ST. JOSEPH'S COLLEGE OF ARTS & SCIENCE (AUTONOMOUS)
CUDDALORE – 607001

PG & RESEARCH DEPARTMENT OF PHSYSICS

SUBJECT : Allied Physics
SUBJECT CODE: APH301S/APH401S
STAFF INCHARGE: Dr.P.Praveen (Shit-I) &
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Section – A

1. What are transverse vibrations?
2. Define bending of beams.
3. What is meant by sound?
4. What are ultrasonics?
5. Give any two uses of ultrasonics.
6. What is meant by interference?
7. What is mean by optical activity?
8. What is meant by aberration?
9. Define polarimeter.
10. What is meant by chromatic aberration?
11. Define transverse waves and longitudinal waves.
12. Write the expression for the energy stored in a charged capacitor.
13. Define magnetic moment of a magnet.
14. What are coherent source?
15. Define capacitance of a capacitor and give its unit.
16. Define time constant in RC circuit.
17. What is time dilation?
18. Define uncertainty principle.
19. Define time constant in LR circuit.
20. Give the principle of a potentiometer.
21. Give any two differences between interference and diffraction.
22. What is diffraction?
23. Define pole strength of a magnet.
24. Give the postulates of relativity.
25. Define De Broglie's wavelength.
26. Define FET.
27. What are IC's? Give its advantages.
28. What is flip-flop?
29. Define PN junction diode.
30. Define twin paradox.

Section – B

1. How will you determine young's modulus using torsion pendulum.
2. Deduce the expression for torsion of a wire.
3. State the laws of transverse vibrations.
4. Explain the production and uses of ultrasonics.
5. Explain the chromatic aberration and lenses.
6. Explain the A.C frequency measurement using sonometer.
7. Derive an expression for loss of energy due to sharing of charges between two capacitors.
8. Describe the experimental method of determing the internal resistance of a cell using a potentiometer.
9. Describe the experimental method to determine radius of curvature of a lens by forming Newton's rings.
10. Describe the method of testing optical flatness of a glass plate by air-wedge.
11. Explain i) length contraction ii) time dilation
12. Postulate theory of relativity.
13. Explain the application of Schrödinger equation for a particle in a box.
14. What are the advantages and disadvantages of integrated circuits?
15. What is an integrated circuit? Give it advantages. Outline the classification of integrated circuits.
16. Explain the output characteristics of FET.
17. Explain the working of RS flip-flop.
18. Explain the working of D flip-flop.
19. Derive the expression for addition of velocities.
20. Obtain the expression for Schrödinger time dependent one dimensional equation.

Section – C

1. Derive an expression for the velocity of sound in a stretched string.
2. Describe the theory of air wedge. Also explain how it can be used to determine the thickness of a wire experimentally.
3. Obtain the condition for achromatic combination of two thin lenses when they are in contact.
4. What is plane transmission grating? Give its theory.
5. Derive Lorentz transformation equations.
6. Explain the making of monolithic IC s with the neat diagram.
7. Give the theory of growth and decay of charge in a circuit consisting of a resistance and capacitor (RC).
8. Give the theory of growth and decay of current in a circuit consisting of a resistance and inductance (LR).
9. Discuss the working of JK flip-flop.