Paramathi

MALAR MATRIC HR. SEC. SCHOOL, NAMAKKAL

Public Examination – 2022

XII - Physics - Expected Questions (Reduced Syllabus)

PART-II

16. (a) Write down Coulomb's law in vector form and mention what each term represents.
    (b) State Gauss law.
    (c) Define 'capacitance'. Give its unit.
    (d) What is corona discharge?
17. **(a) May be a Sum from unit 2.**
    (b) Define current density?
    (c) Distinguish between drift velocity and mobility.
    (d) Define temperature coefficient of resistance.
    (e) What is Seebeck effect?
18. (a) Define magnetic flux.
    (b) State Fleming's left hand rule.
    (c) Is an ammeter connected in series or parallel in a circuit? Why?
    (d) How is a galvanometer converted in to (i) an ammeter and (ii) a voltmeter?
19. (a) State Fleming's right hand rule.
    (b) Mention the ways of producing induced emf.
    (c) How will you define RMS value of an alternating current?
    (d) How will you define Q-factor?
20. (a) State Snell's law /laws of refraction.
    (b) What is principle of reversibility?
    (c) Why do stars twinkle?
    (d) Why does sky appear blue?
    (e) What are the two conditions for total internal reflection?
21. (a) What are the shapes of wave front for
    a) source at infinite, b) point source and c) line source?
    (b) What is Huygens' principle?
    (c) State Malus' law.
    (d) Why is oil immersed objective preferred in a microscope?
    (e) Two independent monochromatic sources cannot act as coherent sources,why?
22. (a) Define work function of a metal. Give its unit.
    (b) What is photoelectric effect?
    (c) Why we do not see the wave properties of a baseball?
    (d) What is surface barrier?
    (e) Define stopping potential.

23. (a) What is meant by excitation energy?
(b) Define the ionization energy and ionization potential.
(c) Define impact parameter.
(d) What is half-life of nucleus? Give the expression.
(e) What are the constituent particles of neutron and proton?
(f) Define curie.

24. **(a) compulsory sum, may be from unit 2 OR 6 OR 7 OR 8.**
(b) What do you mean by doping?
(c) Distinguish between intrinsic and extrinsic semiconductors.
(d) Draw the input and output waveform of a full wave rectifier.
(e) Why can't we interchange the emitter and collector even though they are made up of the same type of semiconductor material?
(f) Draw the donor energy level in n-type semiconductor.
(g) What is rectification?

PART-III

25. (a) Derive an expression for the torque experienced by a dipole due to a uniform electric field.
(b) Derive an expression for electrostatic potential due to a point charge.
(c) Obtain the expression for capacitance for a parallel plate capacitor.
(d) Obtain the expression for energy stored in the parallel plate capacitor.

26. (a) Describe the microscopic model of current and obtain general form of Ohm's law.
(b) Explain the equivalent resistance of a series resistor network.

27: (a) Give an account of magnetic Lorentz force.
(b) State and explain Biot – Savart law.
(c) Discuss the conversion of galvanometer into a voltmeter.

28. **(a) May be a sum.**
(b) Obtain an expression for motional emf from Lorentz force.
(c) An inductor of inductance L carries an electric current i. How much energy is stored while establishing the current in it?
(d) How will you induce an emf by changing the area enclosed by the coil?
(e) Mention the various energy losses in a transformer.

29. (a) Write down the properties of electromagnetic waves.
(b) Give two uses each of (i) IR radiation, (ii) micro waves and (iii) UV radiation

(OR)

(a) Draw the circuit diagram of a half wave rectifier and explain its working.

(b) List out the advantages and limitations of frequency modulation.

30. (a) Derive the relation between f and R for a spherical mirror.

(b) What is optical path? Obtain the equation for optical path of a medium of thickness d and refractive index n.

(c) Obtain the equation for critical angle.

31. (a) Mention the differences between interference and diffraction.

(b) List the uses of polaroids.

(c) State and prove Brewster's law.

32. (a) List out the laws of photoelectric effect.

(b) Derive an expression for de Broglie wavelength of electrons.

(c) Mention the applications of photocells.

(d) Give the construction and working of photo emissive cell.

33. (a) **Compulsory Sum (OR)** Write the properties of cathode rays.

(b) Derive the energy expression for hydrogen atom using Bohr atom model.

(c) Discuss the spectral series of hydrogen atom.

(d) Discuss the alpha decay process with example.

PART-IV

34. (a) (i) Calculate the electric field due to a dipole on its axial line.

(ii) Explain in detail the construction and working of a Vande Graaff generator.

(OR)

(b) (i) Derive the mirror equation and the equation for lateral magnification.

(ii) Obtain lens maker's formula and mention its significance.

35. (a) (i) Explain the determination of the internal resistance of a cell using voltmeter.

(ii) Obtain the condition for bridge balance in Wheatstone's bridge. **(OR)**

(b) (i) Obtain the equation for bandwidth in Young's double slit experiment.

(ii) Discuss about simple microscope and obtain the equations for magnification for near point focusing and normal focusing.

36. (a) (i) Deduce the relation for the magnetic induction at a point due to an infinitely long straight conductor carrying current.

(ii) Deduce an expression for the force on a current carrying conductor in magnetic field. **(OR)**

(b) (i) Obtain Einstein's photoelectric equation with necessary explanation.

(ii) Briefly explain the principle and working of electron microscope.

37. (a) (i) Explain the construction and working of transformer.

(ii) Derive an expression for phase angle between the applied voltage and current in a series RLC circuit. **(OR)**

(b) (i) Obtain the law of radioactivity.

(ii) Derive an expression for the radius of the orbit of the electron and velocity of the electron using Bohr atom model.

38. (a) (i) Explain the types of emission spectrum.

(ii) Write down Maxwell equations in integral form.

(OR)

(b) (i) Explain the construction and working of a full wave rectifier.

(ii) Explain the amplitude modulation with necessary diagrams.

XII - Physics – PUBLIC Expected SUMS (Reduced Syllabus)

UNIT 1:

1.1,1.4,1.9,1.11,1.13,1.17,1.20,1.21,1.24.

UNIT 2:

2.3,2.5,2.6,2.11,2.13,2.18,2.23,2.26.

UNIT 3:

3.5,3.15,3.16.

UNIT 4:

4.8,4.10,,4.11,4.12,4.6.3 CASE 1 and 2,4.16,4.21,4.27.

UNIT 5:

5.2,5.3. **(NUMERICAL Q.NO:5)**

UNIT 6:

6.3,6.5,6.6,6.7,6.19,6.21.

UNIT 7:

7.1,7.2,7.3,7.4,7.8,7.11,7.14,7.17,7.20.

UNIT 8:

8.2,8.3,8.6,8.8,8.9.

UNIT 9:

9.1,9.2,9.6,9.7,9.8,9.10,9.12,9.13,9.15. **NUMERICAL:**5,6,8,9,10,11.

UNIT 10:

10.1,10.2,10.5,10.11. **NUMERICAL:** 7,8,10.

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