

Pre Board Examination 2022

12th Physics

Time:- 3 Hrs

Maximum Marks- 70

Important Instructions :-

1. All questions are compulsory. Internal choice is given in every question from Question No 5 to 19.
2. For Question number 1 to 4 there are 7 marks for each question. Each sub question carry 1 mark.
3. For Question Number 5 to 12 there are 2 marks for each, word limit is 30.
4. For Question Number 13 to 16 there are 3 marks for each, word limit is 75.
5. For Question Number 17 there are 4 marks. For this answer, word limit is 120.
6. For Question Number 18 to 19 there are 5 marks for each questions .Word limit is 150 .

1. Select the correct option.

1x7=7

- I. Force experience by the charge q placed in electric field of intensity E is-
(a) $F = E/q$ (b) $F = q/E$
(c) $F = qE$ (d) $F = E - q$
- II. A moving charge produces -
(a) Only Electric field (b) Only magnetic field
(c) Electric field and magnetic field both (d) Neither electric field nor magnetic field
- III. Lenz rule is related to-
(a) Conservation of charge (b) Conservation of energy
(c) Conservation of mass (d) Conservation of momentum
- IV. Which among the following is of least wavelength-
(a) γ rays (b) Visible light
(c) Infrared rays (d) Ultraviolet rays
- V. For which of the following color the refractive index of the glass is least -
(a) Violet (b) Red
(c) Yellow (d) Blue
- VI. For good resolution a telescope must have -
(a) Objective lens of large diameter (b) Objective lens of small diameter
(c) Objective lens of small focal length (d) Eyepiece of small focal length
- VII. The de-Broglie wavelength associated with an electron accelerated through a potential difference of 150 volt is
(a) 150 \AA (b) 1 m (c) 1 nm (d) 1 \AA

2. Fill in the blanks

1x7=7

- I. The resistance of an ideal voltmeter is
- II. In a LC circuit the phase difference between current and voltage is
- III. rays are used for photography in darkness.
- IV. rays are used as bactericidal.
- V. When the length of tube of a microscope is increased, its magnification power gets
- VI. A thin film appears colored in white light , because of
- VII. NOT gate is also called

3. Answer the following in one word/ sentence.

1x7=7

- I. Write the SI unit of intensity of electric field.
- II. A wire is stretched to triple of its original length. Then how many time its resistance gets increased?

- III. Write the SI unit of self-induction.
- IV. On which principle transformer works?
- V. Write the name of the rays, useful for seeing distant objects in fog.
When is the virtual image formed by a convex lens of any object?
- VI. How much minimum band gap is required in a semiconductor, used to make LEDs?

4. Match the column.

1x7=7

Column (A)

column (B)

- | | | |
|---|-------|----------------------------|
| a. Electric power | i) | Polarisation |
| b. Inductive reactance | ii) | Magnetic effect of current |
| c. Brooster's law | iii) | Photoelectric effect |
| d. Blue color of sky | iv) | Scattering of light |
| e. Quantum property of electromagnetic wave | v) | Voltage regulation |
| f. Zener diode | vi) | ωL |
| g. Moving coil galvanometer | vii) | $\frac{1}{\omega C}$ |
| | viii) | IR |
| | ix) | $R^2 l$ |

5. Why two electric field lines do not intersect each other? 2
Or
Write any two properties of equipotential surface.
6. Why the headlights of a vehicle become dim while starting its engine? 2
Or
What is non-ohmic resistance? Write its one example.
7. What is cyclotron? On which fact it is based? 2
Or
How can we increase current sensitivity of a moving coil galvanometer?
8. Why electrolysis does not take place by alternating current? 2
Or
Why sparking is produced when any electric circuit is broken suddenly?
9. What do you mean by total internal reflection? Write essential condition for it. 2
Or
What is interference? Write an example for it.
10. Explain refraction through a prism with diagram. 2
Or
What do you mean by phase coherent sources.
11. Why de-Broglie matter wave theory is not perceived in daily life? 2
Or
What is cut off or stopping potential?
12. Write any two differences between p-type and n-type semiconductors. 2
Or
Write any two differences between photo diode and solar cell.
13. Explain principle of Wheatstone bridge and derive necessary condition $\frac{P}{Q} = \frac{R}{S}$ for its balance. 3
Or
Derive relation between current and drift velocity of electron.

14. If n cells, each having internal resistance r and emf E are connected in parallel, then find its resultant emf and internal resistance. 3
- Or
- If three resistances of 2 ohm, 3 ohm and 4 ohm are connected in parallel, then find the resultant resistance.
15. Derive the formula for cyclotron frequency. 3
- Or
- Write Biot-Savart law. Define the SI unit of electric current on its basis.
16. An object of height 3cm is placed 14 cm away from a convex lens of focal length 21cm. Find the position, type and size of the image formed. 3
- Or
- A pot of depth 10 cm is filled with the liquid, due to this its base appears to be raised by 2 cm up from its original position, find the refractive index of the liquid. <https://www.mpboardonline.com>
17. Explain the use of PN junction diode as a full wave rectifier under the following headings- 4
- a) Labeled diagram of the circuit
 - b) Working
 - c) Graph for variation in input and output potential with respect to time.
- Or
- How do you obtain OR gate with the help of NAND gate & AND gate with the help of NOR gate? Explain with diagram.
18. What is electric dipole? Derive expression for the intensity of electric field due to electric dipole in axial position. 5
- Or
- Derive formula for capacity of a parallel plate capacitor which is partially filled by dielectric material and partially by air.
19. Calculate the following for the series L C R circuit- 5
- (a) resultant potential difference
 - (b) Impedance of the circuit
 - (c) phase difference between resultant voltage and current.
- Or
- Derive expression for the mutual inductance between two long Current carrying solenoids. Write the factors affecting it.

<https://www.mpboardonline.com>

Whatsapp @ 9300930012

Send your old paper & get 10/-

अपने पुराने पेपर्स भेजे और 10 रुपये पायें,

Paytm or Google Pay से

<https://www.mpboardonline.com>