



KERALA AGRICULTURAL UNIVERSITY  
B.Tech Food Engineering 2018 Admission  
I Semester Final Examination-January 2019

Basc.1103

Engineering Physics (2+1)

Marks:50  
Time: 2 hours

**I Fill in the blanks: (10x1=10)**

- 1 In Newton's rings experiment, the diameter of bright rings is proportional to \_\_\_\_\_
- 2 When there are no external forces, the shape of a liquid drop is determined by \_\_\_\_\_
- 3 \_\_\_\_\_ property measures the resistance of a liquid to flow
- 4 The presence of parallel alignment of magnetic dipole moment is given by \_\_\_\_\_ materials
- 5 Splitting of spectral lines due to magnetic effect is called \_\_\_\_\_
- 6 The transition zone for Raman spectra is between \_\_\_\_\_ and \_\_\_\_\_ levels
- 7 The temperature at which conductivity of a material becomes infinite is called \_\_\_\_\_
- 8 \_\_\_\_\_ laser is an example of optical pumping
- 9 In Holography, \_\_\_\_\_ of light coming from an object are recorded.
- 10 \_\_\_\_\_ is the wavelength of red light emitted by a helium-neon laser

**II Write Short notes on ANY FIVE of the following (5x2=10)**

- 1 How is the central spot in your Newton's ring experiment, bright or dark?
- 2 Surface tension.
- 3 Streamline and Turbulent flow
- 4 Ferromagnetism.
- 5 Zeeman Effect
- 6 Applications of Raman spectroscopy.
- 7 Population Inversion.

**III Answer ANY FIVE of the following (5x4=20)**

- 1 Derive an expression for terminal velocity of a small sphere falling through a viscous liquid.
- 2 Determine the Coefficient of viscosity for a liquid by capillary flow method.
- 3 Langevins theory of Diamagnetism
- 4 Distinguish between semiconductor & Insulator
- 5 Meissner effect.
- 6 Different types of lasers.
- 7 Discuss the propagation characteristics of light through optical fiber and hence derive expression for numerical aperture and acceptance angle.

**IV Answer ANY ONE of the following. (1x10=10)**

- 1 How to determine the wavelength of different colours using diffraction grating with white light with neat diagram
2. Construction and working of CO<sub>2</sub> laser and its applications

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