

Strictly based on the latest CBSE syllabus dated 4th April 2017 for Academic year 2017-18

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CLASS 12

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RANCHI	GUJARAT Abhyas Book, (079) 26766366 Bhagwati Centre, (079) 40065346, 9825007199 Hardik Book Agency, (079) 22148725 Patel Book Agency, (079) 25324741 Rohinee Sales, (079) 27503622 Tushar Book, (079) 26578741, 26587103 Uppal Brother, (079) 22860529 Ajay Book Store, (02692) 238237 Arham Book Depot, (02836) 237833 College Store, (02637) 258642 Maneesh Book Shop, (0265) 2363270 Vinay General Store, 9925817463, 8758882123 Kazi & Sons, (0261) 2767156, 9879328741 Saraswati Book House, (0261) 22095608, 8153022244 Shopping Point, (0261) 2230097, 9824108663	PATIALA	
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R - Remembering, **U** - Understanding,
K - Knowledge, **A** - Application.

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Physics (Code no. 042)

Class XII

Time : 3 hrs.

Max. Marks : 70

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	Chapter-11 : Dual Nature of Radiation and Matter		
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Unit-X	Communication Systems	10	
	Chapter-15 : Communication Systems		
	Total	160	70

UNIT I: ELECTROSTATICS

(22 Periods)

Chapter-1 : Electric Charges and Fields

Electric Charges; Conservation of charge, Coulomb's law-force between two point charges, forces between multiple charges; superposition principle and continuous charge distribution. Electric field, electric field due to a point charge field lines, electric dipole, electric field due to a dipole, torque on a dipole in uniform electric field. Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell (field inside and outside).

Chapter-2: Electrostatic Potential and Capacitance

Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges; equipotential surfaces, electrical potential energy of a system of two point charges and of electric

dipole in an electrostatic field. Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarisation, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor.

UNIT II: CURRENT ELECTRICITY

20 Periods

Chapter-3: Current Electricity

Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility and their relation with electric current; Ohm's law, electrical resistance, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity and conductivity, Carbon resistors, colour code for carbon resistors; series and parallel combinations of resistors; temperature dependence of resistance. Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel, Kirchhoff's laws and simple applications, Wheatstone bridge, metre bridge. Potentiometer - principle and its applications to measure potential difference and for comparing EMF of two cells; measurement of internal resistance of a cell.

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22 Periods

Chapter-4: Moving Charges and Magnetism

Concept of magnetic field, Oersted's experiment. Biot - Savart law and its application to current carrying circular loop. Ampere's law and its applications to infinitely long straight wire. Straight and toroidal solenoids (only qualitative treatment), force on a moving charge in uniform magnetic and electric fields, Cyclotron. Force on a current-carrying conductor in a uniform magnetic field, force between two parallel current-carrying conductors-definition of ampere, torque experienced by a current loop in uniform magnetic field; moving coil galvanometer-its current sensitivity and conversion to ammeter and voltmeter.

Chapter-5: Magnetism and Matter

Current loop as a magnetic dipole and its magnetic dipole moment, magnetic dipole moment of a revolving electron, magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis, torque on a magnetic dipole (bar magnet) in a uniform magnetic field; bar magnet as an equivalent solenoid, magnetic field lines; earth's magnetic field and magnetic elements. Para-, dia- and ferro - magnetic substances, with examples. Electromagnets and factors affecting their strengths, permanent magnets.

UNIT IV: ELECTROMAGNETIC INDUCTION AND ALTERNATING CURRENTS 20 Periods

Chapter-6: Electromagnetic Induction

Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Eddy currents. Self and mutual induction.

Chapter-7: Alternating Current

Alternating currents, peak and RMS value of alternating current/ voltage; reactance and impedance; LC oscillations (qualitative treatment only), LCR series circuit, resonance; power in AC circuits, power factor, wattless current. AC generator and transformer.

UNIT V: ELECTROMAGNETIC WAVES

04 Periods

Chapter-8: Electromagnetic Waves

Basic idea of displacement current, Electromagnetic waves, their characteristics, their Transverse nature (qualitative ideas only). Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses.

UNIT VI: OPTICS

25 Periods

Chapter-9: Ray Optics and Optical Instruments

Ray Optics : Reflection of light, spherical mirrors, mirror formula, refraction of light, total internal reflection and its applications, optical fibres, refraction at spherical surfaces, lenses, thin lens formula, lensmaker's formula, magnification, power of a lens, combination of thin lenses in contact, refraction and dispersion of light through a prism. Scattering of light - blue colour of sky and reddish appearance of the sun at sunrise and sunset. Optical instruments: Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.

Chapter–10: Wave Optics

Wave optics : Wave front and Huygen's principle, reflection and refraction of plane wave at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygen's principle. Interference, Young's double slit experiment and expression for fringe width, coherent sources and sustained interference of light, diffraction due to a single slit, width of central maximum, resolving power of microscope and astronomical telescope, polarisation, plane polarised light, Brewster's law, uses of plane polarised light and Polaroids.

UNIT VII : DUAL NATURE OF RADIATION AND MATTER

08 Periods

Chapter–11 : Dual Nature of Radiation and Matter

Dual nature of radiation, Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation-particle nature of light. Matter waves-wave nature of particles, de-Broglie relation, Davisson-Germer experiment (experimental details should be omitted; only conclusion should be explained).

UNIT VIII : ATOMS AND NUCLEI

14 Periods

Chapter–12 : Atoms

Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum.

Chapter–13 : Nuclei

Composition and size of nucleus, Radioactivity, alpha, beta and gamma particles/ rays and their properties; radioactive decay law. Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission, nuclear fusion.

UNIT IX : ELECTRONIC DEVICES

15 Periods

Chapter–14 : Semiconductor Electronics: Materials, Devices and Simple Circuits

Energy bands in conductors, semiconductors and insulators (qualitative ideas only) Semiconductor diode - I - V characteristics in forward and reverse bias, diode as a rectifier; Special purpose p-n junction diodes: LED, photodiode, solar cell and Zener diode and their characteristics, zener diode as a voltage regulator. Junction transistor, transistor action, characteristics of a transistor and transistor as an amplifier (common emitter configuration), basic idea of analog and digital signals, Logic gates (OR, AND, NOT, NAND and NOR).

UNIT X : COMMUNICATION SYSTEMS

10 Periods

Chapter–15 : Communication Systems

Elements of a communication system (block diagram only); bandwidth of signals (speech, TV and digital data); bandwidth of transmission medium. Propagation of electromagnetic waves in the atmosphere, sky and space wave propagation, satellite communication. Need for modulation, amplitude modulation.

□□

PHYSICS (Code no. 042)
CLASS - XII
QUESTION PAPER DESIGN (2017-18)

Time : 3 Hours

Max. Marks : 70

S. No.	Typology of Questions	Very Short Answer (VSA) (1 mark)	Short Answer-I (SA-I) (2 marks)	Short Answer-II (SA-II) (3 marks)	Value based question (4 marks)	Long Answer (LA) (5 marks)	Total Marks	% Weightage
1.	Remembering: (Knowledge based Simple recall questions, to know specific facts, terms concepts, principles, or theories, identify define, or recite. information)	2	1	1	–	–	7	10%
2.	Understanding (Comprehension : To be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase information)	–	2	4	–	1	21	30%
3.	Application : (Use abstract information in concrete situation, to apply knowledge to new situations, use given content to interpret a situation, provide an example, or solve a problem)	–	2	4	–	1	21	30%
4.	High Order Thinking Skills (Analysis & Synthesis : Classify, compare, contrast, or differentiate between different pieces of information, organize and/or integrate unique pieces of information from a variety of sources)	2	–	1	–	1	10	14%
5.	Evaluation: (Appraise, judge, and/or justify the value or worth of a decision or outcome, or to predict outcomes based on values)	1	–	2	1	–	11	16%
	Total	5×1 = 5	5×2 = 10	12×3 = 36	1×4 = 4	3×5 = 15	70 (26)	100%

QUESTION WISE BREAK UP

Type of Question	Mark per Question	Total No. of Questions	Total Marks
VSA	1	5	05
SA-I	2	5	10
SA-II	3	12	36
VBQ	4	1	04
LA	5	3	15
Total		26	70

- Internal Choice :** There is no overall choice in the paper. However, there is an internal choice in one question of 2 marks weightage, one question of 3 marks weightage and all the three questions of 5 marks weightage.
- The above template is only a sample. Suitable internal variations may be made for generating similar templates keeping the overall weightage to different form of questions and typology of questions same.



WRITING NOTES

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EXAMINATION
PAPER

C.B.S.E.

2017

Class–XII

Delhi & Outside Delhi

PHYSICS
(Theory)

Time : 3 Hours

Max. Marks : 70

General Instructions :

- (i) All questions are compulsory. There are 26 questions in all.
- (ii) This question paper has **five** sections : Section A, Section B, Section C, Section D, and Section E.
- (iii) Section A contains **five** questions of **one** mark each, Section B contains **five** questions of **two** marks each, Section C contains **twelve** questions of **three** marks each, Section D contains **one** value based question of **four** marks and Section E contains **three** questions of **five** marks each.
- (iv) There is no overall choice. However, an internal choice has been provided in **one** question of **two** marks, **one** question of **three** marks and all the **three** questions of **five** marks weightage. You have to attempt only **one** of the choices in such questions.
- (v) You may use the following values of physical constants wherever necessary :

$$c = 3 \times 10^8 \text{ m/s}$$

$$h = 6.63 \times 10^{-34} \text{ Js}$$

$$e = 1.6 \times 10^{-19} \text{ C}$$

$$\mu_0 = 4\pi \times 10^{-7} \text{ T m A}^{-1}$$

$$\epsilon_0 = 8.854 \times 10^{-12} \text{ C}^2 \text{ N}^{-1} \text{ m}^{-2}$$

$$\frac{1}{4\pi\epsilon_0} = 9 \times 10^9 \text{ N m}^2 \text{ C}^{-2}$$

$$\text{Mass of electron} = 9.1 \times 10^{-31} \text{ kg}$$

$$\text{Mass of neutron} = 1.675 \times 10^{-27} \text{ kg}$$

$$\text{Mass of proton} = 1.673 \times 10^{-27} \text{ kg}$$

$$\text{Avogadro's number} = 6.023 \times 10^{23} \text{ per gram mole}$$

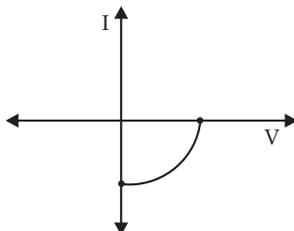
$$\text{Boltzmann constant} = 1.38 \times 10^{-23} \text{ JK}^{-1}$$

Delhi Set I

Code No. 55/1/1

SECTION - A

1. Does the charge given to a metallic sphere depend on whether it is hollow or solid ? Give reason for your answer. 1
2. A long straight current carrying wire passes normally through the centre of circular loop. If the current through the wire increases, will there be an induced emf in the loop ? Justify. 1
3. At a place, the horizontal component of earth's magnetic field is B and angle of dip is 60° . What is the value of horizontal component of the earth's magnetic field at equator ? 1
4. Name the junction diode whose I-V characteristics are drawn below : 1



5. How is the speed of em-waves in vacuum determined by the electric and magnetic fields ? 1

SECTION - B

6. How does Ampere-Maxwell law explain the flow of current through a capacitor when it is being charged by a battery ? Write the expression for the displacement current in terms of the rate of change of electric flux. 2
7. Define the distance of closest approach. An α -particle of kinetic energy 'K' is bombarded on a thin gold foil. The distance of the closest approach is 'r'. What will be the distance of closest approach for an α -particle of double the kinetic energy ? 2

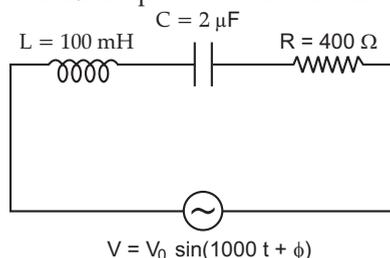
OR

Write two important limitations of Rutherford nuclear model of the atom. 2

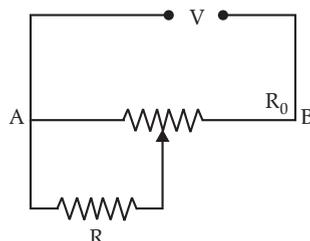
8. Find out the wavelength of the electron orbiting in the ground state of hydrogen atom. 2
9. Define the magnifying power of a compound microscope when the final image is formed at infinity. Why must both the objective and the eyepiece of a compound microscope has short focal lengths ? Explain. 2
10. Which basic mode of communication is used in satellite communication ? What type of wave propagation is used in this mode ? Write, giving reason, the frequency range used in this mode of propagation.

SECTION - C

11. (i) Find the value of the phase difference between the current and the voltage in the series LCR circuit shown below. Which one leads in phase : current or voltage ?
- (ii) Without making any other change, find the value of the additional capacitor C_1 , to be connected in parallel with the capacitor C , in order to make the power factor of the circuit unity. 3

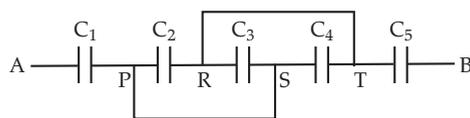


12. Write the two processes that take place in the formation of a p-n junction. Explain with the help of a diagram, the formation of depletion region and barrier potential in a p-n junction. 3
13. (i) Obtain the expression for the cyclotron frequency.
- (ii) A deuteron and a proton are accelerated by the cyclotron. Can both be accelerated with the same oscillator frequency ? Give reason to justify your answer. 3
14. (i) How does one explain the emission of electrons from a photosensitive surface with the help of Einstein's photoelectric equation ?
- (ii) The work function of the following metals is given : Na = 2.75 eV, K = 2.3 eV, Mo = 4.17 eV and Ni = 5.15 eV. Which of these metals will not cause photoelectric emission for radiation of wavelength 3300 \AA from a laser source placed 1 m away from these metals ? What happens if the laser source is brought nearer and placed 50 cm away ? 3
15. A resistance of R draws current from a potentiometer. The potentiometer wire, AB, has a total resistance of R_0 . A voltage V is supplied to the potentiometer. Derive an expression for the voltage across R when the sliding contact is in the middle of potentiometer wire. 3

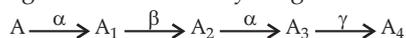


16. Define the term 'amplitude modulation'. Explain any two factors which justify the need for modulating a low frequency base-band signal. 3

17. (i) Find equivalent capacitance between A and B in the combination given below. Each capacitor is of $2 \mu\text{F}$ capacitance.



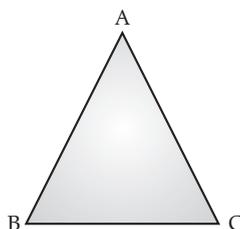
- (ii) If a dc source of 7 V is connected across AB, how much charge is drawn from the source and what is energy stored in the network? 3
18. (i) Derive the expression for electric field at a point on the equatorial line of an electric dipole. 3
- (ii) Depict the orientation of the dipole in (i) stable, (ii) unstable equilibrium in a uniform electric field. 3
19. (i) A radioactive nucleus 'A' undergoes a series of decays as given below :



The mass number and atomic number of A_2 are 176 and 71 respectively.

Determine the mass and atomic numbers of A_4 and A.

- (ii) Write the basic nuclear processes underlying β^+ and β^- decays. 3
20. (i) A ray of light incident on face AB of an equilateral glass prism, shows minimum deviation of 30° . Calculate the speed of light through the prism.



- (ii) Find the angle of incidence at face AB so that the emergent ray grazes along the face AC. 3
21. For a CE-transistor amplifier, the audio signal voltage across the collector resistance of $2 \text{ k}\Omega$ is 2V. Given the current amplification factor of the transistor is 100, find the input signal voltage and base current, if the base resistance is $1 \text{ k}\Omega$.
22. Describe the working principle of a moving coil galvanometer. Why is it necessary to use (i) a radial magnetic field and (ii) a cylindrical soft iron core in a galvanometer?

Write the expression for current sensitivity of the galvanometer.

Can a galvanometer as such be used for measuring the current? Explain. 3

OR

- (a) Define the term 'self-inductance' and write its S.I. unit.
- (b) Obtain the expression for the mutual inductance of two long co-axial solenoids S_1 and S_2 wound one over the other, each of length L and radii r_1 and r_2 and n_1 and n_2 number of turns per unit length, when a current I is set up in the outer solenoid S_2 . 3

SECTION - D

23. Mrs. Rashmi Singh broke her reading glasses. When she went to the shopkeeper to order new specs, he suggested that she should get spectacles with plastic lenses instead of glass lenses. On getting the new spectacles, she found that the new ones were thicker than the earlier ones. She asked this question to the shopkeeper but he could not offer satisfactory explanation for this. At home, Mrs. Singh raised the same question to her daughter Anuja who explained why plastic lenses were thicker.
- (a) Write two qualities displayed each by Anuja and her mother.
- (b) How do you explain this fact using lens maker's formula? 4

SECTION - E

24. (a) Draw a labelled diagram of AC generator. Derive the expression for the instantaneous value of the emf induced in the coil.
- (b) A circular coil of cross-sectional area 200 cm^2 and 20 turns is rotated about the vertical diameter with angular speed of 50 rad s^{-1} in a uniform magnetic field of magnitude $3.0 \times 10^{-2} \text{ T}$. Calculate the maximum value of the current in the coil.

OR

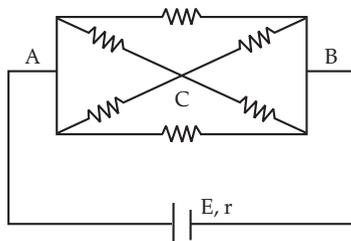
- (a) Draw a labelled diagram of a step-up transformer. Obtain the ratio of secondary to primary voltage in terms of number of turns and currents in the two coils.
- (b) A power transmission line feeds input power at 2200 V to a step-down transformer with its primary windings having 3000 turns. Find the number of turns in the secondary to get the power output at 220 V. 5
25. (a) Distinguish between unpolarized light and linearly polarized light. How does one get linearly polarised light with the help of a polaroid ?
- (b) A narrow beam of unpolarised light of intensity I_0 is incident on a polaroid P_1 . The light transmitted by it is then incident on a second polaroid P_2 with its pass axis making angle of 60° relative to the pass axis of P_1 . Find the intensity of the light transmitted by P_2 .

OR

- (a) Explain two features to distinguish between the interference pattern in Young's double slit experiment with the diffraction pattern obtained due to a single slit.
- (b) A monochromatic light of wavelength 500 nm is incident normally on a single slit of width 0.2 mm to produce a diffraction pattern. Find the angular width of the central maximum obtained on the screen. Estimate the number of fringes obtained in Young's double slit experiment with angular fringe width 0.5, which can be accommodated within the region of total angular spread of the central maximum due to single slit. 5
26. (i) Derive an expression for drift velocity of electrons in a conductor. Hence deduce Ohm's law.
- (ii) A wire whose cross-sectional area is increasing linearly from its one end to the other, is connected across a battery of V volts. Which of the following quantities remain constant in the wire ?
- (a) drift speed (b) current density
 (c) electric current (d) electric field
- Justify your answer.

OR

- (i) State the two Kirchoff's laws. Explain briefly how these rules are justified.
- (ii) The current is drawn from a cell of emf E and internal resistance r connected to the network of resistors each of resistance r as shown in the figure. Obtain the expression of (i) the current drawn from the cell and (ii) the power consumed in the network. 5



Delhi Set II

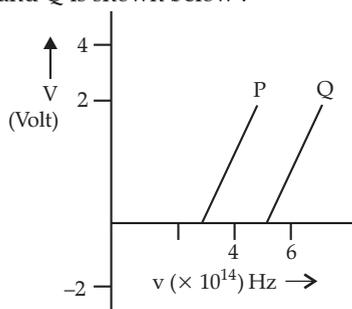
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SECTION - B

6. Find the wavelength of the electron orbiting in the first excited state in hydrogen atom. 2
7. Distinguish between a transducer and a repeater. 2
10. Why should the objective of a telescope have large focal length and large aperture ? Justify your answer. 2

SECTION - C

12. In the study of a photoelectric effect the graph between the stopping potential V and frequency ν of the incident radiation on two different metals P and Q is shown below : 3



- (i) Which one of the two metals has higher threshold frequency ?
 (ii) Determine the work function of the metal which has greater value.
 (iii) Find the maximum kinetic energy of electron emitted by light of frequency 8×10^{14} Hz for this metal.
13. A 12 pF capacitor is connected to a 50 V battery. How much electrostatic energy is stored in the capacitor ? If another capacitor of 6 pF is connected in series with it with the same battery connected across the combination, find the charge stored and potential difference across each capacitor 3
18. A zener diode is fabricated by heavily doping both p- and n- sides of the junction. Explain, why ? Briefly explain the use of zener diode as a dc voltage regulator with the help of a circuit diagram. 3
21. A electron of mass m_e revolves around a nucleus of charge $+Ze$. Show that it behaves like a tiny magnetic dipole. Hence prove that the magnetic moment associated with it is expressed as $\vec{M}_a = -\frac{e\vec{L}}{2m_e}$, where \vec{L} is the orbital angular momentum of the electron. Give the significance of negative sign. 3
22. (i) Derive the expression for the electric potential due to an electric dipole at a point on its axial line. (ii) Depict the equipotential surfaces due to an electric dipole. 3

Delhi Set III

Code No. 55/1/3

SECTION - B

7. When are two objects just resolved ? Explain. How can the resolving power of a compound microscope be increased ? Use relevant formula to support your answer. 2
8. (i) What is the line of sight communication ?
 (ii) Why is it not possible to use sky waves for transmission of TV signals ? Upto what distance can a signal be transmitted using an antenna of height 'h' ? 2
9. An α -particle and a proton are accelerated through the same potential difference. Find the ratio of their de Broglie's wavelengths. 2

SECTION - C

14. (i) State two important features of Einstein's photoelectric equation.
 (ii) Radiation of frequency 10^{15} Hz is incident on two photosensitive surfaces P and Q. There is no photoemission from surface P. Photoemission occurs from surface Q but photoelectrons have zero kinetic energy. Explain these observations and find the value of work function for surface. 3
16. (i) Obtain the expression for the torque $\vec{\tau}$ experienced by an electric dipole of dipole moment \vec{p} in a uniform electric field, \vec{E} . 3
 (ii) What will happen if the field were not uniform ? 3
17. Explain briefly with the help of necessary diagrams, the forward and the reverse biasing of a p-n junction diode. Also draw their characteristic curves in the two cases. 3
20. Two identical capacitors of 12 pF each are connected in series across a battery of 50 V. How much electrostatic energy is stored in the combination ? If these were connected in parallel across the same battery, how much energy will be stored in the combination now ? Also find the charge drawn from the battery in each case. 3
21. (a) Write the expression for the force \vec{F} acting on a particle of mass m and charge q moving with velocity \vec{v} in a magnetic field \vec{B} . Under what conditions will it move in (i) a circular path and (ii) a helical path ?
 (b) Show that the kinetic energy of the particle moving in magnetic field remains constant. 3

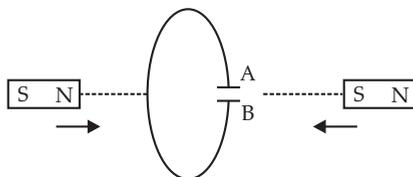


Outside Delhi Set I

Code No. 55/1

SECTION - A

- Nichrome and copper wires of same length and same radius are connected in series. Current I is passed through them. Which wire gets heated up more ? Justify your answer. 1
- Do electromagnetic waves carry energy and momentum ? 1
- How does the angle of minimum deviation of a glass prism vary, if the incident violet light is replaced by red light ? Give reason. 1
- Name the phenomenon which shows the quantum nature of electromagnetic radiation. 1
- Predict the polarity of the capacitor in the situation described below : 1



SECTION - B

- Draw the intensity pattern for single slit diffraction and double slit interference. Hence, state two differences between interference and diffraction patterns. 2

OR

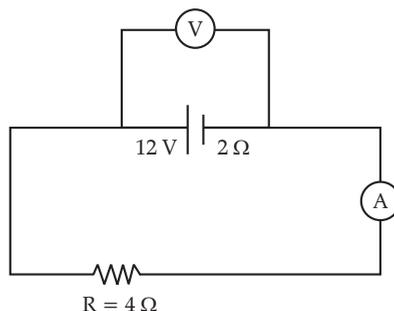
Unpolarised light is passed through a polaroid P_1 . When this polarised beam passes through another polaroid P_2 and if the pass axis of P_2 makes angle θ with the pass axis of P_1 , then write the expression for the polarised beam passing through P_2 . Draw a plot showing the variation of intensity when θ varies from 0 to 2π . 2

- Identify the electromagnetic waves whose wavelengths vary as : 2
 - $10^{-12} \text{ m} < \lambda < 10^{-8} \text{ m}$
 - $10^{-3} \text{ m} < \lambda < 10^{-1} \text{ m}$

Write one use of each.
- Find the condition under which the charged particles moving with different speeds in the presence of electric and magnetic field vectors can be used to select charged particles of a particular speed. 2
- A 12.5 eV electron beam is used to excite a gaseous hydrogen atom at room temperature. Determine the wavelengths and the corresponding series of the lines emitted. 2
- Write two properties of a material suitable for making (a) a permanent magnet, and (b) an electromagnet. 2

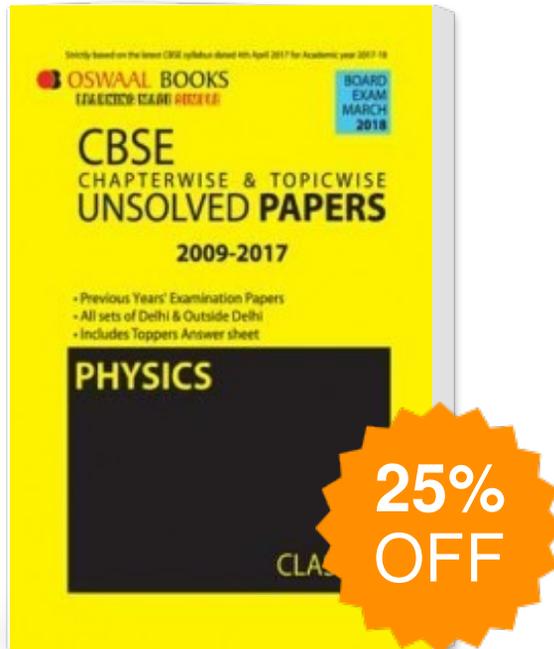
SECTION - C

- The potential difference applied across a given resistor is altered so that the heat produced per second increases by a factor of 9. By what factor does the applied potential difference change ? 3
 - In the figure shown, an ammeter A and a resistor of 4Ω are connected to the terminals of the source. The emf of the source is 12 V having an internal resistance of 2Ω . Calculate the voltmeter and ammeter readings. 3



- How is amplitude modulation achieved ?
 - The frequencies of two side bands in an AM wave are 640 kHz and 660 kHz respectively. Find the frequencies of carrier and modulating signal. What is the bandwidth required for amplitude modulation? 3

Oswaal Unsolved Paper Question Bank Class 12 Physics (March 2018 Exam)



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