

Important Question of Applied Physics-I

- 1. Explain in detail Carnot Cycle and derive an expression for its efficiency.**
- 2. Explain continuum approach in Thermodynamics.**
- 3. Given two moles of a perfect monoatomic gas, initially kept in a cylinder at a pressure $1.0 \times 10^6 \text{ Nm}^{-2}$ and temperature 27°C , are made to expand until its volume is doubled. Calculate work done if the expansion is (i) isobaric and (ii) isothermal**
- 4. If the door of a refrigerator remains open, then why a room cannot be cooled? Explain your answer.**
- 5. Give the equation of continuity of electromagnetic theory. Explain the inconsistency of Ampere's law for transient currents. How was the law modified in its generalized form to overcome the inconsistency.**
- 6. Show that the velocity of the electromagnetic wave in a dielectric medium is always less than the velocity in free space**
- 7. State the theorem showing conservation of energy in electromagnetism. Give the physical significance of the important vector quantity defined in the above mentioned theorem.**
- 8. Discuss the propagation of monochromatic plane electromagnetic wave in a conducting medium. What do you understand by the skin depth.**
- 9. Explain the formation of fringes in Michelson's Interferometer with suitable diagram**
- 10. Explain using mathematical derivation the formation of the n^{th} bright ring in a Newton's ring set up in the reflected light with a diameter given by two expression**
- 11. In a diffraction grating how are spectral lines affected when ruling are made closer.**
- 12. What is meant by resolving power and dispersive power of an optical instrument?**
- 13. How would you distinguish between plane, circularly and elliptically polarised light?**
- 14. Write short note on Nicol prism.**
- 15. Discuss the negative result of Michelson-Morley experiment and conclusion drawn therefrom.**
- 16. Why do we not observe the effect of time dilation in everyday phenomenon?**
- 17. Define coherence. Distinguish between spatial and temporal coherence.**
- 18. Describe qualitatively 4 level laser scheme. Do you think energy conservation is violated in lasing atom**
- 19. State fundamental postulates of special theory and deduce the Lorentz transformations from them.**
- 20. Prove that no material particle can attain a velocity greater than the velocity of light**