Important 3 mark question for TN class 12 Physics.

Chapter 1: Electrostatics

1. Write down the important aspects of Coulomb's law.
2. What are the properties of electric field lines?
3. Derive an expression for the electric field due to the system of point charges.
4. Write the properties of an Electric dipole
5. Derive an expression for the electric potential due to a point charge.
6. Establish the relation between the electric field and the electric potential.
7. Derive an expression for the Torque experienced by an electric dipole in the uniform electric field.
8. What are the properties of an equipotential surface?
9. Obtain Gauss's law from Coulomb's law.
10. Differentiate between Coulomb's force and gravitational force.
11. Derive an expression for the energy stored in the capacitor.
12. Write the uses of capacitors.
13. Explain Capacitor connected in series and parallel.
14. Explain the distribution of charges in a conductor.
15. Write a short note on the Van de Graff generator.

Chapter 2: Current Electricity

1. Derive expressions for the I) microscopic model of current, II)Current density(J)
2. Derive the expression for Ohm's law.
3. Explain the determination of internal resistance.
4. Derive an expression for cells in series and cells in parallel.
5. Explain Kirchhoff's first and second rules.
6. Explain the Wheatstone bridge.
7. Explain the meter bridge.
8. What is the Seebeck effect, and what are its applications?
9. Define temperature coefficient of resistance.

Chapter 3: Magnetism and magnetic effects of electric current.

1. Write the properties of a magnet.
2. State and explain Biot-Savart law.
3. How to convert a galvanometer to an ammeter.
4. How to convert a galvanometer to a voltmeter.

5. State Fleming's left-hand rule.
6. Compare the properties of diamagnetic, paramagnetic and ferromagnetic materials.
7. Write down the features of the Lorentz force.
8. Write a note on moving coil galvanometer.

Chapter 4: Electromagnetic Induction and Alternating Current

1. How will you induce an emf by changing the area enclosed by the coil?
2. Explain motional emf from Lorentz force.
3. What is an eddy current, and what are the drawbacks of eddy currents?
4. Derive an expression for average power of AC over a cycle?
5. Mention various energy losses in a transformer.
6. Explain the relationship between voltage and current in an AC Circuit containing a pure resistor.
7. Write the advantages and disadvantages of AC over DC.
8. Mention the analogies between electrical and mechanical quantities.

Chapter 5: Electromagnetic waves

1. What are the properties of electromagnetic waves?
2. Explain Maxwell's modification of Ampere's circuital law.
3. Explain the types of emission spectrum: i) Continuous emission spectrum ii)Line emission spectrum, iii) Band emission spectrum.
4. Explain the absorption spectra and their types.
5. What are the Fraunhofer lines?

Chapter 6: Ray Optics

1. Explain the angle of deviation due to reflection.
2. What are the characteristics of the image formed by a plane mirror?
3. Explain the relationship between f and r.
4. Derive the mirror equation.
5. Explain the lateral magnification in spherical mirrors.
6. Explain the angle of deviation due to refraction
7. Explain critical angle and total internal reflection.
8. What are the effects due to total internal reflection?
9. What is the refractive index of the material of the prism?
10. What is the optical path? Derive an equation for the optical path.

Chapter 7: Wave optics

1. Explain Huygen's Principle.
2. Explain the Phase difference and the path difference.
3. Write the difference between Fresnel diffraction and Fraunhofer diffraction.

4. Explain Fresnel's distance.
5. What are the characteristics of polarised and unpolarised light?
6. Mention the uses of Polaroids.
7. Explain Brewster's law.
8. What is the Nicol prism?
9. Explain astigmatism.

Chapter 8: Dual nature of Radiation and matter.

1. Explain the types of electron emission.
2. Mention the laws of photoelectric current.
3. What are the characteristics of a photon?
4. Explain Photo cells and their types.
5. What are the applications of photocells?
6. Derive an equation for the De Broglie wavelength of electrons.
7. What are the applications of X-rays?
8. Why electron is an electron preferred over X-rays in a microscope?

Chapter 9: Atomic and nuclear physics.

1. What are the properties of Cathode rays?
2. Explain J.J. Thomson's Atom model.
3. What are the drawbacks of the Rutherford atom model?
4. List the limitations of the Bohr atom model.
5. What are the postulates of the Bohr atom model?
6. What are isotopes, isobars and isotones?
7. Explain alpha decay.
8. Write a note on Carbon dating.
9. What is meant by the half-life period of a radioactive element? Derive an expression for the half-life period.
10. What are the properties of a neutrino?
11. Explain the beta decay process with an example.
12. What are the important interferences from the average binding energy curve?

Chapter 10: Electronics and communication

1. Write a short note on the P-N Junction Diode.
2. Explain the Avalanche breakdown.
3. Write the applications of the Zener diode.
4. What are the applications of light-emitting diodes?
5. State De Morgan's first and Second theorems.
6. What is Amplitude Modulation(AM)? Mention its advantages and Limitations.
7. What is Frequency Modulation(FM)? Mention its advantages and limitations.
8. Draw the block diagram of the transmission and reception of voice signals.
9. Draw the Circuit symbol, logic operation, and truth table of ALL gate.

10. Write the properties of electromagnetic waves.
11. What are groundwave propagation and skywave propagation?
12. What is the Internet? Write its applications.