

AAFAQ ACADEMY – KASUR

Physics Book II

Chapter (20) NEW

Objective + Subjective

THE ATOMIC SPECTRA

Test Session 2014 – Name : _____ Roll No: (in words) _____

OBJECTIVE

Time: 10 Minutes

Marks: 10

Note: Write your roll No. in space provided.

Over-writing, cutting, erasing, using of lead pencils will result into loss of marks.

Q.1: Encircle the correct answers.

- i. The value of Rydberg constant is:
- $1.0974 \times 10^7 m^{-1}$
 - $1.0974 \times 10^{-7} m^{-1}$
 - $1.0974 \times 10^6 m^{-1}$
 - $1.0974 \times 10^{-6} m^{-1}$
- ii. Which of the following is one of the spectral series of atomic hydrogen?
- Brockett series
 - Balmer series
 - P fund series
 - All of above
- iii. If the ionization energy of hydrogen atom is 13.6 eV, its ionization potential will be:
- 146.0 volt
 - 3.0 volt
 - 13.6 volt
 - None of these
- iv. The 1st Bohr atom in the hydrogen atom has radius:
- $3.56 \times 10^{-10} m$
 - $0.053 \times 10^{-11} m$
 - $0.53 \times 10^{-11} m$
 - $5.30 \times 10^{-11} m$
- v. An atom can reside in excited state for:
- 10^{-8} second
 - One second
 - 10^{-10} second
 - More than one second
- vi. The process by which lesser beam can be used to generate 3-dimensional images of objects is called:
- Holography
 - Geo graphy
 - Tomography
 - Radio graphy
- vii. Reflecting mirrors in laser is used to:
- Further stimulation
 - For producing more energetic lasers
 - Both (a) and (b)
 - None of these
- viii. Life time of metastabel states is:
- 10^{-6} sec or more
 - 10^{-3} sec or more
 - 10^{-5} sec or more
 - None of these

- ix. Helium-Neon laser discharge tube contains neon:
- 82 %
 - 15 %
 - 25 %
 - 85 %
- x. The idea of laser device was first introduced by C.H. Townes and Authers Schowlan is:
- 1972
 - 1965
 - 1958
 - 1913

SUBJECTIVE

Time: 30 min.

Marks: 20

Q.2: Write the short answers. (2×6)

- Can the electron in the ground state of hydrogen atom absorb a photon of energy 13.6 eV or greater than 13.6 eV?
- How can the spectrum of hydrogen contain so many lines when hydrogen contains one electron?
- Is energy conserved when an atom emits a photon of light?
- What do we mean when say that the atom is excited?
- Can X-rays be reflected, refracted, diffracted and polarized just like any other waves? Explain.
- What are the advantages of lasers over ordinary light?
- What do we mean when we say that the atom is excited?
- What do you understand by stimulated or induced emission?

Note: Long questions:

- Q.3 (a) Explain characteristic X-rays and continuous X-ray spectra. (5)
- (b) Calculate the longest wavelength of radiation for the Paschen series. (3)