KERALA AGRICULTURAL UNIVERSITY
B.Tech (Agrl.Engg.) 2016 Admission
Ist Semester Final Examination-February-2017

Cat. No: Sacs.1102.   Marks: 50.00

Title: Engineering Physics (2+1)   Time: 2 hours

I Fill up the blanks/Answer the following   (10x1=10)

1. ----------- is the distance inside the superconductor at which magnetic field falls to 1/e time the magnetic field at the surface
2. Splitting of spectral lines in the presence of eletricfield is -----------
3. Spontaneous magnetization is the property exhibited by ----------- substances.
4. Why does soap bubble show beautiful colours, when illuminated by white light?
5. What is Zeeman Effect?
6. Define transition temperature T_C.
7. Define Bloch wall.
8. Write any 2 applications of holography.
9. What are the main characteristics of LASER light?
10. How light is propagated in optic fibre?

II Write short notes/answers on any FIVE of the following   (5x2=10)

1. What are coherent sources? List down the conditions necessary for obtaining interference fringes?
2. What are the difference between interference and diffraction?
3. What is meissner effect?
4. What are the main two hypothesis related to weiss mean field theory?
5. What is pumping? Write the name of different types of pumping methods used nowadays.
6. What are the 4 main advantages of optic fibres?
7. What are Bio Sensors?

III Write short answers on any FIVE   (5x4=20)

1. Write a short note on Fraunhoffer Diffraction.
2. A dc voltage of 1µV is applied across a Josephson junction. Calculate the frequency of Josephson junction. Calculate the frequency of the Josephson current generated.
3. Write a short note on high temperature super conductors.
4. What type of pumping method used in Ruby LASER? Also draw the energy level diagram of a ruby laser?
5. Consider a bare fibre consisting of a core of refractive index 1.48 and having air as cladding what is numerical aperture? What is the maximum incident angle up to which light can be guided by fibre?
6. Distinguish between Step index fibre & Graded index fibre.
7. Write short note on Nuclear magnetic resonance.

IV Write essay on any ONE   (1x10=10)

1. (a) .With a neat diagram obtain an expression for the numerical aperture of an optic fibre.
   (b).A step index fibre has the following parameters n_1 =1.68, n_2 =1.44, and n_a =1 calculate the critical angle, and maximum angle of refraction
2. Explain the classical and quantum theory Raman Effect.

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