

Department of Physics
Government Degree College Kishtwar

Question paper for B.Sc. Sem 5th CBCS regular and private 2021

Subject: PHYSICS

Course Code: UPYTC-501

Note: Attempt any three questions from section-1, three questions from section-2 and one question from section-3.

The soft copy of answer book is to be sent to ajay595shan@gmail.com within 3 hours after the commencement of exam.

Section-1

(6x3=18)

1. What is photon? State its important properties.
2. A photon of energy 1.02 MeV is scattered through 180° by a free electron. Find the energy of scattered photon.
3. Calculate the ground state energy of an electron in one dimensional box of length 1 Angstrom.
4. What do you understand by LS coupling and jj coupling.
5. Write a short note on nuclear stability. Why N exceeds Z in stable nuclei?
6. Give a brief account of four fundamental interactions in nature.

Section-2

(6x7=42)

1. Explain non-existence of electron in nucleus on the basis of uncertainty principle.
2. Show that for a non-relativistic free particle, the phase velocity is half of the group velocity.
3. Prove that a particle will not exist in a box if its energy is zero.
4. Discuss in detail Paschen-Back Effect.
5. Write a short note on radioactive dating.
6. Write a brief note on proportional counter.

Section-3

(2x10=20)

1. Give the experimental verification of Compton effect. Why Compton effect cannot be seen with visible light?
 2. Give an account of elementary theory of β decay. Explain the need for prediction of neutrino in β decay spectrum.
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