KERALA AGRICULTURAL UNIVERSITY

B.Tech. (Food Engg.) 2017 Admission

I Semester Final Examination-January-2018

Basc.1103 **Engineering Physics (2+1)** **Marks: 50**

Time: 2 hours

I **Answer all the questions** **(10x1=10)**

1 In Newton's ring experiment, predict what will happen, if a few drops of a transparent liquid is introduced between the lens and plate.

2 Name the properties of laser source associated with the use of lasers in 'laser induced fusion'.

3 Define Meissner's effect.

State True or False

4 Surface energy is the potential energy per unit area of the surface.

5 The susceptibility of a diamagnetic material is a positive value.

Fill in the blanks

6 The coefficient of viscosity of liquids.....rapidly with the rise in temperature.

7 The temperature at which a normal conductor is converted into a super conductor is known as .....

8 An intrinsic semiconductor can be converted into an extrinsic semiconductor by a process called as.....

9 Splitting of spectral lines in presence of magnetic field is known as----------

10 The light signals are transmitted through optical fibres by.....

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

1 Distinguish between Fresnel's and Fraunhoffer's class of diffraction.

2 Explain why a four level laser is preferred over a three level laser?

3 Account for non-uniform spacing of Newton's rings pattern.

4 It is easy to show diffraction with sound waves but it is difficult to show diffraction with light waves. Why?

5 Differentiate between n-type and p-type semiconductors.

6 What is Reynolds number? What is its significance?

7 Write a note on high T_C superconductors.

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

1 Briefly describe any four major properties of a laser.

2 Distinguish between intrinsic and extrinsic semiconductors.

3 In Newton's rings pattern, prove that the diameter of dark rings are proportional to square root of natural numbers.

4 Distinguish between Type I and Type II super conductors.

5 Write a note on nuclear magnetic resonance and it's use,

6 In Newton's rings setup the diameters of the 5^{th} and 10^{th} dark rings are 0.4 cm and 0.6 cm respectively. If the wavelength of light used is 5460 X 10^{-8} cm, calculate the radius of curvature of the lens used.

7 Define Holography and explain the recording of a hologram

IV **Write an essay on ANY ONE of the following** **(1x10=10)**

1 How will you explain surface tension of a liquid in terms of molecular forces? How do you determine the surface tension by capillary rise method?

2 Explain how light is propagated through an optical fiber. Derive expressions for the numerical aperture, acceptance angle and critical angle.

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