

KERALA AGRICULTURAL UNIVERSITY

B.Tech (Food. Engg) 2012 Admission

Ist Semester Final Examination- January/February -2013

Cat. No: Basc.1103

Title: Engineering Physics (2+1)

Marks: 80

Time: 3 hours

I. Answer all questions (10X1=10 Marks)

1. Write the expression to find out the wavelength of monochromatic light in Newton's ring experiment and explain the symbols.
2. What is meant by Fresnel diffraction?
3. Define Zeeman effect?
4. How to convert a intrinsic semiconductor to extrinsic semiconductor?
5. What is meant by induced absorption process?

State True or False

6. Population inversion is the condition in which the number of atoms in the lower state is greater than the number of atoms in the higher state.
7. The width of forbidden band gap in semiconductor is less than that of metals.

Fill in the blanks

8. For laser production emission must be more dominant.
9. In n-type semiconductor are minority carriers.
10. In holography amplitude and of the waves are scattered from the object are recorded by interference method.

II. Answer any ten questions (10X3=30 Marks)

1. Explain about the experimental set up of Newton's ring apparatus.
2. Explain about grating spectrum with white light.
3. Write a note on paramagnetic material.
4. State and explain Raman effect.
5. Explain numerical aperture and acceptance angle.
6. Explain about Raman spectroscopy.
7. Briefly explain Meissner effect.
8. Explain SQUID and its uses
9. Write a note on graded index fibre.
10. Distinguish between photography and holography.
11. Explain about viscosity and surface tension.
12. What are the difference between p-type And n-type semiconductors.

III. Answer any six questions(6X5=30Marks)

1. Write a short note on Ruby laser.
2. What is the difference between spontaneous emission and stimulated emission.
3. Briefly explain about structure and design of optic fiber.
4. Explain about the laws of mass action.
5. Write down about Josephson's effect.
6. The first order maximum for light of wavelength 5890\AA occurs at angle of 20° when light is incident normally on the grating calculate the number lines / cm on the grating .
7. Critical temperature T_c of Hg with isotopic mass 199.5 is 4.185 k . Calculate the critical temperature when atomic mass changes to 203.4 .
8. The numerical aperture of an optic fiber is 0.295 and refractive index of 1.54. Calculate the refractive index of cladding.

IV. Answer any one question(1X10=10 Marks)

1. What are the properties of laser ? Define Einstein's coefficient . Derive the relation between coefficients.
2. Give the construction and working of plane transmission grating and explain the formation of spectra by grating