

Physics Assignment No. 1

Date of Submission: 30.07.2018

Class: EC1/EC2, EE1/EE2, EC3/EE3, CS4/CS5

Teacher Incharge: Harpreet Kaur Grewal, Randhir Singh

Chapters: Basics of electromagnetic theory, Laser and Fiber optics, Semiconductors.

INSTRUCTIONS:

- 1. Assignment is meant to be submitted by the students of above mentioned classes only.**
- 2. Submit the assignment on sheets properly compiled in a folder. Do not submit it on hard bound copy.**
- 3. Last date of submission will not be extended in any case.**
- 4. Assignments will not be evaluated if submitted after last date of submission.**
- 5. Marks of assignments will be added to final evaluation of Physics paper.**

Q1. Differentiate wave and particle.

Q2. What are em waves? Discuss their nature and write their properties.

Q3. Define spectrum.

Q4. What is em spectrum? Write all its component wavelengths.

Q5. Define and give units of intensity. What's the relationship between intensity and amplitude?

Q6. Define polarization. What is its significance?

Q7. Define solid angle and give its units.

Q8. State and prove Gauss Law of electrostatics in vacuum by making use of the concept of solid angle.

Q9. Give salient feature(s) of Planck's quantum theory of light. Name some examples/experiments verifying it.

Q10. What is photon? Does photon have mass?

Q11. Explain Total Internal Reflection. Give some examples from daily life based on TIR.

Q12. What is co-axial cable?

Q13. Write some uses of lasers in the fields of medicine, engineering and science.

Q14. Discuss some applications of optical fibers.

- Q15. Differentiate conductor and insulator.
- Q16. What is semiconductor? How its resistivity varies with temperature? How many types of semiconductors are there? Explain briefly.
- Q17. What is diode?
- Q18. What is forward bias and reverse bias?
- Q19. What are majority and minority carriers?
- Q20. Define diffusion current and drift current.
- Q21. What is Fermi level and Fermi energy?
- Q22. Discuss the working of p-n diode.
- Q23. What is transistor?
- Q24. Explain briefly solar cell and LED by giving their respective working principle and working.
- Q25. Write four Maxwell's equations in integral form.
- Q26. What are sound waves? How sound waves are different from em waves?
- Q27. Define interference and diffraction.
- Q28. What is coherence?
- Q29. What is laser?
- Q30. What is modulation and demodulation?