647510 **BSc5PhyC503x** **Seat No :_____**

B.Sc. Semester - 5 (Remedial) (CBCS) Examination
March/April-2026 (NEW COURSE)
Spectroscopy and Optics(Core)

Time: 2:30 Hours **Marks:70**

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que.1(A) Answer the following question (any two). (10)
- (1) Write note on Bohr's theory of an atom.
- (2) Explain Franck-Hertz experiment.
- (3) Explain classical interpretation of normal Zeeman effect.

Que.1(B) Answer the following question (any one). (04)
- (1) Write a short note on Sommerfeld elliptical orbits.
- (2) Write short note on experimental study of Zeeman effect.

Que.2(A) Answer the following question (any two). (10)
- (1) Write a note on experimental study of molecular spectra.
- (2) Explain theory of pure rotational-vibration molecular spectra.
- (3) Discuss classical theory of Raman effect.

Que.2(B) Answer the following question (any one). (04)
- (1) Explain theory of electronic band molecular spectra.
- (2) Explain Raman effect and its salient features.

Que.3(A) Answer the following question (any two). (10)
- (1) Describe Bragg's spectrometer.
- (2) Describe continuous x-ray spectrum.
- (3) Write a note on rotating crystal method.

Que.3(B) Answer the following question (any one). (04)
- (1) Explain production of x-rays.
- (2) Write properties of x-rays.

Que.4(A) Answer the following question (any two). (10)
- (1) Write a note construction and working of Michelson's interferometer.
- (2) Derive intensity distribution formula for multiple beam interference.
- (3) Explain the Twyman and Green interferometer.

Que.4(B) Answer the following question (any one). (04)
- (1) If 180 fringes cross the field of view of a Michelson interferometer when the movable mirror is moved through 0.0530 mm. find the wavelength of light used.
- (2) Explain Lummer and Gehrcke plate with neat diagram.

Que.5(A) Answer the following question (any two). (10)
- (1) Explain any two types of production of plane polarized light.
- (2) Write a note on double refraction in calcite prism.
- (3) Describe applications of polarized light.

Que.5(B) Answer the following question (any one). (04)
- (1) Explain polarizer and analyzer.
- (2) Write a short note on effect of polarizer on light of different polarization.

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