KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Ag. Engg.) 2018 Admission
I Semester Final Examination-January 2019

Sacs.1102 Engineering Physics (2+1)

Marks: 50
Time:2 hours

I Fill in the Blanks (10x1=10)

1 Splitting of spectral lines in the presence of an electric field is called_____
2 Susceptibility of a diamagnetic material is _____
3 In a p-type semiconductor the majority carriers are _____
4 When arsenic is added to silicon it changes to _____ type semiconductor.

Answer the following

5 Define transition temperature of a superconductor.
6 Give two examples for ferromagnetic materials.
7 What is the expansion of SQUID?
8 Define population inversion.
9 What is meant by Fermi level?
10 Name two fields where we apply nanotechnology

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

1 What are the conditions to get a stable interference pattern?
2 Transverse Zeeman effect.
3 Distinguish between intrinsic and extrinsic semiconductors.
4 Isotope effect in superconductivity.
5 Metastable level.
6 Any two applications of holography.
7 Law of mass action.

III Answer any FIVE of the following. (5x4=20)

1 Principle and working of an interference filter.
2 Langevins theory of diamagnetism.
3 Josephson DC and AC effects.
4 Calculate the critical field of a superconductor at 2.5K if its transition temperature is 3.7K. Critical magnetic field is 2.39×10^4 A/m at 0K.
5 Applications of nanotechnology in agriculture.**(Any four)**
6 With energy level diagram explain the working of He-Ne laser.
7 Quantum theory of Raman effect.

IV Answer any ONE of the following (1x10=10)

1 a) With a neat diagram explain formation of Newton's rings in reflected system.
b) Derive an expression to find an unknown wavelength using this arrangement.
2 a) Obtain an expression for the Numerical aperture of an optical fibre.
b) What are the applications of optical fibres?

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