B.Sc. 4th Semester (Honours) Examination 2020-21

PHYSICS

Course ID: 42422 **Course Code: SH/PHS/402/C-9/T-9**

Course Title: Modern Physics Lab

Time: 1 Hour **Full Marks: 15**

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Answer any ***three*** questions: 5X3=15

1. What is photo-electric effect? How the Einstein's photoelectric equation can be used to determine the maximum energy of a photoelectron? Draw the graph showing the variation of maximum energy of photoelectrons as a function of frequency of light used. [1+3+1]

2. What do you mean by the work function of a material? Write down the working formula used for determination of the work function of the material of filament of a directly heated vacuum diode. How this equation is utilized to determine the work function? [1+1+3]

3. Explain the working principle for determination of the value of (e/m) using bar magnet. What precautions should be taken while performing this experiment? [3+2]

4. What are the characteristic features of a laser source of light? Write down the working formula and explain the working principle for determination of the wavelength of laser source using single slit diffraction pattern. [2+3]

5. Draw the labelled circuit diagram for determination of the Boltzmann constant using I-V characteristics of a P-N junction diode. Write down the working formula and explain the working principle associated with this experiment. [2+(1+2)]