

**CITY COLLEGE**  
**PHYSICS HONOURS PRACTICAL EXAMINATION—2021**  
**CBCS Semester 3**  
**Paper: PHS-A-CC-3-7-P**  
**Topic: Modern Physics (Practical)**

**Full Marks: 30**

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

**Group-A**

1. Answer any **five** questions: [2×5]
- (a) Write down Einstein's photoelectric equation.
  - (b) What is a photo cell?
  - (c) Write two methods for determining the charge of an electron.
  - (d) What is Lorentz's force?
  - (e) What is Stefan's law of radiation?
  - (f) Draw a schematic diagram of I-V characteristics curve for a tunnel diode.
  - (g) Why tunnel diodes are called back diodes?

**Group-B**

*Answer any five questions*

- 2. Define the terms: work function and threshold frequency. [2+2]
  - 3. (a) What is Planck's constant? (b) What type of materials used for photo cell? [2+2]
  - 4. (a) What is the electron path in a magnetic field? (b) Write S.I. value of  $e/m$ ? [3+1]
  - 5. (a) What is specific charge of an electron? (b) What is the physical significance of  $e/m$  ratio? [1+3]
  - 6. (a) Explain tunneling effect in a tunnel diode. (b) What is negative resistance? [3+1]
  - 7. (a) What is Stefan's constant? (b) Does Stefan's constant depend on the wavelength of radiation? [2+2]
  - 8. Explain briefly the photoelectric effect. [4]
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