DAV PUBLIC SCHOOL, KOTKAPURA

Where excellence is a tradition…

(Affiliated to C.B.S.E., New Delhi, Affiliation No. 1630101)

Happy Holidays

SUMMER BREAK ASSIGNMENT
Session: 2025-26

GRADE : XII-SCIENCE

"Holidays are not just for rest, but also a chance to grow, explore, and sharpen your skills beyond the classroom."

Use this time wisely to:

- ❖ *Strengthen academic understanding & discover new interests.*
- ❖ *Take care of your mental & physical health.*
- ❖ *Practice yoga, meditation, & a sport daily.*
- ❖ *Contribute meaningfully to family & society.*
- ❖ *Study early in the morning when your mind is fresh.*
- ❖ *Make a simple timetable with 4–5 hours of focused academic work daily.*
- ❖ *Ensure at least 7–8 hours of sleep.*
- ❖ *Eat healthy and stay hydrated.*
- ❖ *Limit screen time and avoid over use of social media.*
- ❖ *Help with household chores and learn basic life skills.*
- ❖ *Spend quality time with parents, grandparents & siblings.*
- ❖ *Volunteer in your community if possible (teach a child, clean a park/ surroundings).*
- ❖ *Try your hand at creative writing (poems, blogs, stories, journals).*
- ❖ *Explore photography, music, painting, DIY crafts or design.*
- ❖ *Watch inspiring documentaries or educational videos.*
- ❖ *USE A SEPARATE SINGLE NOTEBOOK FOR HOLIDAY HOMEWORK.*
- ❖ *Reflect weekly on what you learned and achieved.*
- ❖ *Set small goals & reward yourself when you meet them.*
- ❖ *REVISE SYLLABUS COVERED IN MONTH OF APRIL & MAY FOR UPCOMING PERIODIC-II EXAMINATION.*

"Don't count the days – make the days count."

ENGLISH

General Instructions:

Dear Students

- Attempt all the activities thoughtfully and present your work neatly. Pay attention to grammar, vocabulary, and coherence.
- Manage your time by breaking tasks into smaller goals and prioritizing them.
- Engage in discussions with peers/family about literature to gain new insights.
- Practice writing daily to improve your skills.
- Stay healthy by balancing study with breaks and physical activities.

Literature Section – Chapter & Poem Analysis

1. *The Last Lesson* – Alphonse Daudet

- Write character sketches of M. Hamel and Franz, focusing on how the political environment shapes their development.
- Analyze the theme of linguistic identity and nationalism.
- Reflect: *"If Franz had valued his language earlier, how might his future be different?"*

2. *Lost Spring* – Anees Jung

- Thematic response: How does the story explore poverty, lost childhood, and resilience?
- Comparative analysis: Contrast the lives of Saheb and Mukesh. Who has more potential to break the cycle of poverty? Justify.
- Literary Device Focus: Identify how anecdotes and symbolism enrich the narrative.

3. *The Rattrap* – Selma Lagerlöf

- Analyze the peddler's moral transformation and Edla's role in it.
- Reflect on the "world as a rattrap" metaphor. How is it still relevant in today's materialistic world?
- Create a dramatic scene: a dialogue between Edla and her father before inviting the peddler home.

4. *Poem: My Mother at Sixty-Six* – Kamala Das

- Write an analytical paragraph on the emotional undertone and the fear of separation.
- Identify and explain 5 poetic devices.
- Analyze the symbolism of aging through imagery like "ashen face" and "children spilling out of homes".

5. *Poem: Keeping Quiet* – Pablo Neruda

- Explore the philosophy of stillness and introspection in a fast-paced world.
- Debate Prompt: "Stillness is more powerful than action in solving global issues." Write for or against.
- Imagine Earth is speaking: Write a monologue calling for peace and self-awareness.

II. Writing Skills

1. Notice Writing

- Draft a notice for:
  - A seminar on *"Stress Management for Teenagers"*
  - An *Inter-School Debate Competition* on a contemporary issue
  - Black out in your city,invent the necessary details

2. Article Writing

- Cybersecurity
- *Importance of Environmental Awareness Among Youth*
- *Mental Health Awareness*

III. Speaking Skills (Submit Audio/Video or Present in Class)
Prepare and present a 2-minute speech on any one of the following:
- A moment where failure taught me the most
- The importance of kindness in today's divided world
- My favorite book and what it taught me

V. Reading Skills
- Read any 5 newspaper editorials/articles:
  - Summarize each in 100 words
  - Identify 5 new words per article with meanings and usage in a sentence

VI. Vocabulary Enrichment
Maintain a Vocabulary Journal with 20 new words:
- Word
- Part of Speech
- Meaning
- Sentence
- Synonyms/Antonyms

Make the most of your holidays by staying organized, practicing regularly, and enjoying the learning process! **Have fun with Knowledge**

PHYSICS

Chapter No.1 (Electric Charges and Field)

Q:1 Consider a sphere of radius R with charge density distributed as $\rho(R)=kr$ for $r \leq R$ =0 for r>R.

(a) Find the electric field at all points r.

(b) Suppose the total charge on the sphere is 2e, where e is the electron charge. Where can two protons be embedded such that the force on each of them is zero. Assume that the introduction of the proton does not alter the negative charge distribution.

Q:2 Two fixed, identical conducting plates (α and β), each of surface area S are charged to -Q and q, respectively, where $Q > q > 0$. A third identical plate (γ), free to move is located on the other side of the plate with charge Q at a distance d (figure). The third plate is released and collides with the plate β. Assume the collision is elastic and the time of collision is sufficient to redistribute charge amongst β and γ.

(a) Find the electric field acting on the plate γ before collision.

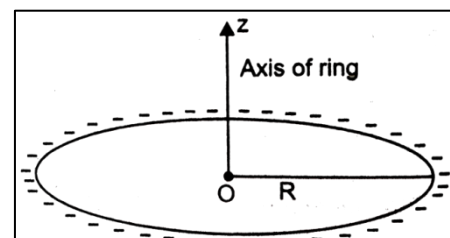(b) Find the charges on β and γ after the collision.

(c) Find the velocity of the plate γ after the collision and at a distance d from the plate β.
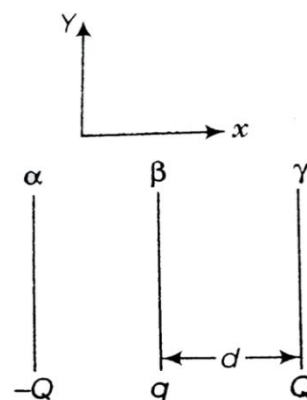
Q:3 Total charge -q is uniformly spread along length of a ring of radius R. A small test +q of mass m is kept at the center of the ring .

(a) Show that the particle executes a single harmonic oscillation.

(b) Obtain its time period.

Q:4 Four charges $+q$, $+q$, $-q$, and $-q$ are placed, respectively, at the corners A, B, C, and D of a square of side 'a'. Calculate the electric field at the center of the square.

Q:5 Two equal spheres of water having equal and similar charge coalesce to from a large sphere. If no charge is lost, how will the surface densities of electrification change?

Q:6 Two identical electric dipoles are placed along the diagonals of a square ABCD of side $\sqrt{2}$ m as shown in the figure. Obtain the magnitude and direction of the net electric field at the centre (O) of the square.
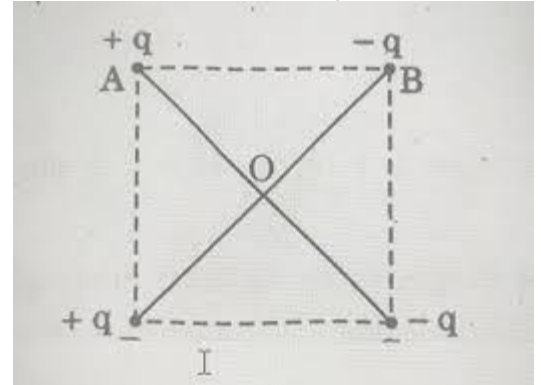

Q:7 Given a uniform electric field $\vec{E} = 5 \times 10^3\ \hat{i}$ N/C, find the flux of this field through a square of 10cm on a side whose plane is parallel to the y - z plane. What would be the flux through the same square if the plane makes a 30° angle with the x-axis?

Q:8 A long charged cylinder of linear charge density λ is surrounded by a hollow co-axial conducting cyclinder. What is the electric field in the space between the two cylinders?

Q:9 Given a uniformly charged plane/sheet of surface charge density $\sigma = 2 \times 10^{17}$ c/m2.
(a) Find the electric field intensity at a point A 5 mm away from the sheet on the left side.
(b) Given a straight line with three points X Y and Z placed 50 cm away from the charged sheet on the right side. At which of these points the field due to the sheet remain the same as that of point A and why?
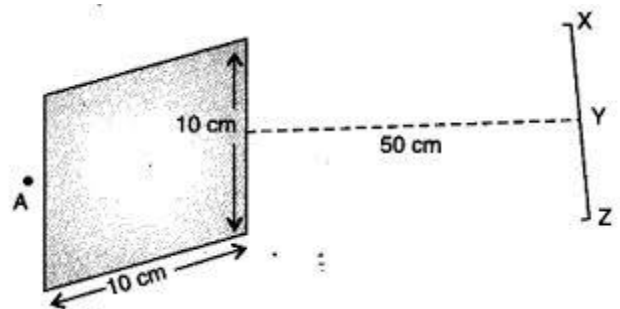

Q:10 A system has two charges $q_A = 2.5 \times 10^{-7}$ C and $q_B = -2.5 \times 10^{-7}$ C located at points A: (0, 0, –15 cm) and B: (0,0, +15 cm), respectively. What are the total charge and electric dipole moment of the system?

Q:11 Which of the following curves shown below cannot possibly represent electrostatic field lines? And why?
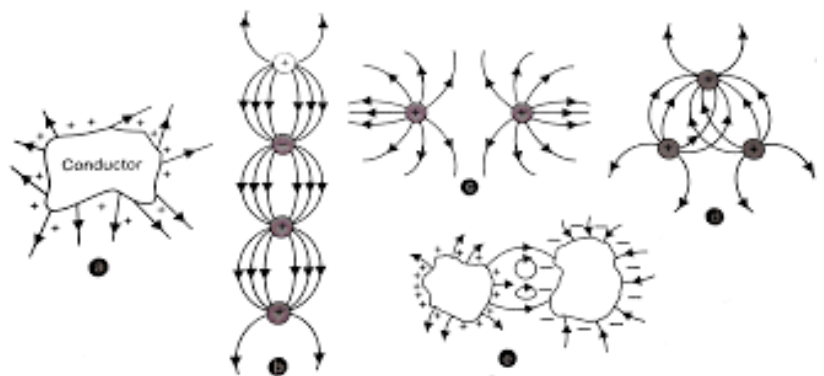
Q:12 An electric dipole of dipole moment (P) is kept in uniform electric field Show graphically the variation of torque (r) acting on the dipole with its orientation (theeta)in the field Find the orientation in which torque is zero and maximum.

Q:13 In the figure there are three infinite long thin sheets having surface charge density +2 σ,-2 σ and+ σ respectively. Give the magnitude and direction of electric field at a point to the left of sheet of charge density +2σ and to the right of sheet of charge density + σ
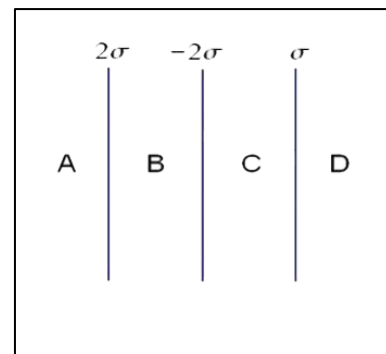
Q:14 A disc of radius a/4 having a uniformly distributed charge 6C is placed in the x-y plane with its centre at $(-a/2,0,0)$. A rod of length a carrying a uniformly distributed charge 8C is placed on the x-axis from x=a/4 to x=5a/4. Two point charges $-7C$ and 3C are placed at $(a/4,-a/4,0)$ and $(-3a/4,3a/4,0)$, respectively. Consider a cubical surface formed by is x surfaces x=±a/2, y=±a/2, z=±a/2. The electric flux through this cubical surface is
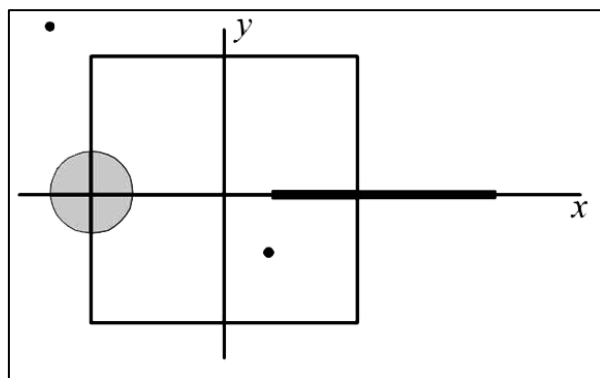
Chapter-2 (Electrostatic Potential and Capacitance)
Q15. Two electric charges +4 μC and −6 μC are separated by a distance of 20cm in air. At what point on the line joining the two charges, is the electric potential zero? Let the potential at C be zero.

Q:16 ABCD is a square of side 0.2m. Charges of $2\times10-9C, 4\times10-9C and 8\times10-9C$ are placed at the corners A, B and C respectively. Calculate work required to transfer a charge of $2\times10^{-9}C$ from corner D to centre of the square.

Q:17 Two point charges A and B of values +5 micro coulomb and +6 micro coulomb are kept 12cm apart in air. Calculate the work done when charge B moves by 2cm towards charge A.

Q:18 Two parallel metal plates are 0.50 cm apart and are connected to a 90-volt battery. Calculate the electric field between them and the surface charge density on the plates.

Q:19 If the potential in the region of space around the point (-1,2,3m) is given by $V=(10x^2+5y^2-3z^2)$, calculate the three components of electric field at this point.

Q:20 Two point charge of +5uC and -8uC are situated at (-1,1,0) and (1,0,-1) represent the electric potential at (-1,1,-1). All distances are measured in meters.

Q:21 Charges of $+1\times10^{-9}C$ are placed at each of the four corners of a square of side 8cm. What is the potential at the intersection of the diagonals?

Q:22 A proton is moved in a uniform electric field of 1.7×10^{-4} N/c between two point A and B separated by a distance of 0.1m.(i) What is the potential difference between the two points? (ii) How much work is done in above process?

Q:23 Charges +q and −q are located at the corners of a cube of side as show in the figure. Find the work done to separate the charges to infinite distance
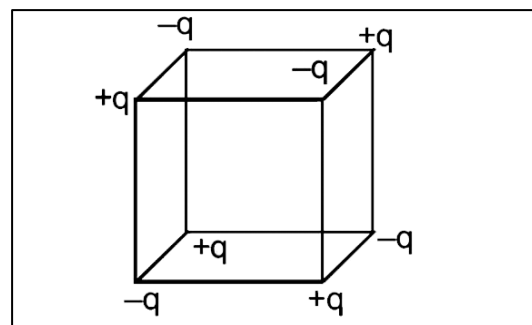

Q:24 A charge +Q is fixed at the origin of the co-ordinate system while a small electric dipole of dipole moment **p** pointing away from the charge along the x-axis is set free from a point far away from the origin.

Q:25 Consider a thin spherical shell of radius R with centre at the origin, carrying uniform positive surface charge density. Plot the variation of the magnitude of the electric field $|E(r)|$ and the electric potential V(r) with the distance r from the centre.

Q:26 If the electric potential on the axis of an electric dipole at a distance 'r' from it is V, then the potential at a point on its equatorial line at the same distance away from it will be
a) 2V   b) V/2   c) –V   d) Zero

Q:27. The electric potential V as a function of distance X is shown in the figure.
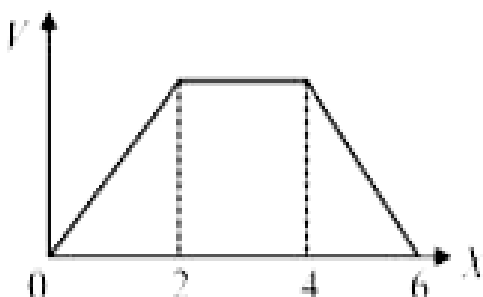
The graph of the magnitude of electric field intensity E as a function of X is
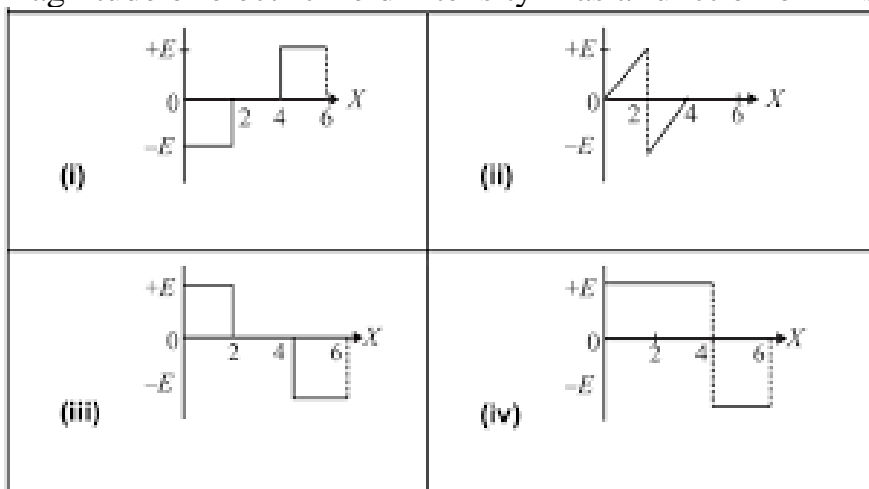

Q:28 A point P lies at a distance x from the mid point of an electric dipole on its axis. The electric potential at point P is proportional to
a) $1/x^2$ b) $1/x^4$ c) $1/x^3$ d) $1/x^{1/2}$

Q:29 Find out equivalent capacitance between A and B. (take each plate Area = A and distance between two conjugative plates is d)
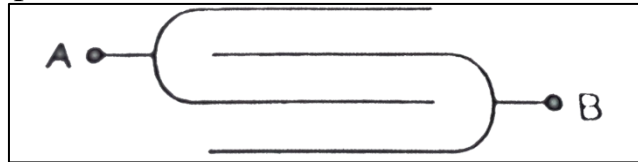

Q:30 What amount of heat will be generated in the circuit shown in Fig. after the swich Sw is shifted from position 1 to 2 ?
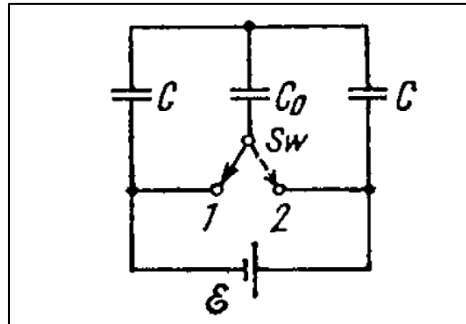
Q:31 Two parallel palate capacitors X and Y have the same area of plates and same separation between then. X has air between the plates and Y contains a dielectric medium of $\epsilon r=4$, Calculate (i) capacitance of X and Y if equivalent capacitance of combination is 4µF. (ii) pot diff between the plates of X and Y. (iii) What is the ratio of electrostatic energy stored in X and Y?


12V
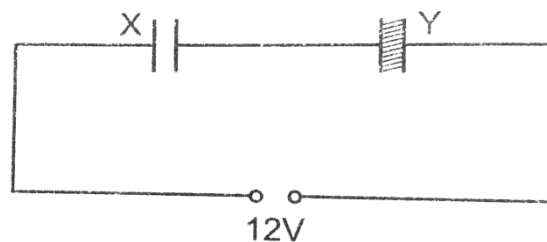
Q:32 Two parallel plate capacitors of capacitances C_1 and C_2 such that $C_2=2C_1$ are connected across battery of V volts as shown in the Fig . Initially the key K is kept closed to fully charge the capacitors . The key K is now thrown open and dielectric slabs of dielectric constant K0 are inserted in the two capacitors to completely fill the gap between the plates .
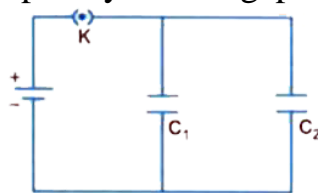
Find the ratio of the energies stored in the combination before and after the introduction of dielectric slabs.

Q:33 Figure shows three circuits, each consisting of a switch and two capacitors initially charged as indicated. After the switch has been closed, in which circuit (if any) will the charges on the left hand capacitor (i) increase (ii) decrease (iii) remain same ? Give reasons.


(a)   (b)   (c)
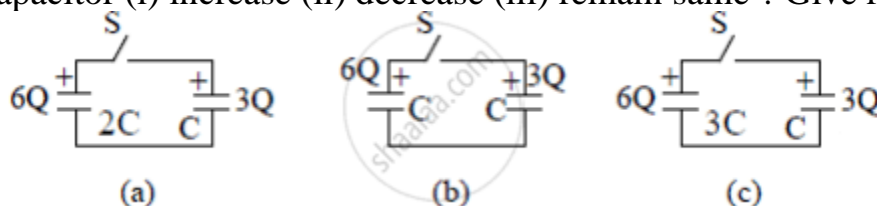
Q:34 A capacitor of capacitance C is charged fully by connecting it to a battery of emf E. It is then disconnected from the battery. If the separation between the plates of the capacitor is now doubled, how will the following change? (a) Charge stored by the capacitor. (b) Field strength between the plates. (c) Energy stored by the capacitor. Justify your answer in each case.

Q:35 Two identical parallel plate capacitors A and B are connected to a battery of V volts with the switch S closed. The switch is now opened and the free space between the plates of the capacitors is filled with dielectric of dielectric constant K . Find the ratio of the total electrostatic energy stored in both capacitors before and after the introduction of the dielectric.
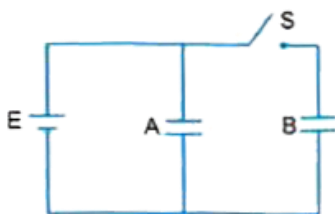
Q:36 In the circuit shown, the equivalent capacitance between the points A and B is
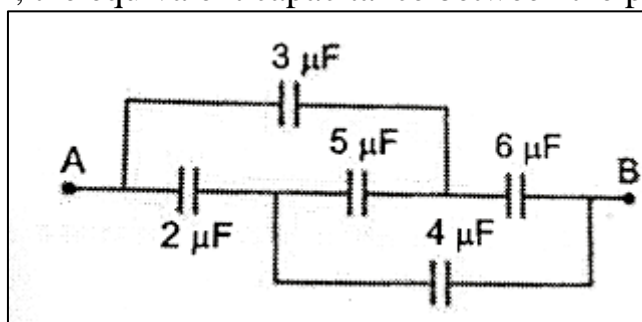
a) 10/3 uf   (b) 15/4 uf   (c) 12/5 uf   (d) 25/6 uf

Q:37 a) Compare the individual dipole moment and the specimen dipole moment for H_2O molecule and O_2 molecule when placed in i) absence of external electric field. ii) Presence of external electric field. Justify your answer.
b) Given two parallel conducting plates of area A and charge densities + σ and - σ. A dielectric slab of constant K and a conducting slab of thickness d each are inserted in between them as shown.
I)   Find the potential difference between the plates.
II)   Plot E versus x graph taking x = 0 at positive plate and x = 5d at negative plate.
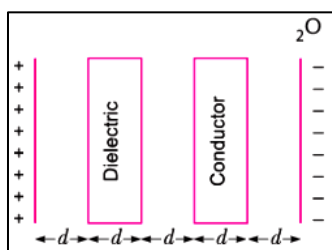
Chapter-3 Current electricity
Q:38 (i)Using the concept of drift velocity of charge carriers in a conductor, deduce the relation between current density and resistivity of the conductor.
(ii) Derive the relationship between drift velocity and relation time.
(iii) Derive relationship between current and drift velocity and hence prove that resistivity is inversely proportional to relation time.

Q:39 (a) Differentiate between the random velocity and the drift velocity of electrons in an electrical conductor. Give their order of magnitudes.

(b) A conductor of uniform cross-sectional area is connected across a dc source of variable voltage. Draw a graph showing variation of drift velocity of electrons (v_d) as a function of current density (J) in it.

Q:40 Two material bars A and B of equal area of cross-section are connected in series to a DC supply. A is made of usual resistance wire and B of an n-type semiconductor.

(a) In which bar is drift speed of free electrons greater?

(b) b If the same constant current continues to flow for a long time how will the voltage drop across A and B be affected? Justify each answer.

Q:41 A wire of resistance 5Ω is drawn out so that its length is increased by twice its original length, calculate its new resistance.

Q:42 If a copper wire is stretched to make it 0.1% longer what is the percentage change in its resistance?

Q:43 i)Estimate the average drift speed of conduction electrons in a copper wire of cross sectional area $1.0 \times 10^{-7} m^2$ carrying a current of 1.5 A. Assume that each copper atom contributes roughly one conduction electron. The density of copper is $9.0 \times 10^3 kgm^{-3}$ and its atomic mass is 63.5u.

ii) Compare the drift speed obtained with the speed of propagation of electric field along the conductor, which causes the drift motion.

Q:44 In the given figure, a battery of emf E is connected across a conductor PQ of length 'l' and different area of cross-sections having radii r_1 and r_2 ($r_2 < r_1$)
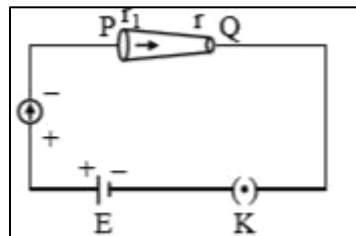
Choose the correct option as one moves from P to Q :

(1) Drift velocity of electron increases.   (2) Electric field decreases.

(3) Electron current decreases.   (4) All of these

Q: 45 The external diameter of a 5 metre long hollow tube is 10 cm and the thickness of its wall is 5 mm. If the specific resistance of copper be 1.7×10^5 ohm-metre, then determine its resistance.

Q:46 The current in a wire varies with time according to the relation i=(3.0A)+(2.0A/s)t

a. How many coulombs of charge pass a cross section of the wire in the time internal between t=0 and t=4.0s?

b. What constant current would transport the same charge in the same time interval?

Q:47 (a) How does the resistivity of a material change if

(i) length is doubled   (ii) area of a cross section is doubled

(b) draw a graph depicting resistivity of a nichrome as a function of temperature.

Q:48 A heating element using nichrome connected to a 230 V supply draws an initial current of 3.2 A which settles after a few seconds to a steady value of 2.8 A. What is the steady temperature of the heating element if the room temperature is 27°C ? Temperature coefficient of resistance of nichrome averaged over the temperature range involved is (1.70×10^{-4})°C^{-1}.

Q:49 An electric toaster uses nichrome for its heating element. When a negligibly small current passes through it. It resistance at room temperature (27.0°C) is found to be 75.3Ω. When the toaster is connected to a 230V supply, the current settles, after a few seconds, to a steady value of 2.68A. What is steady temperature of the nichrome element? The temperature coefficient of resistance of nichrome averaged over the temperature range involved , $1.70 \times 10^{-4} C^{-1}$

Q:50 Two wires of equal length, one of aluminium and the other of copper have the same resistance. Which of the two wires is lighter ? Hence explain why aluminium wires are perferred for overhead power cables. Given For Al. $\rho_1 = 2.63 \times 10^{-8}$ Ωm, For Cu, $\rho_2 = 1.72 \times 10^{-8}$ Ωm. Relative density of Al=2.7, of Cu=8.9.

CHEMISTRY

ELECTROCHEMISTRY

Copper is conducting as such, whereas copper sulphate is conducting only in aqueous solution. Why?

Explain the following terms:

- Weak and strong electrolytes.
- Specific, equivalent and molar conductivity
- How is molar conductivity related to concentration of an electrolyte ? How will you distinguish be- tween a weak and a strong electrolyte based on their conductivity values?
- The measured resistance of a conductance cell containing 7.5×10–3 M solution of KCl at 25°C was 1005 ohms. Calculate (a) specific conductance (b) molar conductance of the solution. Cell constant =1.25 cm–1.
- Conductivity of 0.00241 M acetic acid is 7.896×10–5 S cm–1. Calculate its molar conductivity. If $\Lambda°$ for acetic acid is 390.5 S cm2 mol–1, what is its dissociation constant?
- When a certain conductivity cell was filled with 0.1 M KCl, it has a resistance of 85Ω at 25° C. When the same cell was filled with an aqueous solution of 0.052 M unknown electrolyte, the resistance was 96 Ω . Calculate the molar conductivity of the unknown electrolyte at this concentration. (Specific conductivity of 0.1 M KCl = 1.29×10–2 ohm–1 cm–1)
- How many coulombs are required for the following reduction?

1 mole of Al3+ to Al

1 mol of Cu2+ to Cu

1 mol of MnO– toMn2+.

- How many coulombs are required to produce

20 g of Ca from molten CaCl2 ?

50 g of Al from molten Al2O3 ?

- Three electrolytic cells A, B and C containing electrolytes ZnSO4, AgNO3 and CuSO4 respectively, were connected in series. A steady current of 1.50 ampere was passed through

them until 1.45 g of Ag were deposited at the cathode of cell 'B'. How long did the current flow ? What weight of Cu and Zn were deposited?

- Silver is electrodeposited on a metallic vessel of surface area 800 cm2 by passing current of 0.2 amp for 3 hours. Calculate the thickness of silver deposited.

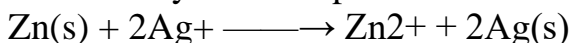(Density of silver = 10.47 g cm–3, Atomic mass of silver = 107.92 amu)

- Write the reactions occuring during the electrolysis of :

Sulphuric acid at the anode.

Aqueous silver nitrate solution using silver electrodes.

Aqueous sodium chloride solution.

Write the symbolic representation of the electrochemical cell with the cell reaction:

$Zn(s) + 2Ag+ \longrightarrow Zn2+ + 2Ag(s)$

Indicate the oxidation electrode and the direction of movement of electrons. Also write the electrode reactions.

(i) Arrange the following metals in the order in which they displace each other : Al, Cu, Fe, Mg, Zn.

(ii) Electrode potential of the metals in their respective solutions are provided. Arrange the metals in their increasing order of reducing power:

$K+ / K = – 2.93$ V, $Ag+ / Ag = 0.80$ V, $Hg+ / Hg = + 0.79$ V. $Mg2+ / Mg = – 2.37$ V, $Cr3+ / Cr = – 0.74V$

The standard potentials are given as:

Eº   = + 0.34 V, Eº   = + 0.80 V

Cu2+ / Cu   Ag+ / Ag

Calculate the cell potential (E) for the cell containing 0.1 M Ag+ and 4.00 M Cu2+ at 298 K.

How many hours does it take to reduce 3 mol of Fe3+ to Fe2+ with 2.00 A current ? (R = 8.314 JK–1 mol–1, F = 96500 C mol–1)

Calculate the cell e.m.f. and Gº for the cell reaction at 25ºC for the cell:

$Zn(s) | Zn2+ (0.0004$ M$) || Cd2+ (0.2$ M$) |Cd(s)$

Eº values at 25º C; $Zn2+ / Zn = – 0.763$ V; $Cd2+ / Cd = – 0.403$ V [F = 96500 C mol–1; R = 8.314 JK–1 mol–1]

Calculate the cell emf at 25º C for the following cell :

$Mg(s) | Mg2+ (0.01M) || Sn2+ (0.1$ M$) | Sn (s)$

[Given Eº= –2.34 V, Eº= –0.136 V, 1 F = 96,500 C mol–1]

Mg2+ / Mg Sn2+ / Sn

Calculate the maximum work that can be accomplished by the operation of this cell.

Calculate the cell emf at 25º C for the following cell:

$Ni(s) | Ni2+ (0.01$ M$) || Cu2+ (0.1$ M$) |Cu (s)$

[Given Eº   = –0.25 V, Eº   = +0.34 V, 1F = 96.500 C mol–1]

Ni2+ / Ni   Cu2+ /Cu

Calculate the maximum work that can be accomplished by the operation of this cell.

The emf of the cell Zn | Zn2+ (0.1 M) || Cd2+ (M) | Cd has been found to be 0.3305 V at 298 K. Calculate the value of M1. Given Eº

= –0.76 V, Eº

= –0.40 V .\

Zn 2+ / Zn   Cd2+ / Cd

(a) Calculate the electrode potential of silver electrode dipped in a 0.1 M solution of silver nitrate at 298 K assuming silver nitrate to be completely dissociated. The standard electrode potential of Ag+/ Ag is 0.80 V at 298 K.

(b) At what concentration of silver ions will this electrode have a potential of zero volt ?

Write the Nernst equation and calculate the e.m.f. of the following cell at 298 K :

Cu(s) | Cu2+ (0.130 M) || Ag+ (1.00 10–4 M) | Ag(s)°

Cu2+ / Cu

= + 0.34 V and E°

= + 0.80 V

(a) Calculate the electrode potential of silver electrode dipped in 0.1 M solution of silver nitrate at 298 K assuming AgNO3 to be completely dissociated. The standard electrode potential of Ag+ / Ag is 0.80 V at 298 K.

(b) At what concentration of silver ions will this electrode have a potential of 0.0 V ?

(a) In the button cell, widely used in watches and other devices, the following reaction takes place:

Zn (s) + Ag O(s) + H O(l) ——→ Zn2+ (aq) + 2Ag(s) + 2OH– (aq)
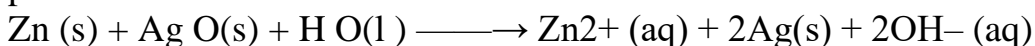
Determine E° and G°

for the reaction. Given E°

= + 0.344 V, E°= –0.76 V

r   Ag / Ag   Zn / Zn

(b) Explain with examples the terms weak adn strong electrolytes. How can these be distnguished ?

What is corrosion ? What are factors which affect corrosion ? CO2 is always present in natural water. Explain its effect (increases, stops or no effect) on rusting of Fe.

(i) Rusting of Fe is quicker in saline water than in ordinary water. Explain.

(ii) We can use Al in place of Zn for cathodic protection of rusting. Comment.

(a) A current of 1.50 amp was passed through an electrolytic cell containing AgNO3 solution with inert electrodes. Teh weight of Ag deposited was 1.50 g. How long did the current flow? Write the reactions taking place at the anode and cathode in the above cell.

Give reactions taking place at the two elecrodes if these are made up of Ag.

The following chemical reaction is occuring in an electrochemical cell.

Mg(s) + 2Ag+ (0.0001 M) ——→ Mg2+ (0.10 M) + 2Ag(s)
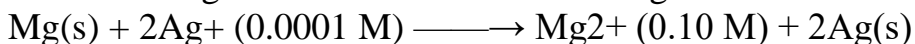
The E° electrode values are:

Mg2+ / Mg = –2.36 V, Ag+ / Ag = 0.81 V

For this cell calculate / write

(i) E° value for the electrode 2Ag+ / 2Ag

Standard cell potential E°

Cell potential (E)cell

(i) Symbolic representation of the above cell.

Will the above cell reaction be spontaneous?

The conductivity of an aqueous solution of NaCl in a cell is 92 ohm–1 cm–1. The resistance of the cell is

247.8 ohm. Calculate the cell constant for the cell.

0.05 M NaOH solution offered a resistance of 31.6 ohm in conductivity cell at 298 K. If the cell constant of the cell is 0.367 cm–1, calculate the molar conductivity of NaOH solution?

A conductivity cell was filled with 0.1 M NaCl solution at 25° C. Its resistance was found to be 176.6 ohm. The conductivity of this solution is 9.2 × 10–3 S cm–1. The cross-sectional area of the electrodes used was 4cm2. What must have been the distance between the electrodes?

Electrolytic conductivity of 0.2 mol L–1 solution of KCl at 298 K is 2.48 × 10–2 Ω –1 cm–1. Calculate

molar conductivity.

With the help of a graph, explain why it is not easy to determine λ
for a weak electrolyte by extrapo-
lating the concentration molar conductance curve as for strong electrolyte.

Calculate the volume of ozygen liberated at anode at STP in the electrolysis of $CuSO_4$ solution when a current of 1 ampere is passed for 16 minutes. The anode reaction is

$2H_2O$ (l) ——→ $4H^+ + O_2 + 4e^-$, 1 F = 96500 C.

Write anode and cathode reactions for the electrolysis of water. How much charge will be transported for the decomposition of 3.6 g of H_2O ? (F = 96500 C mol–1)

Electrolysis of molten NaCl yields sodium metal at the cathode but electrolysis of a solution of NaCl in water gives $H_2(g)$ at the cathode ? How is this difference in results explained ?

The Eº value for two metal electrodes are given below:

Cr^{3+} / Cr^{2+} = – 0.4 V

Fe^{3+} / Fe^{2+} = + 0.80 V
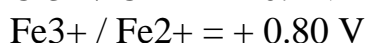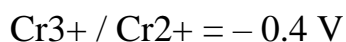
Comment on the result of treating a solution of Cr(II) with a solution containing Fe(III) ions.

Calculate the number of coulombs required to deposit 5.4 g of Al when the electrode reaction is:

$Al^{3+} + 3e^-$ ——→Al
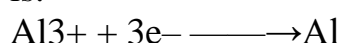
[Given at. mass of Al = 27 g mol–1 and F = 96500 C]

What current strength in amperes would be required to deposit 1g of Cu from a solution of $CuSO_4$ in 2 hours ?(At. mass of Cu = 63.5 g mol–1)

How long a current of 3 ampere has to be passed through a solution of silver nitrate to coat a metal surface of 80 cm2 with a 0.005 mm thick layer ? Density of Ag is 10.5 g cm–3, At. wt. of Ag = 108.0 a.m.u.

How many coulombs are required for the following oxidation:

1 mol of H_2O to O_2

1 mol of FeO to Fe_2O_3 ?

How many coulombs of electric charge must be passed through a solution of silver nitrate to coat a copper sheet of area 100 cm2 on both the sides with a 0.005 mm thick layer. Density of silver is 10.5 g cm–3. Relative atomic mass of silver is 108.

BIOLOGY

Solve the MCQs, Assertion Reason and Case Study Based questions from Elementary Of Biology From Ch- 1 to 4.

● Draw Mind maps of Chapter 1,2 and 4.

● Do NCERT Exemplar Questions of Ch 1 to 4 on FNB.

● Prepare a PPT on-

❖ Ch -1 Sexual Reproduction in Flowering plants. (ROLL NO. 1 TO 10)

❖ Ch -2 Human Reproduction (ROLL NO. 11 TO 20)

❖ Ch- 3 Reproductive Health (Roll no. 21 to 30

❖ Ch- 4 Principles of Inheritance and Variation (Roll no. 31 to 40)

 • Do the given assignment the on FNB (Will share in Broadcast Group).

ACTIVITY:

● Draw Diagrams of Human Male reproductive system, human female reproductive system, Gametogenesis, T.S of ovary, seminiferous tubules, Graffian follicle, Menstrual cycle, Fertilization, Implantation, Monocot and Dicot Embryo, L.S of pollen pistil interaction,

Anther, Pollen grain, Development of male gametophyte in plants , Development of female gametophyte in plants, Pollen Grain on FNB.

● Make a Crossword/ Puzzle

Topics to include

* Ch- Sexual Reproduction in Flowering Plants

* Ch- Reproductive Health

MATHEMATICS

1. Do MCQ, Assertion-Reason and Case Based Questions from RD Sharma:
- Chapter 1(Relation and Function)
- Chapter 2(Inverse Trigonometric Function).
2. Do previous year question and NCERT EXAMPLER question from RD Sharma of above said chapters.
3. Revise chapter 1,2 full and chapter 5 till done in class from NCERT.

ACTIVITY:
- To demonstrate a function that is not one-one but onto on A4 sheet.
- To demonstrate a function which is one- one but not onto on A4 sheet.
- Roll no. 1 – 15 make Ppt on Chapter 1(Relation and Function)
- Roll no. 16 – 29 make Ppt on Chapter 2(Inverse Trigonometric Function)

PHYSICAL EDUCATION

➢ Bring SP practical file and complete it for final practical exams

➢ Complete Record File shall include:

● Practical 1: fitness test administration . (SAI Khelo India Test)

● Practical 2: procedure for Asanas, benefits, and contraindication for any two Asanas for each lifestyle disease.

● Practical 3: Anyone IOA recognised, sports /games of choice.Labelled diagram of field and equipment. Also mention its rules , Terminologies and skill.

➢ Write and Revise these Topics :-

Chapter 1
- Fixture of knockout & League (13 teams for knockout and 8 teams for league solve by stairs case , cyclic and tabular method)
- seeding , Bye , Tournament, special seeding and Function of management
- Tournament Committees

Chapter 6
- SAI khelo India Fitness test
- Harward step test
- Rikli and jones senior citizen test

Chapter 8
- Newton's Law of motion
- Lever and its uses in sports
- Equilibrium and their types

MUSIC

"न विद्या संगीतातपरा "

"संगीत से श्रेष्ठ अन्य कोई विद्या नहीं है ! "

1.Write the definition of Gram and Murchhana from your book Sangeet Pravah.

2.Write and learn the Biography of Bade Gulam Ali khan saab and Krishan Rao Shankar Pandit.

3.make a chart with colored pencil of three taals: Rupkaktaal, Jhaptaal and Dhamartaal with ekgun ,dugun ,tigun and chaugun in different boxes

4.Make one word questions about our Granth SangeetRatnakar and Sangeet prijat(20-25)

5.Paste the printed photo of Tanpura and write parts of it's

6.Write and learn the Drupad and khyalgayik of indian classical singer kaushikichakrabortyji

7. Make any one model of musical instrument like table, harmonium, congo, tanpura, guitar etc. with car-board, thermocole, wooden things, dried coconut shell etc

Note: Learn all class work

PAINTING

Learn and write:
1.   Characteristics of Deccan School.
2.   Characteristics of Bengal School.
3.   Evolution of National Flag.
4.   Contribution of Indian Artist in National Freedom.
5.   Original and development of Bengal School.
6.   Describe about these paintings:
a.   Journey's End
b.   Chand Bibi Playing Polo
7.   Complete your Painting File

INFORMATICS PRACTICES

Holiday Homework

1. Which command is used to see information like name of columns, datatype, size etc.
2. Which clause is used to see the output of query in ascending or descending order?
3. Raj is a database programmer, He has to write the query from EMPLOYEE table to search for the employee who are not getting any commission, for this he has written the query as:

 SELECT * FROM EMPLOYEE WHERE commission=null;

But the query is not producing the correct output, help Raj and correct the query so that he gets the desired output.

4. Raj is a database programmer, has to write the query from EMPLOYEE table to search for the employee who are working in „Sales‟ or „IT‟ department, for this he has written the query as:

SELECT*FROM EMPLOYEE WHERE department="Sales" or "IT";
But the query is not producing the correct output, help Raj and correct the query so that he gets the desired output.

5. Thefollowingqueryisproducinganerror.Identifytheerrorandalsowritethecorrect query.

SELECT * FROM EMP ORDER BY NAME WHERE SALARY>=5000;

6. Which SQL function is used to get the average value of any column?

7. What is the difference between COUNT() and COUNT(*) function

8. Query to delete all record of table without deleting the table:

a) DELETE TABLE TABLE_NAME

b) DELETE FROM TABLE_NAME

c) DROP TABLE TABLE_NAME

d) DELETE TABLE FROM TABLE_NAME

9. Identify the wrong statement about UPDATE command

a. If WHERE clause is missing all there cordin table will be updated

b. Only one record can be updated at a time using WHERE clause

c. Multiple records can be update data time using WHERE clause

d. None of the above

10. Which SQL function is used to find the highest and lowest value of numeric and date type column?

11. What will be the output of the following-

Select Round (7.5789,3);

Select Substr ("HelloRahul",3,8);

- Select Dayofmonth ("2020-10-24");
- Select Round (1449.58,-2);
- Select Round(55.698,2)
- Select mid("examination", 4,4);
- Select length(trim(„exam„))
- Select Round (4562.778, -2);
- Select Substring("mysqlapplication",3,3)
- Select instr ("my sql application", "p");
- Select round(7756.452,1);
- Select round(59999.99,-2);
- Select right(„mysqlapplication",3);

12. A table Employee contains 5 Rows and 4 Columns and another table PROJECT contains 5 Rows and 3 Columns. How many rows and columns will be there if we obtain Cartesian Product of these two tables?

13. SQL applies conditions on the groups through .... clause after groups have been formed.

a) Group by   b)With   c) Where   d) Having

14. Which SQL function is used to count the number of rows in a SQL query?

a) COUNT()   b) NUMBER() c) SUM()   d) COUNT(*)

Table SALES

Column Name
STORE_ID
SALES_DATE
SALES_AMOUNT

Table BOOK_INFORMATION

Column Name
BOOK_ID
BOOK_TITLE
PRICE

15. Which SQL statement allows you to find the highest price from the table BOOK_INFORMATION?
1. SELECT BOOK_ID, BOOK_TITLE, MAX(PRICE) FROM BOOK_INFORMATION;
2. SELECT MAX(PRICE) FROM BOOK_INFORMATION;
3. SELECT MAXIMUM(PRICE) FROM BOOK_INFORMATION;
4. SELECT PRICE FROM BOOK_INFORMATION ORDER BY PRICE DESC;

16. Which SQL statement lets you find the sales amount for each store?
   1. SELECT STORE_ID, SUM(SALES_AMOUNT) FROM SALES;
   2. SELECT STORE_ID, SUM(SALES_AMOUNT) FROM SALES ORDER BY STORE_ID;
   3. SELECT STORE_ID, SUM(SALES_AMOUNT) FROM SALES GROUP BY STORE_ID;
   4. SELECT STORE_ID, SUM(SALES_AMOUNT) FROM SALES HAVING UNIQUE STORE_ID;

16. Which SQL statement lets you list all stores whose total sales amount is over 5000 ?

Table SALES

Column Name
STORE_ID
SALES_DATE
SALES_AMOUNT

1. SELECT STORE_ID, SUM(SALES_AMOUNT) FROM SALES GROUP BY STORE_ID HAVING SUM(SALES_AMOUNT) > 5000;
2. SELECT STORE_ID, SUM(SALES_AMOUNT) FROM SALES GROUP BY STORE_ID HAVING SALES_AMOUNT > 5000;
3. SELECT STORE_ID, SUM(SALES_AMOUNT) FROM SALES WHERE SUM(SALES_AMOUNT) > 5000 GROUP BY STORE_ID;
4. SELECT STORE_ID, SUM(SALES_AMOUNT) FROM SALES WHERE SALES_AMOUNT > 5000 GROUP BY STORE_ID;

17. Which SQL statement lets you list all stores whose total sales amount is over 5000 ?

Table SALES

Column Name
STORE_ID
SALES_DATE
SALES_AMOUNT

1. SELECT STORE_ID, SUM(SALES_AMOUNT) FROM SALES GROUP BY STORE_ID HAVING SUM(SALES_AMOUNT) > 5000;
2. SELECT STORE_ID, SUM(SALES_AMOUNT) FROM SALES GROUP BY STORE_ID HAVING SALES_AMOUNT > 5000;
3. SELECT STORE_ID, SUM(SALES_AMOUNT) FROM SALES WHERE SUM(SALES_AMOUNT) > 5000 GROUP BY STORE_ID;

4. SELECT STORE_ID, SUM(SALES_AMOUNT) FROM SALES WHERE SALES_AMOUNT > 5000 GROUP BY STORE_ID;

18. What SQL statement do we use to find the average exam score for EXAM_ID = 1?
1. SELECT AVG(EXAM_SCORE) FROM EXAM_RESULTS;
2. SELECT AVG(EXAM_SCORE) FROM EXAM_RESULTS GROUP BY EXAM_ID WHERE EXAM_ID = 1;
3. SELECT AVG(EXAM_SCORE) FROM EXAM_RESULTS GROUP BY EXAM_ID HAVING EXAM_ID = 1;
4. SELECT COUNT(EXAM_SCORE) FROM EXAM_RESULTS WHERE EXAM_ID = 1;

19. What SQL statement do we use to find the average exam score for EXAM_ID = 1?

Table **EXAM_RESULTS**

STU ID	FNAME	LNAME	EXAM ID	EXAM_SCORE
10	LAURA	LYNCH	1	90
10	LAURA	LYNCH	2	85
11	GRACE	BROWN	1	78
11	GRACE	BROWN	2	72
12	JAY	JACKSON	1	95
12	JAY	JACKSON	2	92
13	WILLIAM	BISHOP	1	70
13	WILLIAM	BISHOP	2	100
14	CHARLES	PRADA	2	85

1. SELECT AVG(EXAM_SCORE) FROM EXAM_RESULTS;
2. SELECT AVG(EXAM_SCORE) FROM EXAM_RESULTS GROUP BY EXAM_ID WHERE EXAM_ID = 1;
3. SELECT AVG(EXAM_SCORE) FROM EXAM_RESULTS GROUP BY EXAM_ID HAVING EXAM_ID = 1;
4. SELECT COUNT(EXAM_SCORE) FROM EXAM_RESULTS WHERE EXAM_ID = 1;

20. Write the output of the following SQL queries:
(i) SELECT RIGHT ('software', 2);
(ii) SELECT INSTR ('twelve', lV);
(iii) SELECT DAYOFMONTH ('2014-03-01');
(iv) SELECT (76.987,2); (All India 2014C)

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