B.Sc. DEGREE EXAMINATION, APRIL 2018.

II YEAR IV SEMESTER

Core Major - Paper VII - ATOMIC PHYSICS

Time : 3 Hours Max. Marks :60

SECTION A – (10 × 1 = 10 marks)

(Q. No. 1-12) Answer any *TEN* questions

1. Define coefficient of thermal conductivity.
2. State Wiedemann – Franz law.
3. Draw the schematic diagram of electron microscope.
4. Give any 2 properties of positive rays.
5. List out the limitations of Thomson’s parabola method for positive ray analysis.
6. State any one selection rule.
7. Give interval rule.
8. What is photoelectric effect?
9. Define threshold frequency.
10. What are photoelectric cells?
11. Write any two advantages of electron microscope.
12. How are x-rays produced?

SECTION B – (5 × 4 = 20 marks)

(Q. No. 13-19) Answer any *FIVE* questions

1. Obtain an expression for electrical conductivity.
2. Give the construction of Millikan’s oil drop method.
3. State intensity rules.
4. Explain the construction and working of photo electric cells.
5. State and explain Bragg’s law.
6. Give the applications of photo electric cells.
7. Explain the powdered crystal method of studying crystal structure.

SECTION C – (3 × 10 = 30 marks)

(Q. No. 20-24) Answer any *THREE* questions

1. What are positive rays? Describe Thomson’s parabola method for positive ray analysis.
2. Explain the construction and working of Bainbridge mass spectrometer.
3. What is Zeeman effect? Describe the experimental arrangement for studying Zeeman effect. Also obtain an expression for Zeeman shift.
4. Derive Einstein’s photoelectric equation and describe the Millikan’s experiment to verify the same.
5. Describe and explain the x-ray spectrometer method of determining wavelength of x-ray with necessary diagrams.