

SUMMER VACATION HOME ASSIGNMENT

SUB - ENGLISH

CLASS - XII

1. Unseen Passages
 - * Solve two unseen passages from the CBSE sample paper
 - * Complete all the questions and answers related to the passages.
2. Prepare two notices on the following topics using proper format:
 - * Inter School Debate competition
 - * Blood donation camp at school
3. Draft two formal invitations using proper format:
 - * Marriage Ceremony
 - * Inaugural function.
4. Write two letters to the editor on the following issues:
 - * Rising Environmental Pollution in cities
 - * Increasing use of Mobile Phones among teenagers
5. Write Articles on the following topics in about 150 - 200 words each.
 - * Impact of Artificial Intelligence on future careers
 - * Digital Addiction and its impact on Teenage Mental Health.

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डी.ए.वी पब्लिक स्कूल कोयलानगर, धनबाद
ग्रीष्मावकाश गृह कार्य
सत्र -२०२६-२७

कक्षा -बारहवीं
विषय - हिंदी

निम्नलिखित प्रश्नों के उत्तर अपनी उत्तर पुस्तिका में शुद्ध शुद्ध लिखें।

1. आत्म परिचय कविता में कवि हरिवंश राय बच्चन ने अपने व्यक्तित्व के किन पहलुओं को उभारा है?
2. कौन सा विचार दिन ढलने के बाद लौट रहे पथिक के कदमों को धीमा कर देता है? 'दिन जल्दी-जल्दी ढलता है' कविता के आधार पर उत्तर दीजिए।
3. किशोर और युवा वर्ग समाज के मार्गदर्शक हैं। पतंग कविता के आधार पर स्पष्ट कीजिए।
4. फूल और चिड़िया को कविता की क्या-क्या जानकारियां नहीं हैं? 'कविता के बहाने' कविता के आधार पर बताइए।
5. प्रशंसा का व्यक्ति पर क्या प्रभाव पड़ता है? 'बात सीधी थी पर' कविता के आधार पर बताइए।
6. दूरदर्शन वाले कैमरे के सामने कमजोर को ही क्यों लाते हैं? 'कैमरे में बंद अपाहिज' कविता के आधार पर उत्तर दीजिए।
7. पहलवान की ढोलक कहानी भारत पर इंडिया के छा जाने की कहानी है। तर्क सहित उत्तर दीजिए।
8. जीजी के दिए हुए तर्कों से आप कहां तक सहमत हैं? 'काले मेघा पानी दे' पाठ के आधार पर उत्तर दीजिए।
9. कैसे व्यक्ति बाजार के जादू से बच सकते हैं? बाजार दर्शन पाठ के आधार पर उत्तर दीजिए।
10. हिंदी साहित्य के किन्हीं दो आंचलिक उपन्यासकारों के व्यक्तित्व एवं कृतित्व पर एक परियोजना कार्य तैयार करें। (फाइल में बनाएं)

Shri
1515125

SUBJECT: PHYSICS

STD: XII

Chapters: Electric Charges and Fields , Electrostatic Potential and Capacitance &

Current Electricity

Homework Instructions

1. Write all derivations neatly in Physics notebook. 2. Draw proper labeled diagrams.
3. Mention formula, derivation steps, and final result clearly.

Chapter 1: Electric Charges and Fields

1. Derive Coulomb's law in vector form. State the law. Explain the meaning of each term. Write the vector form for force between two point charges.
2. Derive the expression for electric field intensity due to: (a) A point charge (b) A system of charges using superposition principle.
3. Derive the expression for electric field at a point on the axial line of an electric dipole.
4. Derive the expression for electric field at a point on the equatorial line of an electric dipole.
5. Derive the expression for torque acting on an electric dipole placed in a uniform electric field.
6. State and derive Gauss's theorem in electrostatics.
7. Using Gauss's law, derive the expression for electric field due to:
(a) An infinitely long straight charged wire (b) An infinite plane sheet of charge (c) Two large thin plane sheets, each having equal surface charge density are held close and parallel to each other in air. What is the net electric field at a point (i) inside and (ii) outside, the sheets?
8. Using Gauss's law, derive the expression for electric field inside and outside a uniformly charged spherical shell.

Chapter 2: Electrostatic Potential and Capacitance

1. Derive the expression for electric potential due to a point charge.
2. Derive the expression for electric potential due to an electric dipole at: (a) Axial point (b) Equatorial point.
3. Derive the relation: $E = -dv/dr$ between electric field and potential.
4. Derive the expression for potential energy of a system of two charges.
5. Derive the expression for potential energy of an electric dipole in a uniform electric field.
6. Derive the expression for capacitance of a parallel plate capacitor.
7. Derive the effect on capacitance when a dielectric slab is inserted between the plates of a capacitor.
8. Derive the equivalent capacitance for: (a) Capacitors in series (b) Capacitors in parallel.
9. Derive the expression for energy density of electric field.

Chapter 3: Current Electricity

1. Derive the expression for drift velocity of electrons in a conductor.
2. Derive the relation: $I = neAV_d$ where symbols have their usual meanings.
3. Derive Ohm's law using drift velocity concept.
4. Derive the relation between current density and electric field: $J = \sigma E$
5. Derive the expression for electrical conductivity and resistivity.
6. Derive the expression for equivalent resistance in: (a) Series combination (b) Parallel combination.
7. (a) State Kirchhoff's laws and derive the condition for Wheatstone bridge balance.

Q.1. (a) An electric dipole consists of two point charges q and $-q$ separated by a distance $2a$. Derive an expression for the electric field \vec{E} due to this dipole at a point distant r from the centre of the dipole on the equatorial plane. Write the expression for the electric field at a far off point, i.e. $r \gg a$.

(b) A dipole is placed in x - y plane such that charges q and $-q$ are located at $x = a$ and $x = b$ respectively. There exists an electric field

$$\vec{E} = 2\hat{i} \frac{N}{C}$$

in the region. Calculate the force \vec{F} and torque experienced by the dipole.

Q.2. (a) Two cells of emf E_1 and E_2 with internal resistances r_1 and r_2 respectively, are connected in parallel by connecting their positive terminals together and negative terminals together. Deduce an expression for equivalent emf and equivalent internal resistance of the combination. (b) A parallel combination, as stated in (a) above, of two cells of emfs E and $3E$ and internal resistances R each is connected across a resistance $2R$. Find the current that flows through resistance $2R$.

Q.3. A parallel plate capacitor of capacitance C has a dielectric slab between its plates. It is charged to a potential difference V by connecting it across a battery. The battery is then disconnected. If the dielectric slab is now withdrawn from the capacitor, how will the following be affected? (a) Capacitance of the capacitor, (b) Energy stored in the capacitor, and (c) The potential difference between the plates of the capacitor. Justify your answer in each case.

Q.4. Two air-filled capacitors of capacitances C_1 and C_2 are connected in parallel with a dc battery. After the capacitors are fully charged, a slab of dielectric constant K is inserted between the plates of each capacitor. How will the (i) charge on each capacitor and (ii) energy stored in the capacitor affected after the slab is introduced.

Q.5. (a) An electric field E is established across the ends of a cylindrical conductor of length L and area of cross-section A . Discuss how electrons attain an average velocity, independent of time. Hence, obtain a relation between current in the conductor and this 'average velocity' of electrons. (b) (i) This 'average velocity' is found to be few mm/s for currents in range of a few amperes. How then is current established almost the instant a circuit is closed? (ii) Two copper wires having their radii in the ratio of $3 : 2$ are connected in series across a battery. Find the ratio of the drift velocities of the electrons in the wires.

Q.6. (i) Draw electric field lines and equipotential surfaces for a system of two equal and opposite point charges separated by some distance. (ii) Why electric field E at a point on an equipotential surface must be perpendicular to the surface at that point?

Q.7. (i) Two infinitely long straight wires having linear charge densities $-\beta$ and 3β are held vertically parallel to each other, distance r apart in free space. Find the nature and magnitude of the force/length exerted by one wire on the other.

Q.8. A small hollow conducting sphere of radius r_1 is given a charge Q . It is surrounded by a concentric conducting spherical shell of inner radius r_2 and outer radius r_3 , having charge $-3q$. If a point charge $2q$ were kept at the centre, find :

(I) the electric flux through a concentric spherical Gaussian surface of radius x for

(1) $x < r_1$, and (2) $r_1 < x < r_2$.

(II) electric field at a point distant x from the centre for (1) $x > r_3$, and (2) $r_1 < x < r_2$.

(III) surface charge density on the inner surface of (1) sphere, and (2) shell.

- Calculate density of H_2SO_4 solution if its molality and molarity are 94.5 and 11.5 respectively.
- Calculate the mole fraction of Ethanol in a sample of spirit containing 92% ethanol by mass.
- Define the following terms:-
 (i) Molarity (ii) Molality (iii) Abnormal molecular mass.
 (iv) Colligative properties (v) Reverse Osmosis.
- The boiling point of a solution containing 50 g of a non volatile solute in 1 kg of solvent is $0.5^\circ C$ higher than that of the pure solvent. Determine the molecular mass of the solute.
 [M.M of solvent = 78 g/mol] K_b for solvent = $2.53 K m^{-1}$
- A solution containing 10.2 g of glycerine per litre is found to be isotonic with 2% solution of glucose (molar mass 180 g/mol) Calculate molar mass of glycerine.
- The freezing point of a solution containing 0.3 g acetic acid in 30 g benzene is lowered by $0.45^\circ C$. Calculate van't Hoff factor (i).
 K_f for benzene is $5.12 K kg mol^{-1}$.
- How many Coulombs are required to produce 50.0 g of aluminium from molten Al_2O_3 ?
- A solution of copper is electrolysed between copper electrodes by a current of 10 amp. exactly for 1 hour. what changes occur at the electrodes and in the solution.
- At 298 K, the specific conductance of 0.1 M acetic acid solⁿ was found to be $0.00163 S cm^{-1}$. Calculate the degree of dissociation of the acid if its molar conductivity at infinite dilution is $390.7 S cm^2 mol^{-1}$.
- A zinc rod is dipped in 0.1 M solution of $ZnSO_4$. The salt is 95% dissociated at this solution at 298 K. Calculate electrode potential. ($E^\circ_{Zn^{2+}/Zn} = -0.76 V$).
- Calculate EMF of the cell, $Zn|Zn^{2+}(0.1M)||Pb^{2+}(0.02M)|Pb(s)$
 $E^\circ_{Zn^{2+}/Zn} = -0.76 V$, $E^\circ_{Pb/Pb^{2+}} = +0.13 V$
- Calculate ΔG° for the reaction $Cu^{2+}(aq) + Fe(s) \rightleftharpoons Fe^{2+}(aq) + Cu(s)$
 Given $E^\circ_{Cu^{2+}/Cu} = +0.34 V$, $E^\circ_{Fe^{2+}/Fe} = -0.44 V$

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Summer Vacation Home work of Biology session 2026-27

Std. XII

Chapter-1 (Sexual Reproduction in Flowering Plants)

Solved all questions of NCERT Book from this Chapter

Chapter-2 (Human Reproduction)

Solved all questions of NCERT Book from this Chapter

Draw a labelled diagram of sectional view of Testis and Ovary.

Make a flow chart of Spermatogenesis and Oogenesis

Chapter-3 Human (Reproductive Health)

Solved all questions of NCERT Book from this Chapter

15 Assertion/Reason types questions from each Chapter

Summer vacation Home work - 2026

D.A.V. PUBLIC SCHOOL, KOYLANAGAR, DHANBAD

Class - XII

Subject - Mathematics.

1. Relations and Functions

Solve all Examples of Relations and Functions from NCERT Book.

Solve Questions from Exercise of NCERT Book

Ex - 1.1 Q.No. 2, 3, 5, 8, 9, 10, 12, 14, 15 and 16.

Ex - 1.2 Q.No. 3, 4, 9, 10, 11, 12

Miscellaneous Exercise chapter 1

Q.No. 7, 2, 6, 8.

Q.1. Show that the Relation R on $N \times N$ defined by $(a, b) R (c, d) \Leftrightarrow a+d = b+c$ is an equivalence Relation.

Q.2. Check whether $f: Z \times Z \rightarrow Z \times Z$ (where Z is the set of integers) defined as $f(x, y) = (2y, 3x)$ is injective or not.

2. Matrices and Determinants

Solve all examples of Matrices and Determinants from NCERT Book.

Solve Questions from Exercise of NCERT Book

Ex - 3.1 Q.No. 5, 7, 8, 9, 10

Ex - 3.2 Q.No. 3, 7, 10, 12, 16, 17, 18, 20, 21, 22

Ex - 3.3 Q.No. 5, 7, 10, 11, 12

Misc Ex on chapter - 3 Q.No. 4, 6, 8, 9, 10, 11.

Ex - 4.1 Q.No. 4, 5, Ex - 4.2 Q.No. 3, 4

Ex - 4.3 Q.No. 1, 4, Ex - 4.4. 13, 16, 17, 18

Ex - 4.5 Q.No. 13, 15

Miscellaneous Exercise on chapter 4 Q.No. 1, 3, 5, 7, 8.

Q.1. If $P = \begin{bmatrix} 1 & -1 & 0 \\ 2 & 3 & 4 \\ 0 & 1 & 2 \end{bmatrix}$ and $Q = \begin{bmatrix} 2 & 2 & -4 \\ -4 & 2 & -4 \\ 2 & -1 & 5 \end{bmatrix}$ Find QP

and hence solve the following equations using Matrices

$$x - y = 3, \quad 2x + 3y + 4z = 17, \quad y + 2z = 7.$$

DAV Public School, Koylanagar, Dhanbad

Holiday Homework

Class-XII Sub-Informatics Practices session 2025-26

1. Differentiate between Dataframe and Series.

2. Differentiate between series and List.

3. Write a program to create a Series given below.

Kolkata	1800
Delhi	2300
Chennai	2100
Mumbai	3200
Pune	2600

4. Write a program to create a dataframe df

	Name	age	weight
0	Ronit	25	68
1	Mohit	26	73
2	Sujay	25	69
3	Pushkar	23	77
4	Umesh	30	82
5	Priya	29	74
6	Doyal	23	68

Write the statements to do the following:

- Display top 4 elements of the dataframe.
- Display names of the dataframe.
- Change the row indices as ['a', 'b', 'c', 'd', 'e', 'f', 'g'].
- Change the age of Umesh to 24.

Physical education holiday homework

Complete Question and Answer in your class work copy chapter 1 and 2.

