LESSON PLAN CLASS 12 MONTH-MARCH TERM --1

CHAPTER 1- ELECTROSTATICS

LEARNING OBJECTIVES

The students will understand about the following

.Properties of charge ,different methods of charging, Electric force , Electric Field and Electric field lines ,Electric Dipole and its field

.Electrostatic Potential and Potential energy of charge system, Equipotential surfaces and its properties

.Capacitors

PREVIOUS KNOWLEDGE TESTING

.Students will be shown an activity on process of charging ie by rubbing plastic scale against the hair in head ,it attracts bits of paper and questions will be asked after that in online class only.

.some videos will be shown from shiksha app and diksha app also on topics related to electric force, electric field lines

KEYWORDS

.Field lines, Potential, Equipotential surfaces ,Electric dipole, capacitance

PEDAGOGY/INNOVATIVE METHODS/AIDS

.In online classes students will be taught through ZOOM APP and DIKSHA APP notes and videos will be shared.

.Topic wise study material will be sent to students in class groups through WHATSAPP medium.

.Help from other online resources as SHIKSHA HOUSE videos will be taken to teach the particular topics like electric field lines capacitors

LEARNING OUTCOMES

.The Student will be able to

.classify between different methods of charging a body

.understand the electric field and electric potential on basis of coulombs law

.draw well labelled diagrams of

- Electric field lines
- Equipotential surfaces
- Circuit diagrams containing capacitors in series and parallel combination

.calculate using the data given such as values of net capacitance, net electric force , field, potential and potential energy

.Apply the scientific concept in daily life

RESOURCES

NCERT BOOKS

DIKSHA APP

SHIKSHA HOUSE APP

YOU TUBE CLASSES OF KHAN ACADEMY

ASSIGNMENTS

It will be given to students through zoom app and whatsapp

REVISION ASSIGNMENT
PHYSICS (CLASS XII)
UNIT 1-ELECTROSTATICS

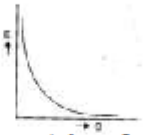
1. **An electrostatic field line is a continuous curve. That is, a field line cannot have sudden breaks. Why not?**

2. **Describe schematically equipotential surfaces corresponding to**
   - **(a) A constant electric field in z- direction.**
   - **(b) A field that uniformly increases in magnitude but remains in a constant (say z-) direction.**
   - **(c) A single positive charge at the origin.**

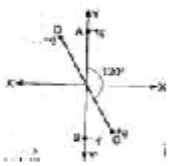
3. **Vehicles carrying inflammable materials usually have metallic ropes touching the ground during motion. Why?**

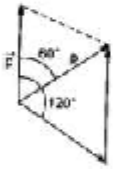
4. **A bird perches on a bare high power line and nothing happens to the bird. A man standing on the ground touches the same line and gets a fatal shock. Why?**

5. **The graph shown here shows the variation of total energy (E) stored in a capacitor against the value of the capacitance (C) itself. Which of the two: the charge on capacitor or the potential used to charge it is kept constant for this graph?**



6. **Two small identical electrical dipoles AB and CD, each of dipole moment 'p' are kept at an angle of 120° as shown in the figure. What is the resultant dipole moment of this combination? If this system is subjected to electric field $(\vec{E})$ directed along + X direction, what will be the magnitude and direction of the torque acting on this?**

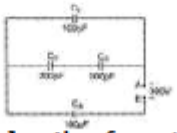


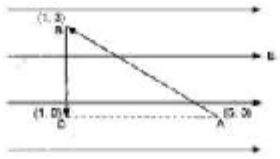


7. **A charge 8 mC is located at the origin. Calculate the work done in taking a small charge of -2 x 10^{-9} C from a point A (0, 0, 3 cm) to a point B (0, 4 cm, 0) via point C (0, 6 cm, 9 cm).**

8. **An electrical technician requires a capacitance of 2 µF in a circuit across a potential difference of 1 kV. A large number of 1 µF capacitors are available to him, each of which can withstand a potential difference of not more than400 V. Suggest an arrangement that requires a minimum number of capacitors.**

9. **(a)Obtain the equivalent capacitance of the following network of capacitors.**
   (b)For a 300 V supply, determine the charge and voltage across each capacitor.



10. 

A test charge 'q' is moved without acceleration from A to C along the path from A to B and then from B to C in electric field E as shown in the figure. (i) Calculate the potential difference between A and C. (ii) At which point (of the two) is the electric potential more and why?

ASSESSMENTS

SELF assessment tests will taken through zoom app and google form

Link will be sent through ZOOM APP

LESSON PLAN 2020 PLUS 2

CURRENT ELECTRICITY

1. **OBJECTIVES** :-a) To explain current, cause of electric current , drift velocity, relation with current , Ohms law,resistance , factors affecting, resistivity, concept of cell, emf.

   b) To study Kirchoffs laws,examples, Wheat Stone Bridge,Slide wire bridge and potentiometer alongwith applications.

2. **P.K. TESTING:-** Students will be asked about electric charge and current, about their SI units .How electric current can be measured.Various sources for electric current.
3. **VOCABULARY:-** Drift velocity,EMF,Current Density,Mobility,Resistivity,Meter Bridge,Potentiometer.
4. **IMPORTANT SPELLINGS:-** Kirchoffs,Potentiometer,Wheat Stone,E.M.F,Sensitivity.
5. **EXPLANATION:-** Students will be explained drift velocity and its relation with current as follows

$$\vec{v_d} = \vec{a}\tau$$

$$\vec{a} = -\frac{eE}{m}$$

$$\vec{v_d} = -\frac{e\vec{E}\tau}{m} \qquad (Drift\ Velocity)$$

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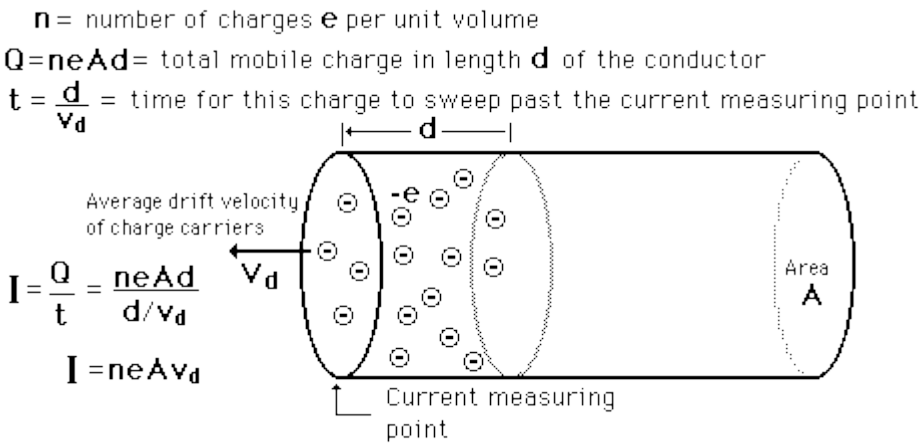
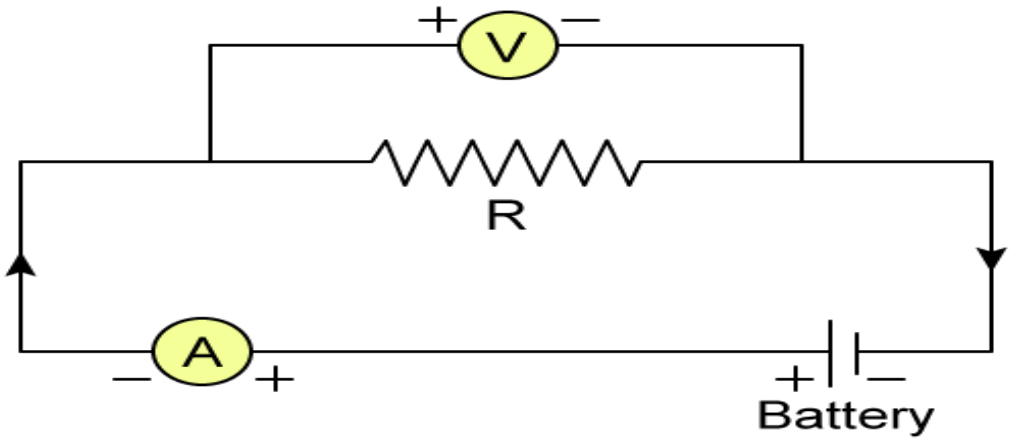
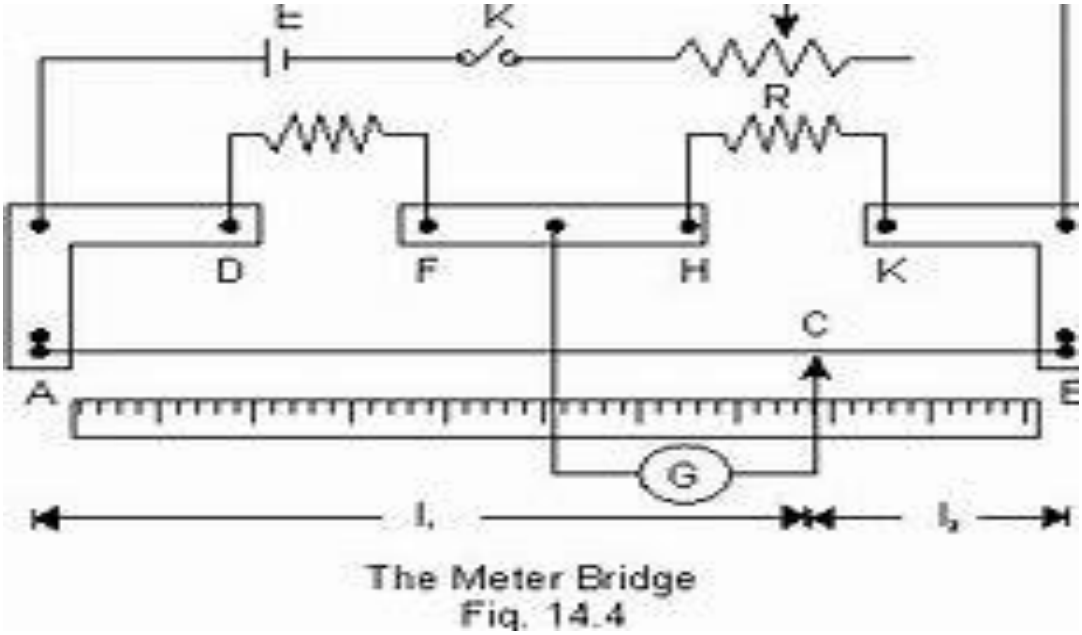


Ohms law will be explained using following circuit and link

https://www.bing.com/videos/search?q=ohm%27s+law+youtube&&view=detail&mid=62671359ADE9926018BA62671359ADE9926018BA&&FORM=VRDGAR&ru=%2Fvideos%2Fsearch%3Fq%3Dohm%2527s%2Blaw%2Byoutube%26FORM%3DHDRSC3

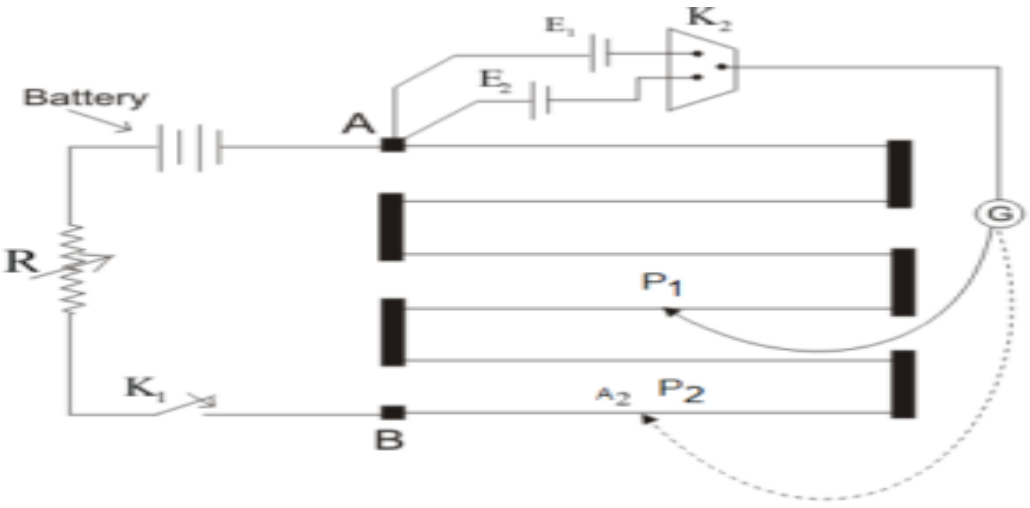


Similarily Metre bridge and Potentiometer circuits and applications will be explained https://www.bing.com/images/search?q=metre%20bridge%20circuit%20diagram&qs=n&form=QBIR&sp=-1&pq=metre%20bridge%20circuit%20diagram&sc=0-28&cvid=0553FAA3AFED45A581B194A55AD30634&first=1&scenario=ImageBasicHover



The Meter Bridge
Fig. 14.4

https://www.bing.com/images/search?view=detailV2&ccid=cpMt7dJ%2b&id=7AD854E3815AE6CA6560525201224227514E58E56&thid=OIP.cpMt7dJ-CAOzoF-Laz8BpQAAAA&mediaurl=https%3a%2f%2fthefactfactor.com%2fwp-content%2fuploads%2f2020%2f01%2fPotentiometer-05.png&exph=250&expw=300&q=Potentiometre++circuit+diagram&simid=608020734547919015&ck=2DFA35130BD2F8A546D1ECFCADE396FD&selectedIndex=10&FORM=IRPRST&ajaxhist=0



6. **PROCEDURE AND CHALLENGES:--** Using above circuit diagrams and links students will be explained each and every theoretical and experimental concepts.We will use lab simulation also to explain experimental setup and how to measure different parameters involved.

http://www.olabs.edu.in/

Students may face problem regarding understanding of connections in the circuit but it can be corrected using above simulators

7. **STUDENTS PARTICIPATION:-** Students will be involved in solving numericals and verifying the results using simulators.

8. **RECAPITULATION/ ASSIGNMENTS:--** Students will be asked about various terms involved like Mobility, Kirchoffs laws and principles of electric devices used. Assignments will be given and they can be assessed using following link learncbse.in.
9. **ART INTEGRATION WITH OTHER DOMAIN:--** Students will be asked to draw various circuit diagrams, neatly so as to differenciate between different devices .
10. **LEARNING OUTCOMES:-** a) Students will learn the difference between mobility and drift velocity.
    b) They will know the difference between EMF and potential difference.
    c) Students will be able to solve complex circuits by simplifying them.
    d) They will be able to differentiate between series and parallel circuits.

11. **RESOURCES:-**

    Students will be taught through ZOOM App.
    Concepts will be made clear using SHIKSHA HOUSE And DIKSHA App.
    Various online sources will be used.

12. **ASSESSMENT:-- Through google form**

LESSON PLAN OF PHYSICS

ELECTROMAGNETIC INDUCTION AND AC CLASS—12 PHYSICS MONTH—JULY

LEARNING OBJECTIVES

.Students will learn about the following—

*Faradays laws of electromagnetic induction

*Process of inducing emf 1.by changing magnetic field

2.by changing area

3.by changing orientation

*Self induction ,Mutual induction

*Transformer,alternating current generator

*Behaviour of electrical components like resistor, capacitor, and inductor separately as well as when they are connected in series towards alternating current

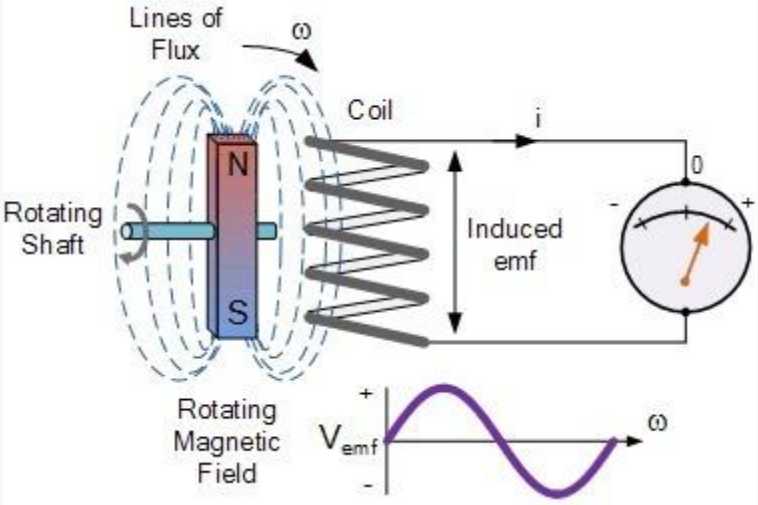
*Q-Factor,power,power factor

PREVIOUS KNOWLEDGE TESTING

SOME QUESTIONS WILL BE ASKED BY SHOWING THE ACTIVITY THROUGH ONLINE CLASS

When a conductor moves through a magnetic field, a voltage is produced across the conductor this is called electromagnetic induction. This produced voltage causes a current to flow through the conductor which is called Inducted current. Electromagnetic induction can be achieved by varying the magnetic flux associated with the conductor.

Induction is in use in many forms and applications, from computer chips to doorbells. The inducted magnetic field is used to close circuits such as such as with relays and it is also used for timing. The length of time that a given electromagnetic field takes to rise and fall in strength is easily predicted, making it a very common timing tool in a wide range of electronic components. Electromagnetic induction is produced either by moving a magnet through a coil of wire on a substrate or by moving coils of wire passed stationary magnets. The latter design is much more practical and more common, as conductors are typically easier to manipulate and easier to move than are powerful, heavy magnets.



KEYWORDS

*induction, self and mutual induction, induce emf, orientation ,alternating current

PEDAGOGY/INNOVATIVEMETHODS/AIDS

*Teaching is done through ZOOM APP

*The modules of all the topics will be shown from DIKSHA APP

*Groups will be made in class to discuss and conduct quiz during online class

INTEGRATION WITH ART

*students will draw the diagrams of coils and circuits using different electrical circuits

*Students will be asked to make an electromagnet with the help of things like Nail, cells and wire and this will be first demonstrated by teacher and then students will show it through online class from their homes only

LEARNING OUTCOMES

The student will be able to

*differentiate between methods of inducing emf

*classify the types on induction

*understands the working of ac generator and transformer

*draw diagrams of circuits

*use it in daily life like understanding the capacitor, inductor, resistor in circuits of tv ,mobile etc

ASSIGNMENTS/ASSESSMENTS

Through online ZOOM APP

LONG ANSWER TYPE QUESTIONS OF ELECTROMAGNETIC INDUCTION AND ALTERNATING CURRENT

Q1. Explain with the help of a labelled diagram, the principle and working of an ac generator. Write the expression for the emf generated in the coil in terms of speed and rotation. Can the current produced by an ac generator be measured with a moving coil galvanometer ?
OR

Describe briefly , with the help of a labelled diagram, the basic elements of an ac generator. State its underlying principle. Show diagrammatically how an alternating emf is generated by a loop of wire rotating in a magnetic field. Write the expression for the instantaneous value of the emf induced in the rotating loop.

OR

State the working of ac generator with the help of a labelled diagram . the coil of an ac generator having N turns, each of area A, is rotated with a constant angular velocity ω. Deduce the expression for the alternating emf generated in the coil. What is the source of energy generation in this device?

Q2. derive an expression for impedance of an a.c. circuit consisting of an inductor and a resistor.
Q3. (a)State the condition for resonance to occur in series LCR a.c. circuit and derive an expression for resonant frequency.
(b) Draw a plot showing the variation of the peak current (i_m)with frequency of the a.c. source used. Define the quality factor Q of the circuit.
Q4. Define the term capacitive reactance. Show graphically the variation of capacitive reactance with frequency of applied alternating voltage.
An ac voltage $V=V_0 \sin \omega t$ is applied across a pure capacitor of capacitance C. Find an expression for current flowing through it. Show mathematically the current flowing through it leads the applied voltage by angle $\pi/2$.
Q5. Explain the term inductive reactance. Show graphically the variation of inductive reactance with frequency of the applied alternating voltage.
An ac voltage $V=V_0 \sin \omega t$ is applied across a pure inductor of inductance L. Find an expression for current i, flowing in the circuit . Show mathematically the current flowing through it lags behind the applied voltage by phase angle $\pi/2$. Also draw (i) phasor diagram (ii) graphs of V an I versus ωt for the circuit.
Q6. Derive an expression for (i)induced current when a conductor of length *l* is moved with a uniform velocity v. normal to a uniform magnetic field B. Assume the resistance of conductor to be R.

Q7. (a)What is induced emf ? write Faraday's law of electromagnetic induction. Express it Mathematically.
(b) A conducting rod of length *l* with one end pivoted, is rotated with a uniform angular speed ω in a vertical plane, normal to a uniform magnetic field B. deduce an expression for the emf induced in this rod.
If resistance of rod is R, what is the current induced in it.

Q8. A coil of number of turns N, Area A is rotated at a constant angular speed ω in a uniform magnetic field B and conducted to a resistor R. Deduce the expression for
(i)Maximum emf induced in the coil.

(ii) Power dissipation in the coil .

Q9. (a)Describe briefly, with the help of a labeled diagram, the working of a step up transformer.
(b) Write any two source of energy loss in a transformer.

(c) A set up Transformer converts a low voltage into high voltage. Does it not violate the principle of conservation of energy? Explain.

OR

Draw a schematic Diagram of a set up transformer. Explain its working principle . Deduce the expression for the secondary to primary voltage in turms of number of turns in the two coils. In an ideal transformer, how is this ratio related to the current in the two coils?

How is the transformer used in large scale transmission and distribution of electrical energy over long distances?

Q10. An ac source of voltage $V=V_m \sin \omega t$ is connected one by one, to three circuit elements X,Y and Z. It is observed that the current flowing in them.
(a) is in the phase with applied voltage for element X.

(b) lags the applied voltage, in phase, by angle $\pi/2$ for element Y.

(c) leads the applied voltage in phase by angle $\pi/2$.

Identify the three circuit elements.

Find an expression for for the current flowing in the circuit, when the same ac source is connected across a series combination of the elements X,Y and Z.

If the frequency of the applied voltage is varied, set up the condition of the frequency when the current amplitude in the circuit is maximum. Write expression for this current amplitude.

Q11. (a)What is impedance?
(b) A series LCR circuit is connected to an ac source having voltage $V=V_0 \sin \omega t$. Derive an expression for the impedance, instantaneous current and its phase relationship to the applied voltage. Find the expression for the resonant frequency
OR

(a) ac source having voltage $V=V_0 \sin \omega t$ is connected to a series combination of L, C and R. Use the phasor diagram to obtain expression for impedance of the circuit and phase angle between voltage and current. Find the condition when the current will be in phase with the voltage. What is the circuit in this condition called?
(b)In a series LR circuit $X_L = R$ and power factor of the circuit is P_1. When capacitor with capacitance C such that $X_L=X_C$ is put in series, the power factor becomes P_2 calculate P_1/P_2 .
Q12. Derive Expression for self inductance of a long air- cored solenoid of length *l*, cross- sectional area A and having number of turns N.
Q13. What do mean by mutual inductance of two nearby coils ? Find an expression for mutual inductance of two co-axial solenoid.
OR

LINKS AND RESOURCES

NCERT BOOK

DIKSHA APP MODULES

KHAN CLASSES MODULES

TERM ---2

LESSON PLAN OF PHYSICS CLASS 12 MONTH--AUGUST OPTICS

Subtopic:➢ Ray optics

- ➢ Reflection
- ➢ refraction
- ➢ dispersion.

Learning objectives:

students will learn about the following:

- image formation by lens and mirrors with experiment image formation by prism including experiment lens maker's formula, prism formula , formula for refraction through convex and concave surface simple microscope, compound microscope and telescope.

Previous knowledge testing:

to recall definition of reflection, refraction of light refraction through glass slab and prism image formation by mirror and lenses related questions will be asked.

Keywords:

Snell's law, refractive index, power of lenses, dispersion, minimum deviation magnifying powers.

Activity/innovative methods:

- activity based on image formation by mirror and lenses using lighter candle and screen.
- Students will be shown dispersion through prism
- activity of glass slab showing lateral displacement

result:

students will understand difference between real inverted and virtual images and will understand difference between small sizes and large size images they will learn formation of rainbow. All the above activities will be shown to students through ZOOM APP.

Assessment:

Class test will be conducted.

learning outcomes:

students will get the knowledge of:

- reflection by spherical mirrors.
- Reflection by spherical lenses
- Atmospheric refraction
- Glass prism and dispersion through glass prism

Link and resources:
- Modules of extramarks
- Smart classes
- NCERT text book
- Concept of physics by H.cverma.

Class 12th

topic: optics

subtopic: wave optics

Learning objectives:

students will understand the following

- Light is an electromagnet wave.
- Huygens's principles and its uses to explain reflection and refraction of light.
- Interferences, diffraction and polarisation of light.

previous knowledge testing:

the students will be asked about the reflection and refraction phenomena which they have already done in their junior classes.

keywords and vocabulary:wave fronts, interferences, diffraction and polarisation.

Aids/ innovative methods:

to explain the phenomena of diffraction interferences and polarisation some lab activities will be shown to students during online teaching through ZOOM APP like the diffraction of light can be performed in lab easily with the help of:

- two pencils
- a piece of transparent tape with erasers.
- a lighter or a candle with matches.

Procedure:

we will hold two pencils, side by side with erasers at the top the tape wrapped around 1 pencil should keep the pencils slightly apart we will hold both the pencils close to one eye and look at light source through it.

Watching the light through the slide and rotating it we will observe blocks of light grew large and spread Apart.

Participation of students:

students will observe the activity and will write the resul and in the last discussion will be done by making groups in online classes

Learning outcomes:

By the end of unit students will be able to differentiate between interference and diffraction& can easily judge the methods of polarisation.

Link and sources:

- NCERT textbook for class 12

- Concept of Physics by HC Verma

Zoom APP,DIKSHA APP

CLASS 12TH

TOPIC: MODERN PHYSICS

MONTH --SEPTEMBER AND OCTOBER

Subtopics:

- dual nature of matter and radiation
- atoms and
- nuclei

Learning objectives:

students will understand about the following:

- Photoelectric effect with experiment Einstein Photoelectric equation
- photocell de Brogliewave length
- Davisson German experiment
- Thomson's model of an atom Ruther ford'sexperiment.
- bohr's theory
- radioactivity and type of radiations

- nuclear forces and its properties binding energyand binding energy

curve,half-life and decay constant, nuclear reactions.

Previous knowledge testing:to recall the different type of electron emission, basic atomic model and radiation

from radioactive nuclei the students will be or some questions.

Keywords:

Photoelectric effect, radioactive emission nuclear fission fusion, Mass defect,

Bindingenergy, atomic models given by Thomson, bohr, rutherford.

Activities innovative method procedure:

- activity based on Photoelectric effect with the help of static model to

represent the complete process of Photoelectric effect.

- Students will be shown model of an atomic and different theories will be

discussed.

- Result the students will be understood the photoelectric effect and

structure of atom.

- Binding energy curve will be explained to students and the importance of

binding energy curve will be discussed.

- Conceptual andproblems will be done from NCERT book. With the help of DIKSHA APP.

Assessment:

class test will be conducted Through google form and school futuristic app

Learning outcome:

- students will b get to know about Photoelectric effect.
- Bohr's and Rutherford theory of atomic model
- nuclear reaction
- half-life decay constant average life of a radioactive substance.

Link and resources:

- module of extra marks smart classes
- Https.//www.topperlearning.com
- NCERT textbook

DIKSHA APP AND SHIKSHA MODULE

ASSIGNMENTS

IMPORTANT QUESTIONS FOR PRACTICE

1. The work function of the following metal is given Na = 2.75 eV, K = 2.3 eV, Mo = 4.14 eV, Ni = 5.15 eV which of these metal will not give a photoelectric emission for radiation of wave length 3300 AO from a laser
source placed at 1m away from the metal. What happens if the laser is brought nearer and placed 50 cm away.
2. Why photo-electrons ejected from a metal surface have different kinetic energies although the frequency of incident photons are same?
3. Define distance of the closest approach. An alpha-particle of kinetic energy 'K' is bombarded on a thin gold foil. The distance of the closet approach is 'r'. What will be the distance of closest approach for an alpha-particle of double the kinetic energy?
4. If the total number of neutrons and protons in a nuclear reaction is conserved how then is the energy absorbed or evolved in the reaction?
5. Particle of mass M at rest decays into two particles of masses m1 and m2 having velocities V1 and V2 respectively. Find the ratio of de-Broglie Wavelengths of the two particles.

Questions From Board Papers

1. What is the stopping potential applied to a photocell, in which electrons with a maximum kinetic energy of 5.6 eV are emitted.
2. If the amount of a radioactive substance is increased four times then how many times will the number of atoms disintegrating per unit time be increased?
3. Why does only a slow neutron (.03eV energy) cause the fission in the uranium nucleus and not the fast one?
4. In Bohr's atomic model, the potential energy is negative and has a magnitude greater than the kinetic energy, what does this imply?
5. The half life of a radioactive element A is same as the mean life time of another radioactive element B. Initially, both have same number of atoms. B decay faster than A. Why?

Important Questions On 12th Physics Chapter 11

In an experiment on photoelectric effect, the slope of the cut-off voltage versus frequency of incident light is found to be 4.12 × 10^-15 V s. Calculate the value of Planck's constant.

The slope of the cut-off voltage (V) versus frequency (v) of an incident light is given as: V/v=4.12× 〖10〗 ^(-15) Vs

V is related to frequency by the equation

hv = eV

Where, e = Charge on an electron = 1.6 × 10^-19 C and

h = Planck's constant

Therefore,

h = e×V/v

= 1.6× 〖10〗 ^(-19) × 4.12 × 〖10〗 ^(-15)

= 6.592 × 〖10〗 ^(-34) Js

Hence, the value of Plank's constant is 6.592× 〖10〗 ^(-34) Js.

Show that the wavelength of electromagnetic radiation is equal to the de Broglie wavelength of its quantum (photon).

Quarks inside protons and neutrons are thought to carry fractional charges [(+2/3)e ; (-1/3)e]. Why do they not show up in Millikan's oil-drop experiment?

Why should gases be insulators at ordinary pressures and start conducting at very low pressures?

Every metal has a definite work function. Why do all photoelectrons not come out with the same energy if incident radiation is monochromatic? Why is there an energy distribution of photoelectrons?

Topic: solids and Semiconductor devices

learning objectives:

students will understand about the following:

Energy bands, classification of solids on basis of energy bands intrinsic and extrinsic semiconductor (p and n type of semiconductor).P.n junction diode, junction transistor type of junction diodes like solar cells, photodiode, LED and zener diode working of a rectifier

Previous knowledge testing:

students will be asked about the semiconductor basics and solar cells.

Keywords:

semiconductors, intrinsic and extrinsic semiconductor, holes majority and minority charge Carriers junction diodes and junction transistor.

Procedure:

students will be explained about:

- the formation of energy bands and to classify solids on basis of it
- they will be told about the methods of increasing conductivity of intrinsic semiconductor and how two extrinsic semiconductors will be formed.
- Formation of PN junction diodes it's forward and reverse biasing then the experiment on forward and reverse biasing will be performed in lab.
- Working of diodes as rectifier and its application will be explained on the basis of their nature towards forward and reverse biasing.
- Type of junction diode will be explained and their uses will also be explained

VIRTUAL LAB ACTIVITIES

- to study the forward and reverse biasing of PN junction diodes and draw their characteristic curves.
- To study zener diode and draw its characteristic curve.

THE ABOVE EXPERIMENTS WILL BE SHOWN TO STUDENTS IN ONLINE CLASS THROUGH ZOOM APP

participation of students:

students will perform the lab activity in the Physics laboratory and they'll note down all observations.

Assessment:

a class test will be conducted through google form and school futuristic app

Learning outcome:

students will get to know about:

- semiconductor and their types
- Semiconductor devices like PN junction diode

Students will be able to classify the different types of junction diodes

Students will be able to understand the actual working of voltage stabiliser

links and sources:

- modulus through shiksha app and modules made by teacher
- NCERT textbook
- Concept of Physics by HC

ASSIGNMENTS IMPORTANT QUESTIONS FOR PRACTICE

1. What is the function of base region of a transistor? Why is this region made thin and lightly doped? Draw a circuit diagram to study the input and output characteristics of n-p-n transistor in a common emitter configuration. Show these characteristics graphically.
2. In an n-p-n transistor circuit, the collector current is 10mA. If 90% of the electrons emitted reach the collector, find the base current and emitter current.
3. A p-n junction is fabricated from a semiconductor with a band gap of 2.8 eV. Can it detect a wavelength of 600 nm? Justify your answer.
4. A carrier wave of peak voltage 12v is used to transmit a message signal. What should be the peak voltage of the modulating signal in order to have a modulation index of 75%?
5. If the current gain of a CE – Amplifier is 98 and collector current Ic = 4 mA, determine the base current.

Questions From Board Papers

1. Semiconductors do not support strong current i.e., a semiconductor is damaged when strong current passes through it. Why?
2. Name the semiconductor device that can be used to regulate an unregulated dc power supply.
3. A semiconductor device is connected in a series circuit with a battery and a resistance. A current is found to pass through the circuit. When polarity of the battery is reversed, the current drops to almost zero. Name the semiconductor device.
4. The output of a 2 input AND gate is fed as input to a NOT gate. Write the truth table for the final output of the combination. Name this new logic gate formed.
5. Which special type of diode can act as a voltage regulator? Give the symbol of this diode and draw the general shape of its V-I characteristics.

Important Questions On 12th Physics Chapter 14

In half-wave rectification, what is the output frequency if the input frequency is 50 Hz. What is the output frequency of a full-wave rectifier for the same input frequency?

Input frequency = 50 Hz

For a half-wave rectifier, the output frequency is equal to the input frequency.

Output frequency = 50 Hz

For a full-wave rectifier, the output frequency is twice the input frequency.

Output frequency = 2 × 50 = 100 Hz

Why are elemental dopants for Silicon or Germanium usually chosen from group XIII or group XV?

Sn, C, and Si, Ge are all group XIV elements. Yet, Sn is a conductor, C is an insulator while Si and Ge are semiconductors. Why?