# SD DAV PUBLIC SCHOOL, JAMTARA

## Summer Vacation Assignment (2026-27)

**Class: - XII**

**SUBJECT: ENGLISH**

# Reading Portion

**1. Download five reading passages and do them in the copy**

**2. Read the English newspaper, collect the new words and use them in your own sentences.**

# Literature Portion

**Q1. "I've plenty of time. I'll learn it tomorrow. And now you see where we've come out."**
**What does M. Hamel mean to convey through these lines? (40-50 words)**

Q2. We miss a thing when we are in fear of losing it. Substantiate this statement with two examples from 'The Last Lesson', how the people in the story suddenly realised how precious their language was to them. [40-50 Words]

Q3. What was the 'thunderclap' the narrator received as Hamel began the lesson? [40-50 Words]

Q4. Explain the inference that can be drawn from the line : "Will they make them sing in German, even the pigeons?"

Q5. It is said that the 'Face is a mirror of one's emotions.' Why did the poet 'smile and smile'? [40-50 Words]

Q7. Write a paragraph focusing on how the poems 'Keeping quiet' and 'My Mother at Sixty-six' illuminate different facets of human introspection and the significance of quiet reflection in understanding oneself.

Q8. Explain : 'late winter's moon'

**Q9. Charlie's desperate attempt to find the third level reflects his frustration with the modern world. What aspects of the modern world have led to Charlie's frustration?**

# Writing Skill

1. **You are Asma/Ashish, the head girl/boy of XYZ international school. Your school is going to publish the annual magazine next month. Write a notice for the notice board of your school inviting students to submit write-ups.**

2. You are Sanjay / Sanajana, of class 12, the President of the Drama club at St John's School, Amritsar. Prepare a notice in 50 words inviting entries for various roles for an upcoming inter-school drama competition.

**Project: Make a pictorial flow chart on the chapter "Lost Spring" hunting for the biography of the writer, justification of title, character sketch of the protagonists, theme and message of the chapter, cause of child labour, ways to eliminate the child labour and conclusion.(it should be in the file)**

# SUBJECT: PHYSICS

## 2.2 Electrostatic Potential

**MCQ**

1. A conducting sphere of radius $R$ is given a charge $Q$. Consider three points $A$, $B$ and $C$ — $A$ at the centre, $B$ at a distance $R/2$ from the centre and $C$ on the surface of the sphere. The electric potentials at these points are such that
   (a) $V_A = V_B = V_C$ (b) $V_A = V_B \neq V_C$
   (c) $V_A \neq V_B \neq V_C$ (d) $V_A \neq V_B = V_C$ *(2024)*

**VSA (1 mark)**

2. The physical quantity having SI unit $N\,C^{-1}\,m$ is _____. *(2020)* R

**SA II (3 marks)**

3. Two charged conducting spheres of radii $a$ and $b$ are connected to each other by a wire. Find the ratio of the electric fields at their surfaces. *(2023)* An

## 2.3 Potential due to a Point Charge

**MCQ**

4. A proton is taken from point $P_1$ to point $P_2$, both located in an electric field. The potentials at points $P_1$ and $P_2$ are − 5 V and + 5 V respectively. Assuming that kinetic energies of the proton at points $P_1$ and $P_2$ are zero, the work done on the proton is
   (a) $-1.6 \times 10^{-18}$ J
   (b) $1.6 \times 10^{-18}$ J
   (c) zero
   (d) $0.8 \times 10^{-18}$ J
   *(2024)* Ap

**VSA (1 mark)**

5. A point charge $+Q$ is placed at point $O$ as shown in the figure. Is the potential difference $V_A - V_B$ positive, negative or zero?


*(Delhi 2016, Foreign 2016)*

## 2.4 Potential due to an Electric Dipole

**MCQ**

6. 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) $\frac{1}{x^2}$ (b) $\frac{1}{x^3}$
   (c) $\frac{1}{x^4}$ (d) $\frac{1}{x^{1/2}}$
   *(2023)* Ev

**SA II (3 marks)**

7. Derive the expression for the electric potential due to an electric dipole at a point on its axial line. *(2/3, Delhi 2017)* Ap

## 2.5 Potential due to a System of Charges

**MCQ**

8. **Assertion (A)** : Equal amount of positive and negative charges are distributed uniformly on two halves of a thin circular ring as shown in figure. The resultant electric field at the centre $O$ of the ring is along $OC$.


**Reason (R)** : It is so because the net potential at $O$ is not zero.
   (a) If both Assertion (A) and Reason (R) are true and Reason (R) is correct explanation of Assertion (A).
   (b) If both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A).
   (c) If Assertion (A) is true but Reason (R) is false.
   (d) If both Assertion (A) and Reason (R) are false.
   *(2024)* U

**SA I (2 marks)**

9. Two small conducting balls $A$ and $B$ of radius $r_1$ and $r_2$ have charges $q_1$ and $q_2$ respectively. They are connected by a wire. Obtain the expression for charges on $A$ and $B$, in equilibrium. *(2023)* U

10. $N$ small conducting liquid droplets, each of radius $r$, are charged to a potential $V$ each. These droplets coalesce to form a single large drop without any charge leakage. Find the potential of the large drop. *(2020)* An

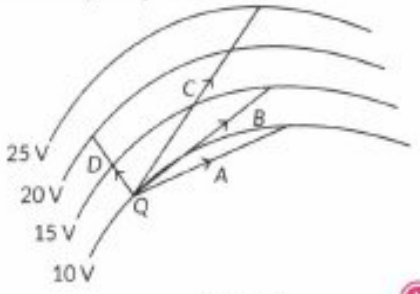
**LA (5 marks)**

11. (i) The electric field in a region is given by $\vec{E} = 40x\,\hat{i}$ N/C. Find the amount of work done in taking a unit positive charge from a point (0, 3 m) to the point (5 m, 0).
    (ii) A charge $Q$ is distributed over two concentric hollow spheres of radii $r$ and $R$ ($> r$) such that their surface charge densities are equal. Find :
    (I) the electric field, and
    (II) the potential at their common centre.
    *(2025)* Ev

## 2.6 Equipotential Surfaces

**MCQ**

12. In the figure curved lines represent equipotential surfaces. A charge $Q$ is moved along different paths $A$, $B$, $C$ and $D$. The work done on the charge will be maximum along the path

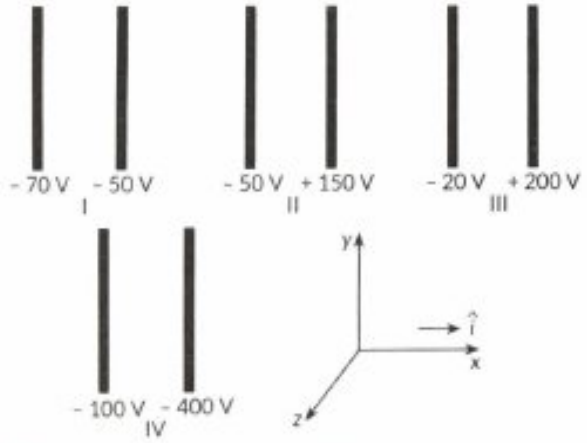



(a) $A$ (b) $B$
(c) $C$ (d) $D$ (2025) R

**Case Based Questions**

**Question number 13(i) to 13(iv) are case study based questions. Read the following paragraph and answer the questions that follows.**

13. The figure shows four pairs of parallel identical conducting plates, separated by the same distance 2.0 cm and arranged perpendicular to $x$-axis. The electric potential of each plate is mentioned. The electric field between a pair of plates is uniform and normal to the plates.




(i) For which pair of the plates is the electric field $\vec{E}$ along $\hat{i}$?

(a) I (b) II (c) III (d) IV

(ii) An electron is released midway between the plates of pair IV. It will

(a) move along $\hat{i}$ at constant speed

(b) move along $-\hat{i}$ at constant speed

(c) accelerate along $\hat{i}$

(d) accelerate along $-\hat{i}$.

(iii) Let $V_0$ be the potential at the left plate of any set, taken to be at $x = 0$ m. Then potential $V$ at any point ($0 \le x \le 2$ cm) between the plates of that set can be expressed as :

(a) $V = V_0 + \alpha x$ (b) $V = V_0 + \alpha x^2$
(c) $V = V_0 + \alpha x^{1/2}$ (d) $V = V_0 + \alpha x^{3/2}$

where $\alpha$ is a constant, positive or negative.

(iv) Let $E_1$, $E_2$, $E_3$ and $E_4$ be the magnitudes of the electric field between the pairs of plates, I, II, III and IV respectively.

Then :

(a) $E_1 > E_2 > E_3 > E_4$ (b) $E_3 > E_4 > E_1 > E_2$
(c) $E_4 > E_3 > E_2 > E_1$ (d) $E_2 > E_3 > E_4 > E_1$

OR

(iv) An electron is projected from the right plate of set I directly towards its left plate. It just comes to rest at the plate. The speed with which it was projected is about
(Take $(e/m) = 1.76 \times 10^{11}$ C/kg)

(a) $1.3 \times 10^5$ m/s
(b) $2.6 \times 10^6$ m/s
(c) $6.5 \times 10^5$ m/s
(d) $5.2 \times 10^7$ m/s (2024) CFQ

14. The electric potential $V$ at any point $(x, y, z)$ is given by $V = 3x^2$ where $x$ is in metres and $V$ in volts. The electric field at the point (1 m, 0, 2 m) is

(a) 6 V $m^{-1}$ along $-x$-axis
(b) 6 V $m^{-1}$ along $+x$-axis
(c) 1.5 V $m^{-1}$ along $-x$-axis
(d) 1.5 V $m^{-1}$ along $+x$-axis. (Term I 2021-22) U

15. Equipotentials at a large distance from a collection of charges whose total sum is not zero are

(a) spheres (b) planes
(c) ellipsoids (d) paraboloids

(Term I 2021-22) R

**VSA (1 mark)**

16. Two point charges $q$ and $-q$ are located at $(0, 0, -a)$ and $(0, 0, a)$ respectively.

(a) Depict the equipotential surfaces due to this arrangement.

(b) Find the amount of work done in moving a small test charge $q_0$ from point $(l, 0, 0)$ to $(0, 0, 0)$.

(AI 2020C)

17. A uniform electric field $E$ of 500 N/C is directed along $+x$ axis. $O$, $B$ and $A$ are three points in the field having $x$ and $y$ coordinates (in cm) (0, 0), (4, 0) and (0, 3) respectively. Calculate the potential difference between the points (i) $O$ and $A$, and (ii) $O$ and $B$. (2023C) Ap

**SA II (3 marks)**

18. (a) Draw the equipotential surfaces corresponding to a uniform electric field in the $z$-direction.

(b) Derive an expression for the electric potential at any point along the axial line of an electric dipole. (AI 2019)

19. Draw the equipotential surface due to an electric dipole. *(1/3, Delhi 2019)* R

OR

Depict the equipotential surfaces due to an electric dipole. *(2/3, Delhi 2017)*

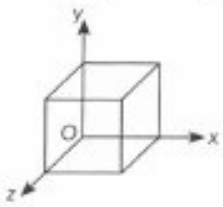
20. Define an equipotential surface. Draw equipotential surfaces:
    (i) in the case of a single point charge and
    (ii) in a constant electric field in Z-direction.
    Why the equipotential surface about a single charge are not equidistant ?
    (iii) Can electric field exist tangential to an equipotential surface? Give reason.
    *(AI 2016)* R

**LA** **(5 marks)**

21. (i) A small conducting sphere A of radius *r* charged to a potential *V*, is enclosed by a spherical conducting shell *B* of radius *R*. If *A* and *B* are connected by a thin wire, calculate the final potential on sphere *A* and shell *B*.
    (ii) Write two characteristics of equipotential surfaces. A uniform electric field of 50 $NC^{-1}$ is set up in a region along +x axis. If the potential at the origin (0, 0) is 220 V, find the potential at a point (4 m, 3 m). *(2025)* Cr

22. Draw equipotential surfaces due to an isolated point charge (−*q*) and depict the electric field lines. *(1/5, AI 2020)*

23. A cube of side 20 cm is kept in a region as shown in the figure. An electric field $\vec{E}$ exists in the region such that the potential at a point is given by $V = 10x + 5$, where *V* is in volt and *x* is in m.
    Find the
    (i) electric field $\vec{E}$ and
    (ii) total electric flux through the cube.




    *(3/5, 2020)* An

24. Write two important characteristics of equipotential surfaces. *(2/5, 2020)*

25. The magnitude of electric field (in N $C^{-1}$) in a region varies with the distance *r* (in m) as, $E = 10r + 5$
    By how much does the electric potential increase in moving from point at $r = 1$ m to a point at $r = 10$ m. *(2/5, 2020)* Ap

26. The electric potential as a function of distance 'x' is shown in the figure. Draw a graph of the electric field *E* as a function of x.


    *(1/5, AI 2019)* An

27. Is the electrostatic potential necessarily zero at a point where the electric field is zero? Give an example to support your answer. *(2/5, AI 2019)* Ap

28. An infinitely large thin plane sheet has a uniform surface charge density +σ. Obtain the expression for the amount of work done in bringing a point charge *q* from infinity to a point, distant *r*, in front of the charged plane sheet. *(3/5, AI 2017)* Ap

## 2.7 Potential Energy of a System of Charges

**MCQ**

29. **Assertion (A) :** Work done in moving a charge around a closed path, in an electric field is always zero.
    **Reason (R) :** Electrostatic force is a conservative force.
    (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
    (b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A).
    (c) Assertion (A) is true and Reason (R) is false.
    (d) Assertion (A) is false and Reason (R) is also false. *(2023)* R

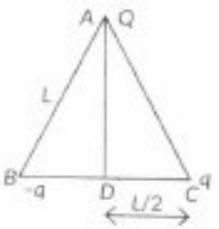
30. A +3.0 nC charge *Q* is initially at rest at a distance of $r_1 = 10$ cm from a + 5.0 nC charge *q* fixed at the origin. The charge *Q* is moved away from *q* to a new position at $r_2 = 15$ cm. In this process work done by the field is
    (a) $1.29 \times 10^{-5}$ J (b) $3.6 \times 10^{5}$ J
    (c) $-4.5 \times 10^{-7}$ J (d) $4.5 \times 10^{-7}$ J
    *(Term I 2021-22)*

**SA I** **(2 marks)**

31. Three point charges 1 μC, −1 μC and 2 μC are kept at the vertices A, B and C respectively of an equilateral triangle of side 1 m. $A_1$, $B_1$ and $C_1$ are the midpoints of the sides AB, BC and CA respectively. Calculate the net amount of work done in displacing the charge from A to $A_1$, from B to $B_1$ and from C to $C_1$. *(2023C)* Ev

32. Obtain an expression for electrostatic potential energy of a system of three charges *q*, 2*q* and −3*q* placed at the vertices of an equilateral triangle of side *a*. *(2023)*

33. Three point charges *Q*, *q* and −*q* are kept at the vertices of an equilateral triangle of side *L* as shown in figure. What is
    (i) the electrostatic potential energy of the arrangement? and
    (ii) the potential at point *D*?



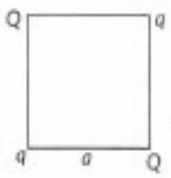

    *(2023)* Ap

**SA II** (3 marks)

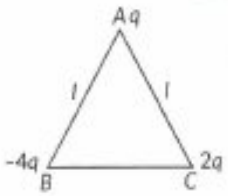
34. Two point charges of 10 μC and 20 μC are located at points (– 4 cm, 0, 0) and (5 cm, 0, 0) respectively, in a region with electric field $E = \frac{A}{r^2}$, where $A = 2 \times 10^6$ $NC^{-1}$ $m^2$ and $\vec{r}$ is the position vector of the point under consideration. Calculate the electrostatic potential energy of the system. *(2024C)*

35. (a) Two point charges + $Q_1$ and $-Q_2$ are placed $r$ distance apart. Obtain the expression for the amount of work done to place a third charge $Q_3$ at the midpoint of the line joining the two charges.
    (b) At what distance from charge $+Q_1$ on the line joining the two charges (in terms of $Q_1$, $Q_2$ and $r$) will this work done be zero. *(2020)* Ev

36. Four point charges $Q$, $q$, $Q$ and $q$ are placed at the corners of a square of side '$a$' as shown in the figure. Find the
    (a) resultant electric force on a charge $Q$, and
    (b) potential energy of this system. *(2018)* An



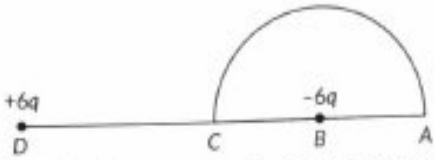

37. (a) Three point charges $q$, $-4q$ and $2q$ are placed at the vertices of an equilateral triangle $ABC$ of side '$l$' as shown in the figure. Obtain the expression for the magnitude of the resultant electric force acting on the charge $q$.
    (b) Find out the amount of the work done to separate the charges at infinite distance. *(2018)*




38. Three point charges +1 μC, –1 μC and +2 μC are initially infinite distance apart. Calculate the work done in assembling these charges at the vertices of an equilateral triangle of side 10 cm. *(2017)*

**LA** (5 marks)

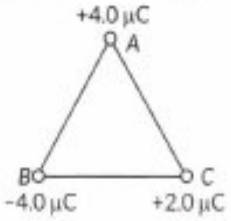
39. (i) Consider three metal spherical shells $A$, $B$ and $C$, each of radius $R$. Each shell is having a concentric metal ball of radius $R/10$. The spherical shells $A$, $B$ and $C$ are given charges $+6q$, $-4q$, and $14q$ respectively. Their inner metal balls are also given charges $-2q$, $+8q$ and $-10q$ respectively. Compare the magnitude of the electric fields due to shells $A$, $B$ and $C$ at a distance $3R$ from their centres.
    (ii) A charge –6 μC is placed at the centre $B$ of a semicircle of radius 5 cm, as shown in the figure. An equal and opposite charge is placed at point $D$ at a distance of 10 cm from $B$. A charge +5 μC is moved from point '$C$' to point '$A$' along the circumference. Calculate the work done on the charge.




*(2025)* R

40. (i) Obtain an expression for the electric potential due to a small dipole of dipole moment $\vec{p}$, at a point $\vec{r}$ from its centre, for much larger distances compared to the size of the dipole.
    (ii) Three point charges $q$, $2q$ and $nq$ are placed at the vertices of an equilateral triangle. If the potential energy of the system is zero, find the value of $n$. *(2024)* R

41. (i) Consider two identical point charges located at points (0, 0) and ($a$, 0).
    (1) Is there a point on the line joining them at which the electric field is zero ?
    (2) Is there a point on the line joining them at which the electric potential is zero?
    Justify your answers for each case.
    (ii) State the significance of negative value of electrostatic potential energy of a system of charges.
    Three charges are placed at the corners of an equilateral triangle $ABC$ of side 2.0 m as shown in figure. Calculate the electric potential energy of the system of three charges.




*(2023)*

## 2.8 Potential Energy in an External Field

**MCQ**

42. An electric dipole consisting of charges $+q$ and $-q$ separated by a distance $L$ is in stable equilibrium in a uniform electric field . The $\vec{E}$ electrostatic potential energy of the dipole is
    (a) $qLE$ (b) zero (c) $-qLE$ (d) $-2qEL$
    *(2020)* Ap

**SA I** (2 marks)

43. Obtain the expression for potential energy of an electric dipole placed with its axis at an angle ($\theta$) to an external electric field ($\vec{E}$) . What is the minimum value of the potential energy? *(2019C)*

**CBQ** (4 marks)

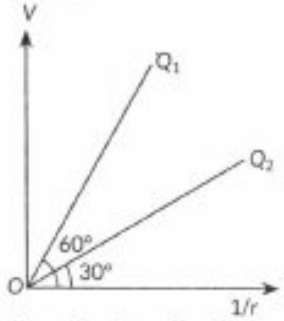
44. Electrostatics deals with the study of forces, fields and potentials arising from static charges. Force and electric field, due to a point charge is basically determined by Coulomb's law. For symmetric charge configurations, Gauss's law, which is also based on Coulomb's law, helps us to find the electric field.

A charge/ a system of charges like a dipole experience a force/torque in an electric field. Work is required to be done to provide a specific orientation to a dipole with respect to an electric field.

Answer the following questions based on the above :

(a) Consider a uniformly charged thin conducting shell of radius $R$. Plot a graph showing the variation of $|\vec{E}|$ with distance $r$ from the centre, for points $0 \le r \le 3R$.

(b) The figure shows the variation of potential $V$ with $1/r$ for two point charges $Q_1$ and $Q_2$, where $V$ is the potential at a distance $r$ due to a point charge. Find $\frac{Q_1}{Q_2}$




(c) An electric dipole of dipole moment of $6 \times 10^{-7}$ C-m is kept is a uniform electric field of $10^4$ N/C such that the dipole moment and the electric field are parallel. Calculate the potential energy of the dipole.

OR

An electric dipole of dipole moment $\vec{p}$ is initially kept in a uniform electric field $\vec{E}$ such that $\vec{p}$ is perpendicular to $\vec{E}$. Find the amount of work done in rotating the dipole to a position at which $\vec{p}$ becomes antiparallel to $\vec{E}$.

*(2023) CFQ*

**LA** **(5 marks)**

45. (i) Draw equipotential surfaces for an electric dipole.
(ii) Two point charges $q_1$ and $q_2$ are located at $\vec{r}_1$ and $\vec{r}_2$ respectively in an external electric field $\vec{E}$. Obtain an expression for the potential energy of the system.
(iii) The dipole moment of a molecule is $10^{-30}$ C m. It is placed in an electric field $\vec{E}$ of $10^5$ V/m such that its axis is along the electric field. The direction of $\vec{E}$ is suddenly changed by 60° at an instant. Find the change in the potential energy of the dipole, at that instant. *(2024)* Ap

46. Find the expression for the potential energy of a system of two point charges $q_1$ and $q_2$ located at $\vec{r}_1$ and $\vec{r}_2$, respectively in an external electric field $\vec{E}$.

*(2/5, 2020)* Ap

47. Two point charges $q_1$ and $q_2$ are kept $r$ distance apart in a uniform external electric field $\vec{E}$. Find the amount of work done in assembling this system of charges. *(2/5, 2020)* An

48. Derive an expression for the potential energy of an electric dipole in a uniform electric field. Explain conditions for stable and unstable equilibrium.

*(3/5, AI 2019)*

## 2.9 Electrostatics of Conductors

**MCQ**

49. An isolated conductor, with a cavity,has a net charge +Q. A point charge +q is inside the cavity. The charges on the cavity wall and the outer surface are respectively.
(a) 0 and Q
(b) − q and Q − q
(c) − q and Q + q
(d) 0 and Q − q

*(2024)* U

## 2.12 The Parallel Plate Capacitor

**MCQ**

**Case Based Questions**

**Question number 50(i) to 50(iv) are case study based question. Read the following paragraph and answer the questions that follows.**

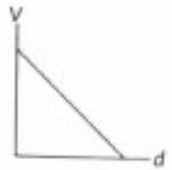
50. A parallel plate capacitor has two parallel plates which are separated by an insulating medium like air, mica, etc. When the plates are connected to the terminals of a battery, they get equal and opposite charges and an electric field is set up in between them. This electric field between the two plates depends upon the potential difference applied, the separation of the plates and nature of the medium between the plates.

(i) The electric field between the plates of a parallel plate capacitor is $E$. Now the separation between the plates is doubled and simultaneously the applied potential difference between the plates is reduced to half of its initial value. The new value of the electric field between the plates will be

(a) $E$ (b) $2E$ (c) $\frac{E}{4}$ (d) $\frac{E}{2}$

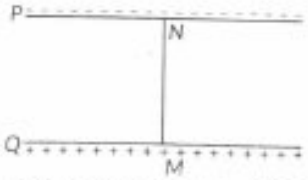
(ii) A constant electric field is to be maintained between the two plates of a capacitor whose separation $d$ changes with time. Which of the graphs correctly depict the potential difference (V) to be applied between the plates as a function of separation between the plates ($d$) to maintain the constant electric field ?

(a) 


(b) 


(c) 


(d) 


(iii) 


In the above figure, *P*, *Q* are the two parallel plates of a capacitor. Plate *Q* is at positive potential with respect to plate *P*. *MN* is an imaginary line drawn perpendicular to the plates. Which of the graphs shows correctly the variations of the magnitude of electric field strength *E* along the line *MN*?

(a) 


(b) 


(c) 


(d) 


(iv) Three parallel plates are placed above each other with equal displacement $\vec{d}$ between neighbouring plates. The electric field between the first pair of the plates is $\vec{E}_1$ and the electric field between the second pair of the plates is $\vec{E}_2$. The potential difference between the third and the first plate is

(a) $(\vec{E}_1+\vec{E}_2)\cdot\vec{d}$ (b) $(\vec{E}_1-\vec{E}_2)\cdot\vec{d}$

(c) $(\vec{E}_2-\vec{E}_1)\cdot\vec{d}$ (d) $\frac{d(E_1+E_2)}{2}$

OR

(iv) A material of dielectric constant *K* is filled in a parallel plate capacitor of capacitance *C*. The new value of its capacitance becomes

(a) *C* (b) $\frac{C}{K}$

(c) *CK* (d) $C\left(1+\frac{1}{K}\right)$ (2025) An

51. The capacitance of a parallel plate capacitor is 10 μF when the distance between its plates is 8 cm. If the distance between the plates is halved, the capacitance will become
(a) 10 μF (b) 15 μF
(c) 20 μF (d) 40 μF (2024C)

52. A charge particle is placed between the plates of a charged parallel plate capacitor. It experiences a force *F*. If one of the plates is removed, the force on the charge particle becomes
(a) *F* (b) 2*F*
(c) *F*/2 (d) Zero (*AI* 2020C)

**LA** (5 marks)

53. When a parallel plate capacitor is connected across a *dc* battery, explain briefly how the capacitor gets charged. (2/5, *AI* 2019) U

54. If two similar large plates, each of area *A* having surface charge densities + σ and − σ are separated by a distance *d* in air, find the expressions for
(a) field at points between the two plates and on outer side of the plates. Specify the direction of the field in each case.
(b) the potential difference between the plates.
(c) the capacitance of the capacitor so formed.
(3/5, *AI* 2016)

## 2.13 Effect of Dielectric on Capacitance

**LA** (5 marks)

55. (i) Two point charges 5 μC and − 1 μC are placed at points (−3 cm, 0, 0) and (3 cm, 0, 0) respectively. An external electric field $\vec{E}=\frac{A}{r^2}\hat{r}$ where $A = 3\times10^5$ Vm is switched on in the region. Calculate the change in electrostatic energy of the system due to the electric field.
(ii) A system of two conductors is placed in air and they have net charge of +80 μC and −80 μC which causes a potential difference of 16 V between them.
(1) Find the capacitance of the system.
(2) If the air between the capacitor is replaced by a dielectric medium of dielectric constant 3, what will be the potential difference between the two conductors?
(3) If the charges on two conductors are changed to +160 μC and −160 μC, will the capacitance of the system change?
Give reason for your answer. (2025) Ev

56. (i) Obtain the expression for the capacitance of a parallel plate capacitor with a dielectric medium between its plates.

(ii) A charge of 6 μC is given to a hollow metallic sphere of radius 0.2 m. Find the potential at (i) the surface and (ii) the centre of the sphere. (2024)

## 2.14 Combination of Capacitors

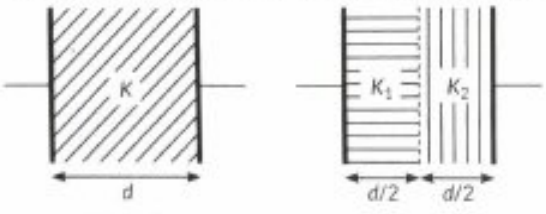
**MCQ**

57. Three capacitors, each of 4 μF are to be connected in such a way that the effective capacitance of the combination is 6 μF. This can be achieved by connecting.
    (a) All three in parallel
    (b) All three in series
    (c) Two of them connected in series and the combination in parallel to the third.
    (d) Two of them connected in parallel and the combination in series to the third. (2023) Ev

58. Two capacitors of capacitances $C_1$ and $C_2$ are connected in parallel. If a change $Q$ is given to the combination, the ratio of the charge on the capacitor $C_1$ to the charge on $C_2$ will be
    (a) $C_1/C_2$ (b) $\sqrt{\frac{C_1}{C_2}}$ (c) $\sqrt{\frac{C_2}{C_1}}$ (d) $\frac{C_2}{C_1}$
    (AI 2020)

**SA II (3 marks)**

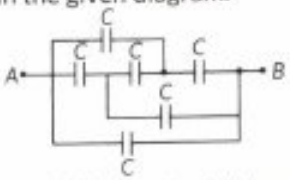
59. The space between the plates of a parallel plate capacitor is completely filled in two ways. In the first case, it is filled with a slab of dielectric constant $K$. In the second case, it is filled with two slabs of equal thickness and dielectric constants $K_1$ and $K_2$ respectively as shown in the figure. The capacitance of the capacitor is same in the two cases. Obtain the relationship between $K$, $K_1$ and $K_2$.




(Case 1) (Case 2) (AI 2020)

**CBQ (4 marks)**

60. A capacitor is a system of two conductors separated by an insulator. The two conductors have equal and opposite charges with a potential difference between them. The capacitance of a capacitor depends on the geometrical configuration (shape, size and separation) of the system and also on the nature of the insulator separating the two conductors. They are used to store charges. Like resistors, capacitors can be arranged in series or parallel or a combination of both to obtain desired value of capacitance.
    (i) Find the equivalent capacitance between points $A$ and $B$ in the given diagram.




    (ii) A dielectric slab is inserted between the plates of a parallel plate capacitor. The electric field between the plates decreases. Explain.
    (iii) A capacitor $A$ of capacitance $C$, having charge $Q$ is connected across another uncharged capacitor $B$ of capacitance $2C$. Find an expression for (a) the potential difference across the combination and (b) the charge lost by capacitor $A$.

OR

    (iii) Two slabs of dielectric constants $2K$ and $K$ fill the space between the plates of a parallel plate capacitor of plate area $A$ and plate separation $d$ as shown in figure. Find an expression for capacitance of the system.


(2023) CFQ Ev

High Weightage Topic

## 2.15 Energy Stored in a Capacitor

**MCQ**

**Case Based Questions**

**Question number 61 and 62 are case study based question. Read the following paragraph and answer the questions that follows.**

61. A capacitor is a system of two conductors separated by an insulator. In practice, the two conductors have charges $Q$ and $-Q$ with potential difference $V = V_1 - V_2$ between them. The ratio $Q/V$ is a constant, denoted by $C$ and is called the capacitance of the capacitor. It is independent of $Q$ or $V$. It depends only on the geometrical configuration (shape, size, separation) of the two conductors and the medium separating the conductors. When a parallel plate capacitor is charged, the electric field $E_0$ is localised between the plates and is uniform throughout. When a slab of a dielectric is inserted between the charged plates (charge density $\sigma$), the dielectric is polarised by the field. Consequently opposite charges appear on the faces of the slab, near the plates, with surface charge density of magnitude $\sigma_p$. For a linear dielectric $\sigma_p$ is proportional to $E_0$. Introduction of a dielectric changes the electric field, and hence the capacitance of a capacitor, and hence, the energy, stored in the capacitor.
    Like resistors, capacitors can also be arranged in series or in parallel or in a combination of series and parallel.
    (i) Consider a capacitor of capacitance $C$, with plate area $A$ and plate separation $d$, filled with air as

air [Fig. (a)]. The distance between the plates is increased to $2d$ and one of the plates is shifted as Fig. (b). The capacitance of the new system now is


(a) (b)

(a) $\frac{C}{4}$ (b) $\frac{C}{2}$ (c) $2C$ (d) $4C$

(ii) A slab (area $A$ and thickness $d_1$) of a linear dielectric of dielectric constant $K$ is inserted between charged plates (charge density $\sigma$) of a parallel plate capacitor [plate area $A$ and plate separation $d$ ($> d_1$)] and opposite charges with charge density of magnitude $\sigma_p$ appear on the faces of the slab. The dielectric constant $K$ is given by

(a) $\frac{\sigma+\sigma_p}{\sigma}$ (b) $\frac{\sigma}{\sigma-\sigma_p}$

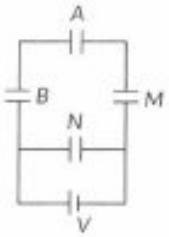
(c) $\frac{\sigma+\sigma_p}{\sigma_p}$ (d) $\frac{\sigma}{\sigma_p}$

(iii) An electric field $E$ is established between the plates of an air filled parallel plate capacitor, with charges $Q$ and $-Q$. V is the volume of the space enclosed between the plates. The energy stored in the capacitor is

(a) $\frac{1}{2}\varepsilon_0 E^2$ (b) $\varepsilon_0 Q^2 E$

(c) $\frac{1}{2}\varepsilon_0 E^2 V$ (d) $\varepsilon_0 E Q V$

(iv) Three capacitors $A$, $B$ and $M$, each of capacitance $C$ are connected to a capacitor $N$ of capacitance $2C$ and a battery as shown in the figure. If the charges on $A$ and $N$ are $Q$ and $Q'$ respectively, then $\frac{Q'}{Q}$ is




(a) $\frac{1}{6}$ (b) $\frac{1}{3}$ (c) 3 (d) 6

OR

A slab (area $A$ and thickness $d/2$ ) of dielectric constant $K$ is inserted in a parallel plate capacitor of plate area $A$ and plate separation $d$. If $C$ and $C_0$ are the capacitances of the capacitors with and without the dielectric, then $\frac{C}{C_0}$ is

(a) $\frac{K+1}{2K}$ (b) $\frac{2K}{K+1}$ (c) $\frac{K}{K-1}$ (d) $\frac{K-1}{K}$

(2025)

62. Dielectrics play an important role in design of capacitors. The molecules of a dielectric may be polar or non-polar. When a dielectric slab is placed in an external electric field, opposite charges appear on the two surfaces of the slab perpendicular to electric field. Due to this an electric field is established inside the dielectric.

The capacitance of a capacitor is determined by the dielectric constant of the material that fills the space between the plates. Consequently, the energy storage capacity of a capacitor is also affected. Like resistors, capacitors can also be arranged in series and/or parallel.

(i) Which of the following is a polar molecule?

(a) $O_2$ (b) $H_2$ (c) $N_2$ (d) HCl

(ii) Which of the following statements about dielectrics is correct?

(a) A polar dielectric has a net dipole moment in absence of an external electric field which gets modified due to the induced dipoles.

(b) The net dipole moments of induced dipoles is along the direction of the applied electric field.

(c) Dielectrics contain free charges.

(d) The electric field produced due to induced surface charges inside a dielectric is along the external electric field.

(iii) When a dielectric slab is inserted between the plates of an isolated charged capacitor, the energy stored in it

(a) increases and the electric field inside it also increases.

(b) decreases and the electric field also decreases.

(c) decreases and the electric field increases.

(d) increases and the electric field decreases.

(iv) An air-filled capacitor with plate area $A$ and plate separation $d$ has capacitance $C_0$. A slab of dielectric constant $K$, area $A$ and thickness $\left(\frac{d}{5}\right)$ is inserted between the plates. The capacitance of the capacitor will become

(a) $\left[\frac{4K}{5K+1}\right]C_0$ (b) $\left[\frac{K+5}{4}\right]C_0$

(c) $\left[\frac{5K}{4K+1}\right]C_0$ (d) $\left[\frac{K+4}{5K}\right]C_0$

OR

Two capacitors of capacitance $2\ C_0$ and $6\ C_0$ are first connected in series and then in parallel across the same battery. The ratio of energies stored in series combination to that in parallel is

(a) $\frac{1}{4}$ (b) $\frac{1}{6}$

(c) $\frac{2}{15}$ (d) $\frac{3}{16}$

(2024)

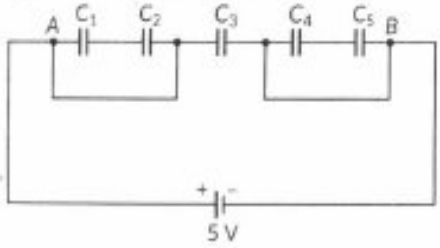
63. A parallel plate capacitor is charged by a battery. The battery is then disconnected and the plates of the charged capacitor are then moved farther apart. In the process
(a) the charge on the capacitor increases
(b) the potential difference across the plates decreases
(c) the capacitance of the capacitor increases
(d) the electrostatic energy stored in the capacitor increases. *(2024C)*

64. A variable capacitor is connected to a 200 V battery. If its capacitance is changed from 2 μF to $X$ μF, the decrease in energy of the capacitor is $2 \times 10^{-2}$ J. The value of $X$ is
(a) 1 μF (b) 2 μF
(c) 3 μF (d) 4 μF
*(Term I 2021-22)*

**SA II (3 marks)**

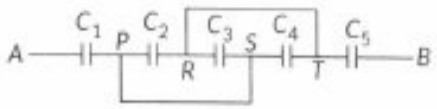
65. A parallel plate capacitor ($A$) of capacitance $C$ is charged by a battery to voltage $V$. The battery is disconnected and an uncharged capacitor ($B$) of capacitance $2C$ is connected across $A$. Find the ratio of
(i) final charges on $A$ and $B$.
(ii) total electrostatic energy stored in $A$ and $B$ finally and that stored in $A$ initially. *(2023)* An

66. In the figure given below, find the




(a) equivalent capacitance of the network between points $A$ and $B$.
Given : $C_1 = C_5 = 4$ μF, $C_2 = C_3 = C_4 = 2$ μF.
(b) maximum charge supplied by the battery, and
(c) total energy stored in the network. *(2020)* An

67. (i) Find the equivalent capacitance between $A$ and $B$ in the combination given below. Each capacitor is of 2 μF capacitance.

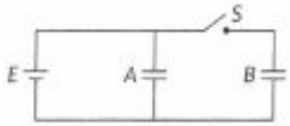



(ii) If a dc source of 7 V is connected across $AB$, how much charge is drawn from the source and what is the energy stored in the network?
*(Delhi 2017) CFQ*

68. 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.
*(Delhi 2017)* Ap

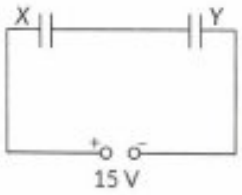
69. Two identical capacitors of 12 pF each are connected in series across a battery of 50 V. How much electrostatic energy is stored in the combination? If these were connected in parallel across the same battery, how much energy will be stored in the combination now?
Also find the charge drawn from the battery in each case. *(Delhi 2017)*

70. Two identical parallel plate capacitors $A$ and $B$ are connected to a battery of $V$ volt with the switch $S$ closed. The switch is now opened and the free space between the plates of the capacitors is filled with a 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.



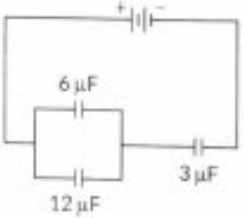

*(AI 2017)* An

71. Two parallel plate capacitors $X$ and $Y$ have the same area of plates and same separation between them. $X$ has air between the plates while $Y$ contains a dielectric of $\varepsilon_r = 4$.




(i) Calculate capacitance of each capacitor if equivalent capacitance of the combination is 4 μF.
(ii) Calculate the potential difference between the plates of $X$ and $Y$.
(iii) Estimate the ratio of electrostatic energy stored in $X$ and $Y$. *(Delhi 2016)*

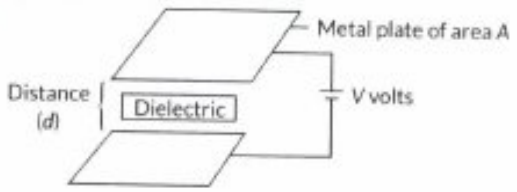
72. In the following arrangement of capacitors, the energy stored in the 6 μF capacitor is $E$. Find the value of the following
(i) Energy stored in 12 μF capacitor
(ii) Energy stored in 3 μF capacitor
(iii) Total energy drawn from the battery




*(Foreign 2016)* Ap

**CBQ** **(4 marks)**

73.




A parallel plate capacitor is an arrangement of two identical metal plates kept parallel, a small distance apart. The capacitance of a capacitor depends on the size and separation of the two plates and also on the dielectric constant of the medium between the plates. Like resistors, capacitors can also be arranged in series or parallel or a combination of both. By virtue of electric field between the plates, charged capacitors store energy.

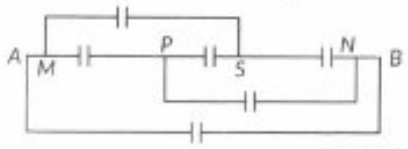
(a) The capacitance of a parallel plate capacitor increases from 10 μF to 80 μF on introducing a dielectric medium between the plates. Find the dielectric constant of the medium.

(b) $n$ capacitors, each of capacitance $C$, are connected in series. Find the equivalent capacitance of the combination.

(c) A capacitor is charged to a potential ($V$) by connecting it to a battery. After some time, the battery is disconnected and a dielectric is introduced between the plates. How will the potential difference between the plates, and the energy stored in it be affected ? Justify your answer.

OR

(c) Find the equivalent capacitance between points $A$ and $B$, if capacitance of each capacitor is $C$.




*(2023C)* An

**LA** **(5 marks)**

74. (i) (a) Why does the electric field inside a dielectric slab decrease when kept in an external electric field ?

(b) Derive an expression for the capacitance of a parallel plate capacitor filled with a medium of dielectric constant K.

(ii) A charge $q$ = 2 μC is placed at the centre of a sphere of radius 20 cm. What is the amount of work done in moving 4 μC from one point to another point on its surface ?

(iii) Write a relation for polarisation $\vec{P}$ of a dielectric material in the presence of an external electric field. *(AI 2021C)*

75. (i) Obtain an expression for the potential energy of an electric dipole placed in a uniform electric field.

(ii) Three capacitors of capacitance $C_1$, $C_2$ and $C_3$ are connected in series to a source of $V$ volt. Show that the total energy stored in the combination of capacitors is equal to sum of the energy stored in individual capacitors.

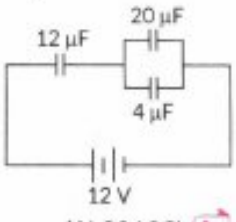
(iii) A capacitor of capacitance $C$ is connected across a battery. After charging, the battery is disconnected and the separation between the plates is doubled. How will

(a) the capacitance of the capacitor, and

(b) the electric field between the plates be affected? Justify your answer. *(AI 2021C)*

76. (a) Obtain the expressions for the resultant capacitance when the three capacitors $C_1$, $C_2$ and $C_3$ are connected (i) in parallel and then (ii) in series.

(b) In the circuit shown in the figure, the charge on the capacitor of 4 μF is 16 μC. Calculate the energy stored in the capacitor of 12 μF capacitance.




*(AI 2019C)* Ap

77. (a) When a parallel plate capacitor is connected across a dc battery, explain briefly how the capacitor gets charged.

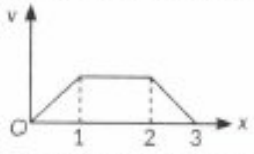
(b) A parallel plate capacitor of capacitance 'C' is charged to $V$ volt by a battery. After some time the battery is disconnected and the distance between the plates is doubled. Now a slab of dielectric constant $1 < K < 2$ is introduced to full the space between the plates. How will the following be affected?

(i) The electric field between the plates of the capacitor.

(ii) The energy stored in the capacitor.

Justify your answer in each case.

(iii) The electric potential as a function of distance $x$ is shown in the following figure. Draw a graph of the electric field $E$ as a function of $x$.




*(AI 2019)* Ap

78. A parallel plate capacitor is charged by a battery to a potential difference $V$. It is disconnected from battery and then connected to another uncharged capacitor of the same capacitance. Calculate the ratio of the energy stored in the combination to the initial energy on the single capacitor.

*(2/5, Delhi 2019)*

79. Find the ratio of the potential differences that must be applied across the parallel and series combination of two capacitors $C_1$ and $C_2$ with their capacitances in the ratio 1 : 2 so that the energy stored in the two cases becomes the same. *(3/5, AI 2016)* Ev

**SUBJECT: CHEMISTRY**

## MULTIPLE CHOICE QUESTIONS

1. **The molality of 98% $H_2SO_4$ (density = 1.8 g/mL) by weight is:**
   (a) 6 m (b) 18 m
   (c) 10 m (d) 4 m
2. **Which of the following does not show positive deviation from Raoult's law?**
   (a) benzone + chlorofor (b) benzene + acetone
   (c) benzene + ethanol (d) benzene + $CCl_4$
3. **Which solution will have least vapour pressure?**
   (a) 0.1 M $BaCl_2$ (b) 0.1 M Uxa
   (c) 0.1 M $Na_2SO_4$ (d) 0.1 M $Na_3PO_4$
4. **Which condition is not satisfied by an ideal solution?**
   (a) $\Delta H_{mix} = 0$ (b) $\Delta V_{mix} = 0$
   (c) $\Delta P_{mix} = 0$ (d) $\Delta S_{mix} = 0$
5. **Azeotrope mixture are:**
   (a) mixture of two solids
   (b) those will boil at different temperature
   (c) those which can be fractionally distilled
   (d) constant boiling mixtures
6. **If $K_f$ value of $H_2O$ is 1.86. The value of $\Delta T_f$ for 0.1 m solution of non-volatile solute is**
   (a) 18.6 (b) 0.186
   (c) 1.86 (d) 0.0186
7. **Solute when dissolve in water**
   (a) increases the vapour pressure of water
   (b) decreases the boiling point of water
   (c) decrease the freezing point of water
   (d) All of the above
8. **The plant cell will shrink when placed in:**
   (a) water (b) A hypotonic solution
   (c) a hypertonic solution (d) an siotonic solution
9. **The freezing point of 11% aquous solution of calcium nitrate will be:**
   (a) 0°C (b) above 0°C
   (c) 1°C (d) below 0°C

10. **The Van't Hoff factor for 0.1 M $Ba(NO_3)_2$ solution is 2.74. The degree of dissociation is:**

(a) 91.3% (b) 87%

(c) 100% (d) 74%

11. **Which of the following solutions would have the highest osmotic pressure:**

(a) $\frac{M}{10}$ NaCl (b) $\frac{M}{10}$ Urea

(c) $\frac{M}{10}$ $BaCl_2$ (d) $\frac{M}{10}$ Glucose

12. **0.5 M aquous solution of Glucose is isotonic with:**

(a) 0.5 M KCl solution (b) 0.5 M $CaCl_2$ solution

(c) 0.5 M Urea solution (d) 1 M solution of sucrose

13. **Which of the following is true for Henry's constant**

(a) It decreases with temperature (b) It increases with temperature

(c) Independent on temperature (d) It do not depend on nature of gases.

14. **Which one is the best colligative property for determination of molecular mass of polymer?**

(a) osmotic pressure (b) elevation in boiling point

(c) depression in freezing point (d) osmosis

15. **Which of the following do not depend on temperature?**

(a) % W/V (weight/volume) (b) molality

(c) molarity (d) normality

16. **Henry's law constant K of $CO_2$ in water at 25°C is $3 \times 10^{-2}$ mol/L $atm^{-1}$. Calculation the mass of $CO_2$ present in 100 L of soft drink bottled with a partial pressure of $CO_2$ of 4 atm at the same temperatrue.**

(a) 5.28 g (b) 12.0 g

(c) 428 g (d) 528 g

17. **Mixing of $HNO_3$ and HCl is reaction:**

(a) endothermic reaction (b) exothermic reaction

(c) both exothermic and endothermic (d) depend on entropy of reaction

18. **The most likely on ideal solution is:**

(a) NaCl—$H_2O$ (b) $C_2H_5OH$—$C_6H_6$

(c) $C_7H_{16}$—$H_2O$ (d) $C_7H_{16}$—$C_8H_{18}$

19. **Van't Hoff factor for a dilute solution of a $K_2$[HgI4] is:**

(a) 2 (b) 1

(c) 3 (d) zero

**20. Benzoic acid dissolved in benzene shows a molecular weight of:**

(a) 122 (b) 61

(c) 244 (d) 366

**21. 6% (W/V) solution of urea will be isotonic with:**

(a) 18% (W/V) solution of glucose (b) 0.5 M solution of NaCl

(c) 1 M solution of $CH_3COOH$ (d) 6% (W/V) solution of sucrose.

**22. Solution showing (+) ve deviation from Raoult's law include:**

(a) acetone + $CS_2$ (b) acetone + $C_2H_5OH$

(c) acetone + Benzene (d) acetone + aniline

**Answer the following questions**

1) 45 g of ethylene glycol ( C2H6O2 ) is mixed with 600 g of water
Calculate (a) the freezing point depression and (b) the freezing point of the solution.

2) The boiling point of benzene is 353.23 K. When 1.80 g of a non- volatile solute was dissolved in 90 g of benzene, the boiling point is raised to 354.11. Calculate the molar mass of the solute Kb for benzene is 2.53 K Kg mol-1.

3) Define the term solution. How many types of solutions are formed ? Write briefly about each type with an example.

4) Define the following terms
I) Mole fraction. ii) Molality. iii) Molarity iv) Mass percentage

5) Define Henry's law? Write it's applications.

6) Define electrochemical series. Write in copy the standard electrode potentials at 298 K and learn also . Series is given in NCERT BOOK page no. 37.

7) How would you determine the standard electrode potential of the system
Mg2+ | Mg ?

# SUBJECT: MATHEMATICS

Holiday Homework Questions

Chapter 1: Relations and Functions

Chapter 3: Matrices

## Chapter 1 : Relations and Functions

1. Define a relation.

2. Define a function.

3. Write the domain of the function $f(x) = x^2$.

4. Find the range of the function $f(x) = 3x + 2$, where $x \in \{1, 2, 3\}$.

5. Check whether the relation $R = \{(1,2), (2,3), (3,4)\}$ is a function.

6. Find the domain of the function $f(x) = 1 / (x - 2)$.

7. Find the domain and range of $f(x) = \sqrt{(9 - x^2)}$.

8. Show that the function $f(x) = x^3$ is one–one.

9. Check whether the function $f(x) = x^2$ is one–one.

10. Find the value of $f(-2)$ if $f(x) = x^2 - 3x + 1$.

11. Write whether the relation $R = \{(1,1), (2,4), (3,9)\}$ is a function.

12. Find the range of the function $f(x) = |x|$, $x \in R$.

13. If $f(x) = 2x + 5$, find $f(3) - f(1)$.

14. Check whether the function $f(x) = 1/x$ is one–one.

15. Find the domain of the function $f(x) = \sqrt{(x - 4)}$.

## Chapter 3 : Matrices

1. Define a matrix.

2. Find the order of the matrix $A = [[2, 3, 5], [1, 4, 7]]$.

3. How many elements are there in a matrix of order $3 \times 2$?

4. Write the diagonal elements of the matrix $[[1,2,3],[4,5,6],[7,8,9]]$.

5. If $A = [[1, 2], [3, 4]]$ and $B = [[2, 0], [1, 5]]$, find $A + B$.

6. Find $3A$, where $A = [[-1, 2], [4, 0]]$.

7. Find the transpose of the matrix $[[1, -2, 3], [4, 0, 5]]$.

8. If $A = [[2, x], [y, 3]]$ is a symmetric matrix, find x and y.

9. Find AB, if $A = [[1,2],[3,4]]$ and $B = [[2,0],[1,5]]$.

10. Solve the matrix equation: X + [[1,2],[3,4]] = [[5,6],[7,8]].

11. Find the value of x if [[x, 2], [3, 4]] = [[1, 2], [3, 4]].

12. Verify that matrix addition is commutative.

13. Show that multiplication of matrices is not commutative.

14. Using matrices, solve: x + y = 5, x − y = 1.

15. Write the order of the identity matrix of size 3.

## SUBJECT: BIOLOGY

1.Arrange the following terms in correct developmental sequence: Pollen grain, sporogenous tissue, microspore tetrad, pollen mother cell, male gametes.

2.With a neat diagram, explain the 7-celled, 8-nucleate nature of female gametophyte.

3.What is amniocentesis? Why has the government imposed a statutory ban inspite of its importance in medical field?

4.What is meant by emasculation? When and why does a plant breeder employ this technique?

5.Explain the role of tapetum in the formation of pollen grain walls.

6.Write one advantage and one disadvantage of cleistogamy to flowering plants.

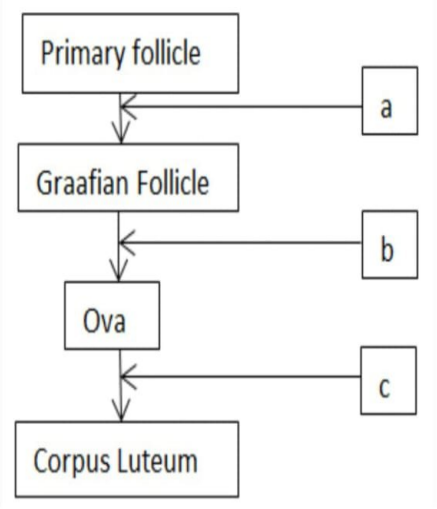
7.What are the major components of seminal plasma?

8.Explain the events in a normal woman during her menstrual cycle on the following days . (i) Ovarian event from 13-15 days.

(ii) Ovarian hormones level from 16-23 days.

(iii) Uterine events from 24-29 days.

9.Mention the names of the hormones responsible for ovarian changes during the menstrual cycle in the boxes provided.



10.Write the pathway of sperm transportation in male reproductive system.

11.Explain the statement: “A fertile egg is the blueprint of future development.”

12.Differentiate between spermatogenesis and oogenesis.?

14.flower of tomato plant following the process of sexual reproduction produces 240 viable seeds.

Answer the following questions giving reasons

(i) What would have been the minimum number of ovules present in per pollinated pistil?

(ii) How many microspore mother cells would minimally be required to produce requisite number of pollen grains?

(iii) How many pollen grains must have minimally pollinated the carpel?

(iv) How many male gametes would have used to produce these 200 viable seeds?

(v) How many megaspore mother cells were required in this process?

15.How do copper and hormone releasing IUDs act as contraceptives? Explain.

16.Draw a well labelled diagram of T. S. of ovary, T. S. Of testis and T.S. of Blastula.

Project - To make a Model of different event of menstrual cycle or penetration sperm into ovum.

## SUBJECT: IP

1. " Prepare a practical file of highlighted part in PDF sent in the group
2. Write the notes of Networking sent in the group in your cw copy

# SUBJECT: PHY. EDU.

**Case Study Question**

| 1.**Clubs.** | **Matches** | **Won.** | **Drawn.** | **Lost** | **Points** |
|---|---|---|---|---|---|
| ATK Mohun Bagan. | 20 | 10. | 7. | 3. | 37 |
| Bengaluru FC | 20. | 8 | 5. | 7 | 29 |
| Chennaiyin FC | 20 | . 5 | 5 | 10. | 20 |
| FC Goa. | 20 | 4 | 7 | 9 | 19 |
| Hyderabad FC. | 20 | 11 | 5 | 4 | 38 |
| Jamshedpur FC | 20 | 13 | 4 | 3 | 43 |
| Kerala Blasters FC. | 20 | 9 | 7 | 4 | 34 |
| Mumbai City FC. | 20 | 9 | 4 | 7 | 31 |
| NorthEast UFC | 20 | 3 | 5 | 12 | 14 |
| Odisha FC | 20 | 6 | 5 | 9 | 23 |
| SC East Bengal | 20 | 1 | 8 | 11 | 11 |

a. Based on the table given above place the teams according to their ranking

b. List down two advantages of this kind of tournament

c. Write down the formula for calculating points

2. XYZ School is conducting an invitation tournament in which 25 teams have sent their entries. Matches have to be conducted on a knockout basis.

a. How many total matches will be played?

b. How many matches will be played in the first round of the tournament?

c. How many rounds will be played?

d. Which team will get 4th bye of the tournament?

**Art Integration**

1. Prepare a report on the Annual Sports Day of your school for publishing in a National daily.

2. Your School is hosting CBSE Regional Sports Meet. Plan and present a Folk Dance for the Opening Ceremony.