KATWA COLLEGE

DEPARTMENT OF PHYSICS

INTERNAL ASSESSMENT EXAMINATION -2023

B.Sc. (H), SEMESTER: - IV,

PAPER:- CC-IX (ELEMENTS OF MODERN PHYSICS)

F.M: 10   **TIME: 1 HOUR**

❖ **Answer any five from the following questions: -**   **5 x 2 = 10**

1. Write down the experimental features of black body radiation. What is "Ultraviolet catastrophe"?

2. Why stopping potential is inversely proportional to the wavelength of the incident light in case of photoelectric effect?

3. Why Compton effect is observed with X rays and not with visible light?

4. Establish the Bohr's quantum condition of angular momentum based on de Broglie's concept of matter waves.

5. Calculate the de Broglie wavelength of thermal neutron at 0^oC.

6. Define packing fraction. What are the magic number nuclei?

7. Predict the ground state spins and parities of $^{11}_{5}B$ and $^{33}_{16}S$.

8. A nucleus with $A = 235$ splits into two nuclei of mass numbers in the ratio 2:1. Find the radii of the new nuclei.