KERALA AGRICULTURAL UNIVERSITY
B.Tech. (Agrl. Engg.) 2020 Admission
I Semester Final Examination-November 2021

Sacs. 1102 **Engineering Physics (2+1)** **Marks: 50**
Time: 2 hours

I **Fill in the blanks** **(10x1=10)**

1. Different types of Lasers are classified based on _____.
2. Gold Nano particles with a size range of 2- 20 nm have been Synthesized using the by live _____ plants.
3. Newton's rings is a phenomenon in which an interference pattern is created by the _____ light between two surfaces.

State True or False

4. The forbidden energy gap of germanium is 1.1 eV.

Choose the Correct Answer

5. Resonance frequency is
   a. System to oscillate with greater amplitude at specific frequencies
   b. System to oscillate with lower amplitude at specific frequencies
   c. System to oscillate with greater amplitude at varying frequencies
   d. System to oscillate with lower amplitude at varying specific frequencies
6. The principle of propagation of light through optical fibers is
   a. Interference
   b. Diffraction
   c. Total internal reflection
   d. Polarization

Answer the following

7. Give two examples of Type I Superconductors.
8. Determine the wave length of violet line in the mercury spectrum using 15,000 lines/ inch diffraction grating with an angle of diffraction is 12.5 degree.
9. Define Diffraction.
10. Define Intrinsic & Extrinsic semiconductors.

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

1. Comment on thin film interference
2. Differentiate Hard and Soft magnetic materials
3. Ferro magnetism – Explain
4. SQUIDS -Brief with applications
5. Give any two advantages of optical fibre communication
6. Differentiate single mode and multi-mode fibers
7. Describe Top-down approach in synthesis of Nano materials

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

1. Describe the classification of magnetic materials and its applications
2. How metals, semiconductors and insulators are classified based on band theory of solids?
3. Explain Holography in detail with recording and reconstruction of hologram and its applications
4. Describe biosensors with different types & applications
5. Explain Meissner effect and drive London equation

6. Describe Stark effect with applications
7. Explain Interference filters with applications.

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

1. Define diffraction, differentiate the Fresnel and Fraunhofer diffraction and explain how to determine the wave length of light by diffraction grating
2. Explain in detail about the applications of Nano technology in Agriculture

****