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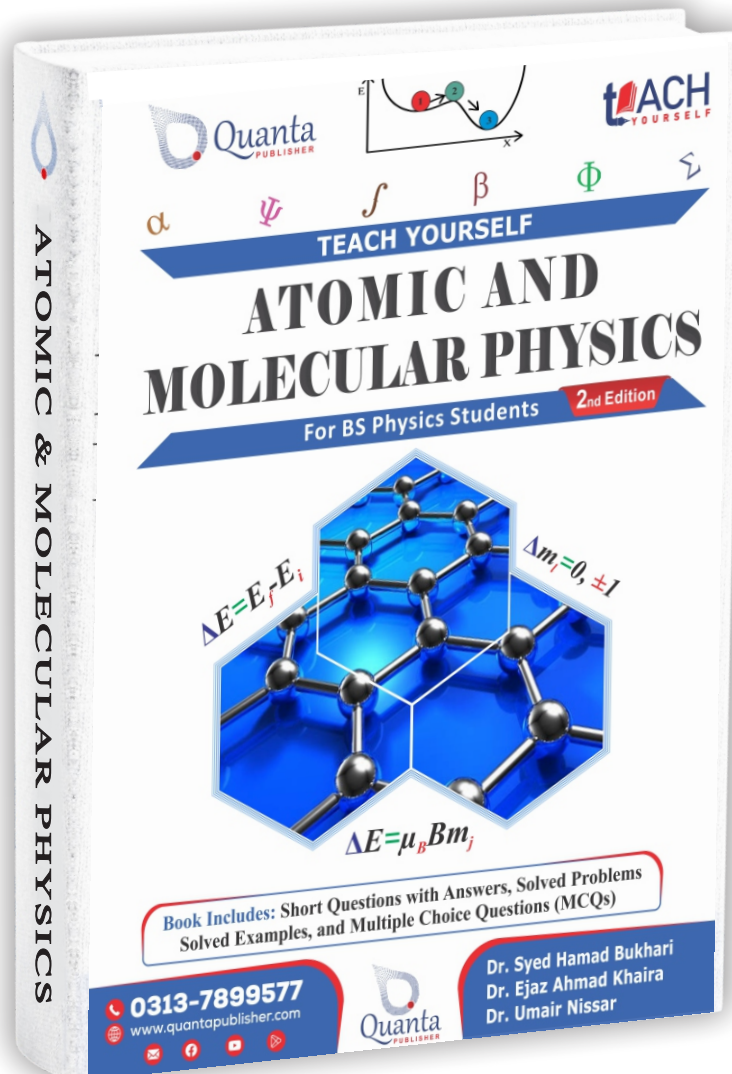Dr. Umair Nissar

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GOVERNMENT COLLEGE UNIVERSITY, FAISALABAD
SUB CAMPUSES EXAMINATIONS (SPRING SEMESTER 2022)

SUBJECTIVE

Course Code: PHY-404   **Class: BS PHYSICS**   Roll No 1387

Course Title: Modern Physics-II   Semester: 4th

Time Allowed: 100 minutes   Marks: 18   Session: 2020-2024

Attempt all the Questions.

Q No.2

➤ Write the limitations of Bohr atomic model.

➤ What is sommarfeld model? Draw the schematic picture of sommerfeld elliptical orbit and also give two guantization rule of sommerfeld model of atom.
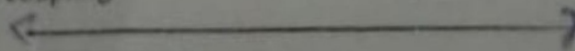
Q No.3

➤ Describe the four quantum number for hydrogen atom. What are these quantum number associated with?

➤ State and explain Pauli Exclusion Principle in detail.

Q No.4

➤ State and explain stark effect and also draw the schematic picture of splitting of spectral lines in absence and presence of electric field.

➤ How can we calculate the change in wavelength in Zeeman effect.

Q No.5

➤ What are pumping scheme in laser? Explain optical and electrical pumping.

➤ What is spin orbit coupling.

ABDUL WALI KHAN UNIVERSITY MARDAN

BS Physics 6ᵗʰ Semester Spring 2020

Paper : Atomic & Molecular Physics

Time Allowed: 2:30   Total marks: 50

Section A

Q1. Choose the correct option.   (6)

1. The line radiations emitted from hydrogen filled discharge tube can be analyzed into
A. Band spectrum   b. Line spectrum   c. Continuous spectrum   d. Absorption spectrum

2. Visible light lies in...... series
A. Layman   b. Balmer   c. Bracket   d. Paschan

3. X-rays are similar in nature to ....
A. Alpha rays b. Beta rays   c. Gemma rays   d. All of these

4. X-ray diffraction reveals that these are..... in nature
A. Particle   b. Wave   c. Both a and b   d. None

5. If electron jumps from 2ⁿᵈ orbit to 1ˢᵗ orbit in Hydrogen atom it emits photon of
A. 3.4 eV   b. 10.2 eV   c. 13.6 eV   d. 3.8 eV

6. The radius of 1ˢᵗ shell of hydrogen atom is
A. 0.0053 nm b. 0.53 nm   c. 0.053 nm   d. 53 nm

Q.2 Write short note on the following   (12)

1.   Define nuclear motion and reduce mass.
2.   What is mean by energy level
3.   Define space quantization.
4.   What does population inversion means?
5.   Hydrogen have single electron but how it has different spectra, explain.
6.   Is energy conserve if a photon is emitted by an atom?

Section B

                                                                        (32)

Q3. Write comprehensive note on the following questions

1.   Write note on summer field model

2.   Discuss Bohr correspondence principle.

3.   What is mean by Zeeman Effect?

4.   Write note L,S coupling and j,j coupling.

$$E = \frac{2\pi^2 e^4 k^2 m}{n^2 h^3}$$

Govt. Postgradute college of Science Faisalabad.

BS Physics   Mid Test 2019   4th Semester

Course Code:- Phy -404   Course title:- Modern Physics II

Max Marks:- 12   Time:- 1 hour   Roll No._____

Note:- Attempt All Questions.

Q.1	Define orbital Quantum number.	2
Q.2	State and explain Frank – Hertz Experiment.	4
Q.3	Write note on Summer feld Model of atom	6