



CBSE Class 12 Physics Sample Papers

GENERAL INSTRUCTIONS:

1. THERE ARE **30** QUESTIONS.
2. QUESTION **1-8** CARRY **ONE** MARK EACH.(Physics sample Paper)
3. QUESTION **9-18** CARRY **TWO** MARK EACH..(Physics sample Paper)
4. QUESTION **19-27** CARRY **THREE** MARK EACH..(Physics sample Paper)
5. QUESTION **28-30** CARRY **FIVE** MARK EACH..(Physics sample Paper)

SECTION – I QUESTION 1-8 CARRY **ONE** MARK EACH.

1. A potential difference is applied between a conducting sphere and a conducting plate (“plus” on the sphere and “minus” on the plate). The dimension of the plate are much larger than the distance between sphere and plate. A point positive charge is moved from point 1 to point 2 parallel to the plate. Using the above information choose the correct statement

- (a) work done in the process is zero
- (b) net positive work will be done in moving charge from 1 to 2 by external agent
- (c) net negative work will be done in moving charge from 1 to 2 by external agent
- (d) information is insufficient to give any assertion regarding work.

2. What is the shortest wavelength present in the Paschen series of spectral lines?
3. Why the metal brush in a Van de Graaff generator consists of pointed spikes?
4. What is the shortest wavelength present in the Paschen series of spectral lines?

5. What are the functions of potentiometer?
6. Give example of element which don't obey Ohm's law ?
7. A superconductor is a perfect diamagnetic. Justify the statement.
8. Name the universal logic gates.

SECTION – II QUESTION 9-18 CARRY TWO MARK EACH.

9. A 200 ohms resistor is connected to a 110 V, 50 Hz ac supply. (a) Determine the rms value of current in the circuit. (b) What is the net power consumed over a full cycle?
10. A colour coded resistor has bands of violet, red and black colours respectively. What is the value of resistance?
11. What is Resonance? Show on the graph variations of current with frequency?
12. The amplitude of the magnetic field part of a harmonic electromagnetic wave in vacuum is $B = 510 \text{ nT}$. What is the amplitude of the electric field part of the wave?
13. Deduce the expression of kinetic energy of the ions in cyclotron?
14. Explain any two **(A) MYOPIA (B) HYPERMETROPIA (C) ASTIGMATISM (D) PRESBYOPIA**
15. Calculate the energy equivalent of 1 g of substance.
16. Two wires of equal length, one of silver and the other of gold have the same resistance. Which of the two wires is lighter?
- 17 Write the Snell Law.
18. Read the following questions and choose
 - (A) If both the statements are true and statement-2 is the correct explanation of statement-1.
 - (B) If both the statements are true but statement-2 is not the correct explanation of statement-1.

(C) If statement-1 is True and statement-2 is False.

(D) If statement-1 is False and statement-2 is True.

Statement-1: A solid cylinder is floating in water kept in a container. If container is moving upward with constant acceleration then length of cylinder inside the water at equilibrium is greater.

Statement-2: The pressure at a point inside a liquid kept in a container will increase if container start moving upward with constant acceleration.

(a) A (b) B (c) C (d) D

SECTION – III QUESTION 19-27 CARRY THREE MARK EACH.

19. What is the intensity of transmitted light when a polaroid sheet is rotated between two crossed polaroids.?

20. Obtain the Binding energy of **MeV** of a helium nucleus. Mass of Helium = 4.00263 u.

21. Show that in a free oscillation of LC circuit, the sum of energies stored in the capacitor and inductor is a constant in time.

22. (a) What is Photoelectric Effect ?

(b) Explain the effect of potential on photoelectric current. Show on the graph the effect of photoelectric current with collector plate.

23. To draw the I-V characteristic curve of a p-n junction in forward bias and reverse bias?

24. To determine angle of minimum deviation for a given prism by plotting a graph between angle of incidence and angle of deviation.?

25. The electron, in a hydrogen atom, initially in a state of quantum number n_1 makes a transition to a state whose excitation energy, with respect to the ground state, is 10.2 eV. If the wavelength, associated with the photon emitted in this transition, is 487.5 nm, find the (i) energy in eV, and (ii) value of the quantum number, n_1 of the electron in its initial state.

26. Define the terms (i) mass defect(ii) binding energy for a nucleus and state the relation between the two. For a given nuclear reaction the B.E./nucleon of the product nucleus/nuclei is more than that for the original nucleus/nuclei. Is this nuclear reaction exothermic or endothermic in nature? Justify your choice.

27. Draw an appropriate ray diagram to show the passage of a 'white ray', incident on one of the two refracting faces of a prism. State the relation for the angle of deviation, for a prism of small refracting angle. Plot a graph showing the dependence of on and identify the pair of variables, that can be used here, to get a straight line graph.?

SECTION – IV QUESTION 28-30 CARRY FIVE MARK EACH.

28. Explain the working of transistor as a switch. Write the expression and draw the circuit diagram. Show on the graph with its transfer characteristics? OR Draw the logic symbol and draw the truth table of NAND , AND , NOT , NAND.

29. An athlete peddles a stationary tricycle whose pedals are attached to a coil having 100 turns each of area 0.1m^2 . The coil, lying in the X-Y plane, is rotated, in this plane, at the rate of 50 rpm, about the Y-axis, in a region where a uniform magnetic field, $= (0.01)$ tesla, is present. Find the (i) maximum emf (ii) average e.m.f generated in the coil over one complete revolution.

30. Define the terms 'depletion layer' and 'barrier potential' for a P-N junction diode. How does an increase in the doping concentration affect the width of the depletion region? Draw the circuit of a full wave rectifier. Explain its working.? OR Why is the base region of a transistor kept thin and lightly doped? Draw the circuit diagram of the 'set-up' used to study the characteristics of a npn transistor in its common emitter *configuration*. Sketch the typical(i) Input characteristics (ii) Output characteristics for this transistor configuration?

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