydrogen atom.

Year 2007:

Q. State Bohr's postulates for a hydrogen atom. Derive the expression for the total energy of the electron in the n^{th} orbit of the hydrogen atom.

Year 2006:

Q. Applying Bohr's postulates on hydrogen atom, derive an expression for the radius of the n^{th} orbit.

Year 2005, 2013:

Q. Derive the expression for the following: When $r_n = \frac{4\pi \epsilon_o \hbar^2 n^2}{me^2}$

(i) The energy of an electron in the n^{th} shell of a hydrogen atom.

(ii) The wavelength of the photons emitted in a hydrogen spectrum.

Year 2003 (P.M):

Q. State Bohr's postulates for a hydrogen atom.

Year 2002 (P.E):

Q. Derive the expression for the radius of the n^{th} orbit of a hydrogen atom.

Year 2002 (P.M):

Q. State the postulates of Bohr's Atomic Model and derive an expression for the radius of n^{th} orbit.

Year 2000:

Q. State the basic postulates of Bohr's Theory of Atomic Structure.

Laser:

Year 2010:

Q. Differentiate between the principle of production of laser and light from an in candescent bulb. Also give their characteristics.

Ans.

LASER LIGHT	INCANDESCENT LIGHT
1. It is produced due stimulated emission of radiation.	1. It is produced due to spontaneous emission of radiation.
2. It is polarized and coherent waves	2. It is unpolarized and not coherent.
3. It is highly monochromatic light.	3. It is a mixture of several wavelength.
4. It consists of parallel waves in a narrow beam and is highly directional.	4. It is emitted in all directions and spread out.

Year 2008:

Q. What is LASER? Discuss meta-stable and population inversion in a lasing material.

Year 2003 (P.E):

Q. Describe the construction and working of the Ruby Laser.

Year 2001:

Q. Describe the construction and working of the Ruby Laser.