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SARDAR PATEL UNIVERSITY

Bachelor of Science (Semester-6) Examination - 2026

Subject Code: US06MIPHY01

Subject: Physics

Title: Spectroscopy

Date: 04/04/2026 (Saturday)

Time: 10:00 AM to 11:30 AM

Total: 25 Marks

Q.1 Write correct answers of the following MCQs.

[05]

1. The reciprocal of wavelength is called _____.
(a) Amplitude (b) Intensity (c) Frequency (d) Wavenumber
2. _____ effect on spectral lines is studied in the Stark effect?
(a) Magnetic field (b) Electric field (c) Gravitational field (d) None
3. The Laue spots are due to _____ of X-rays.
(a) Interference (b) Refraction (c) Diffraction (d) Polarization
4. The least penetrating group of X-ray is _____.
(a) K - Group (b) L - Group (c) M - Group (d) N - Group
5. The spectrum of photosphere of sun consist of dark lines known as _____.
(a) Fraunhofer lines (b) Fresnel lines (c) Stoke's lines (d) Anti-Stoke's lines



Q-2 (a) Explain the experimental setup for obtaining the Zeeman effect. [05]

(b) Write a note about the types of spectra. [05]

OR

Q-2 (a) Give a detailed explanation about quantum numbers. [05]

(b) Write a note on L - S coupling and J - J coupling. [05]

Q-3 (a) State and prove Moseley's law and give two of its uses. [05]

(b) Write the names of the methods of producing X-rays and explain the production of X-rays by Coolidge tube. [05]

OR

Q-3 (a) Give a detailed explanation of X-ray emission spectra. [05]

(b) Write the properties of X-rays and give the differences between the X-ray spectrum and the visible spectrum. [05]

[P.T.O.]