

# KERALA AGRICULTURAL UNIVERSITY

B.Tech (Agrl.Engg) 2014 Admission  
I<sup>st</sup> Semester Final Examination- January -2015

Marks: 50.00  
Time: 2 hours

Cat. No: Phys.1101

Title: Engineering Physics (2+1)

I Answer all questions

(10 x 1=10)

1. What is meant by critical magnetic field in super conductivity
2. What is meant by viscosity
3. What are cooper pairs
4. What is meant by band gap in semiconductors
5. Tiny drop of liquid assume spherical shape .Why

State True or False

6. Laser source is monochromatic but not coherent
7. Newton's rings are formed due to the interference of light

Fill up the blanks

8. Magnetic moment per unit volume is known as \_\_\_\_\_
9. Light propagate through the optical fiber is due to \_\_\_\_\_
10. In Ruby Laser \_\_\_\_\_ act as an active medium

II Write short notes on any FIVE questions

(5 x 2=10)

1. Explain the superconducting phenomena
2. List any four applications of laser
3. Why hologram is superior to ordinary photograph
4. What is the essence of BCS theory of superconductivity
5. Distinguish between intrinsic and extrinsic semiconductors
6. What is Curie -Weiss law of electromagnetism
7. Explain Zeman effect

III Write short notes on any FIVE questions

(5 x 4=20)

1. Explain type I and type II superconductors
2. Distinguish between spontaneous and stimulated emission
3. Briefly discuss the Einstein coefficients
4. With a neat diagram explain the donor and acceptor levels in intrinsic semiconductors
5. Discuss the technique involved in recording a hologram
6. Explain the quantum theory of Raman effect
7. Calculate the numerical aperture and hence the acceptance angle for an optical fiber. Given that the refractive indices of the core and cladding are 1.45 and 1.40 respectively

IV Write an essay on any ONE

(1 x 10=10)

1. Explain the origin of paramagnetism .Discuss the Langevin's theory of paramagnetism
2. What is Josephson Tunneling .Discuss the DC and AC Josephson effect

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