

1. Define electric dipole moment. Give its unit.
2. Distinguish between particle and wave.
3. Explain the principle and working of RADAR with neat block diagram.
4. What are the characteristics of heating elements used in electric heating device?
5. A source of alternating emf is connected with RLC series combination circuit. Obtain with the help of vector diagram, the expression for (i) the effective voltage (ii) the phase relationship between the current and the voltage.
6. Explain the working of photo emissive cell. Write the applications of photoelectric cells.
7. State Faraday's law of Electromagnetic induction and obtain an expression of induced emf.
8. Explain OR gate and AND gate on the basis of following points: (i) Symbol (ii) Truth Table (iii) Boolean expression.
9. Explain Ohm's law.
10. State Fleming's right hand rule.

11. Make the analysis of amplitude modulated wave. Plot the frequency spectrum and band width.
12. In young's double slit experiment two coherent sources of intensity ratio of 64:1, produce interference fringes. Calculate the ratio of maximum and minimum intensities.
13. Write the properties of electric lines of force.
14. Calculate the energy released when two ${}_1\text{H}^2$ nuclei fuse together to form a single ${}_2\text{H}^4$
Given the binding energy per nucleon of ${}_1\text{H}^2$ and ${}_2\text{He}^4$ are 1.1 MeV and 7.0 MeV respectively.
15. Explain the working of a half wave diode rectifier.
16. Prove the Boolean identity: $(A+B)(A+C) = A+BC$.
17. What is an amplifier? Explain its actions as (i) inverting amplifier (ii) non- inverting amplifier.
18. What are the characteristic of heating element used in electric heating device?
19. A 300mm long tube containing 60cc of sugar solution produces a rotation of 9° when placed in polarimeter. If the specific rotation is 60° , calculate the quantity of sugar contained in the solution.

20. With the help of a functional block diagram, explain the function of monochrome TV receiver.
21. Explain and sketch the neat circuit diagram, the working of single stage CE amplifier. Draw the frequency response curve and discuss the result.
22. Obtain an expression for the energy the electron n_{th} orbit of hydrogen atom based on Bohr's theory.
23. State De-Morgan's theorem.
24. Describe the J.J Thomson method for determine the specific charge of an electron.
25. Explain with the help of block diagram, the function of FM radio transmitter.
26. Write the properties of electric lines of force.
27. Describe Bainbridge mass spectrometer to determine the isotopic masses of nuclei.
28. Calculate the time required for 60% of a sample of random to undergo decay. Give $T_{1/2}$ of random = 3.8 days.
29. Write the applications of photo electric cells.
30. Give reason: the coil within a resistance box is doubled coiled, why?
31. Describe A.C. Dynamo under following heading- (i) Labeled diagram (ii) Principle (iii) Working.

32. Explain Sommerfeld atom model.
33. Distinguish between emf and potential difference.
34. State Tangent law. Explain in detail the principle, construction and theory of a tangent galvanometer.
35. Explain the latitude effect of cosmic rays.
36. State Kirchhoff's law of voltage and current law.
37. Explain in detail the principle, construction, working and limitations of cyclotron with a diagram.
38. Explain the emission and absorption spectra.
39. Explain Raman scattering of light with the help of energy level diagram.
40. Sketch the circuit of a Colpitt's oscillator and explain its working.