MANIPAL ACADEMY OF HIGHER EDUCATION

DEPARTMENT OF SCIENCES

First Semester M.Sc. (Physics)

End Semester Examination – OCT/NOV 2018

PHY 4109: PHYSICS LAB - I

Time: 3 hrs. **Max. Marks:** 40

Note: *Perform one experiment assigned to you. Write the formula with the explanation of symbols, their units, circuit /ray diagrams if any, tabular columns, qualitative plot of graphs of the experiment allotted to you in the first 20 minutes. Perform the experiment showing at least one reading of each measurement and report the result.*

1. Determine the Young's modulus of the given material using *Cornu's fringes*. Given : Wavelength of the light, λ = 589.3 nm.
2. Verify the *Fresnel's law* of reflection of light. Given : Refractive index of the material of the prism, μ = 1.65.
3. Determine the reverse saturation current, energy band gap of the given *p-n junction* and study the variation of its junction capacitance.
4. Evaluate the characteristics of given *GM tube* and determine its dead time.
5. Determine the *half-life* of K^{40} in the given sample of KCl.
6. Determine *Planck's constant*, work function of the emitter material of the given photo tube and verify inverse square law.
7. Determine the wavelength of the given laser light using *Michelson's interferometer***.**
8. Determine the *thermal conductivity* of the given mild steel material. Specific heat of the material, *S* = 420 J/kg/K.
9. Determine the birefringence of mica sheet using *Babinet compensator*.
10. Perform *Frank-Hertz experiment* and hence determine the excitation potential of Argon atom.

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