# DAV PUBLIC SCHOOL, IFFCO, PARADEEP
## HOLIDAY HOME WORK   STD – XII

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|---|---|
| HINDI | 1 . रचनात्मक लेखन - (क) भारत में राष्ट्रीय एकता (ख) आतंकवाद (ग) भारतीय संस्कृति (घ) युवाओं में बढ़ता तनाव<br><br>2 . पत्र लेखन -<br>(क) टी.वी. सीरियलों के माध्यम से अंधविश्वासों और रुढ़ियों के प्रचार –प्रसार पर चिंता व्यक्त करते हुए किसी समाचार पत्र के संपादक को पत्र लिखिए –<br>(ख) चुनाव के दिनों में बढ़ गए ध्वनि प्रदूषण को नियंत्रित करने की अपील करते हुए थानाध्यक्ष को पत्र लिखिए –<br>3.पत्रकारीय लेखन और उसके विविध  आयामों से सम्बंधित आल इन वन में दिए गए सारे प्रश्न |<br>4. फीचर लेखन- (क) भीड़ भरी बस का अनुभव (ख) चुनाव प्रचार का एक दिन (ग) सजग नागरिक<br>5. आलेख लेखन- (क) आँखों देखी सड़क दुर्घटना (ख) धर्मों में भाईचारा (ग) समाजिक मूल्यों का संकट |
| ENGLISH | 4.  Syllabus for PSVT<br>    a.   The last Lesson<br>    b.   Lost Spring<br>    c.   Deep Water<br>    d.   My mother At Sixty Six<br>    e.   Notice/ Advertisement/ Job Application/ Article<br>    f.   Reading Comprehension<br>5.  Different types of Notices  –  5<br>6.  Different types of Advertisements –   5<br>7.  Job Applications – 2 (with Bio-data)<br>8.  Poster Making  –  5 |
| MATHS | • Solve all NCERT book problems of chapter – 1, 3 & 4.<br>• Solve all Exemplar book (NCERT) problems of chapter – 1, 3 & 4.<br>• Prepare 20 MCQs from chapter – 1, 3 & 4 each of your own. |
| BIOLOGY | Q.1 Download the Questionnaire attached here with 30 questions  and solve it in your  Biology H.W copy.<br>Q.2 Complete the record writing in Biology practical record copy of all the experiments according to your Syllabus without mentioning the dates.<br>Q.3 Solve Biology NCERT Exemplar of Chapter 1, 2, 3 & 4 in Bio H.W copy.<br>Q.4 Finalise the Topic for Investigatory Project (after discussion with your bio teacher) & finish the DTP work & submit along with HHW.<br>Q.5 Read Chapter 1,2, 3 & 4  thoroughly & prepare at least 5, 5 , 10 & 10 Unique VSA type Questions from each Chapter respectively  with one word or one short sentence answer. |
| PHYSICS | 1.  Download the questionnaire attached here and solve them in HW copy.<br>2.  Prepare 10 VSAQ/ MCQ of your own from each chapter taught in class.<br>3.  Complete the record writing as per the instruction given in class. |
| CHEMISTRY | 1.  Download the question attached herewith and solve them in the HW notebook.<br>2.  Solve all the exercise question of chapter solution. |
| PHYSICAL EDUCATION | 1-Planning in Sports<br>2-One chapter question / answer & discussion |

# SUMMER HOLIDAY HOMEWORK - 2019, STD XII, PHYSICS

1.     Define the term 'electric polarisation' of a dielectric medium. Write its S.I. unit.
2.     A dielectric medium of dielectric strength 9 x $10^6$ V/m is filled between the plates of a parallel plate capacitor having effective capacitance of 1 pF and plate separation 1 cm. Determine the charge on the capacitor. Ans: 90mC
3.     "For any charge configuration, equipotential surface through a point is normal to the electric field." Justify.
4.     Why is the electric potential inside a hollow spherical charged conductor constant and has the same value as on its surface?
5.     Two capacitor of capacitance 6pF and 12pF are connected in series with battery. The voltage across the 6pF capacitor is 2V. Compute the battery voltage. Ans 3V
6.     Two long thin parallel wires having linear charge density 2 x $10^{-9}$ C/m and – 3 x $10^{-9}$ C/m are kept 20 cm apart in air. Find the magnitude and direction of the electric field at a point 10 cm from each wire.
 Ans: 900mC towards wire having negative charge density.
7.     Two point charges q and – 2q are kept'd' distance apart. Find the location of the point relative to charge 'q' at which potential due to this system of charges is zero. Ans: at d/3 from charge q.
8.     An electric dipole is placed in a uniform electric field E with its dipole moment p parallel to the field. Find (i) the work done in turning the dipole till its dipole moment points in the direction opposite to E. (ii) the orientation of the dipole for which the torque acting on it becomes maximum.
9.     An electric dipole of length 1cm with its axis making an angle of 600 with uniform electric field, experiences a torque of $6\sqrt{3}$ Nm. Calculate the potential energy of the dipole if it has charge 2 nC. Ans: -6J
10.    Given a uniform electric field = 4 x $10^3$ N/C. Find the flux of this field through a square of 5 cm 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 300 angle with the x-axis?
Ans: 10 $Nm^2C^{-1}$, 5 $Nm^2C^{-1}$
11.    Two point charges q1 and q2 are located at A and B respectively in an electric field. Obtain the expression for the total work done in assembling the configuration.
12.    A parallel plate capacitor is charged to a potential difference V by dc source and then disconnected. The distance between the plates is then halved. Explain with reason for the change in electric field, capacitance and energy of the capacitor.

13. What will happen to capacitance of capacitor when a copper plate of thickness one third of the separation between the plates is introduced in the capacitor between the plates? Ans 1.5 times of C

14. N identical spherical drops charged to the same potential 'V' are combined to form a big drop. Find the potential of the new big drop formed. Ans: $(2N/3)V$

15. In the electric field of a point charge 'q', the four points A,B,C and D are equidistant from q, however AB>AC>AD. Calculate the work done in taking a unit charge along AB, AC and AD.

16. The plates of a parallel plate system are charged up to 100V. A 4 mm thick dielectric slab is inserted between the plates. Then to maintain the same potential difference, the distance between the system's plates are increased by 2mm. find the dielectric constant.

17. Three identical charges each +q are placed at the corners of an equilateral triangle of side d cm. Calculate the force on a charge +2q at the centroid of the triangle.
Ans: **Zero**

18. You are given an isolated parallel plate capacitor of capacitance C charged to a potential difference V. What will happen to the following when separation distance between the plates is doubled with the help of insulating handle attached to the plates: (i) charge on the plates (ii) potential difference across the plates (iii) energy stored by the capacitor.

19. Draw the graph to show the variation of force between two point charges with $[1/r^2]$, where 'r' is separation between two charges when the force is (i) attractive (ii) repulsive.

20. Given a uniform electric field E= 5 x $10^3$ i N/C, find the flux of this field through a square of side 10 cm 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 degree angle with the x-axis?

21. Two charged conducting spheres of radii 'a' and 'b' are connected to each other by a thin wire. What is the ratio of electric fields on the surface of two spheres? Hint: $V_1 = V_2$
So, $q_1/q_2 = a/b$, $E_1/E_2 = q_1 b^2/ q_2 a^2 = b/a$)

22. Two capacitors of capacitances $C_1$ and $C_2$ such that $C_1 = 2C_2$ are connected in turn (i) in series and (ii) in parallel across the same battery. In which of the two cases will the (a) energy stored and (b) charge acquired be more? Justify your answer.

23. Three point charges of $+ 2 \mu C$, $- 3\mu C$ and $- 3\mu C$ are kept at the vertices A, B and C respectively of an equilateral triangle of side 20 cm . What should be the sign and magnitude of the charge to be placed at the mid-point (M) of side BC so that the charge at A remains in equilibr

24. A small sphere of radius a carrying a positive charge q is placed concentrically inside a large hollow conducting shell of radius b (b>a). This outer shell has charge Q on it. Show that if these spheres are connected by a conducting wire, charge will always flow from the inner sphere to the outer sphere irrespective of the magnitude of the two charges.

25. A charge is uniformly distributed over a ring of radius a. Obtain an expression for the electric field intensity E at a point on the axis of the ring. Hence show that for points at large distances from the ring it behaves like a point charge.

## CH :3 Current Electricity

1. Distinguish between emf (E) and terminal voltage (V) of a cell having internal resistance 'r'. Draw a plot showing the variation of terminal voltage (V) vs the current (I) drawn from the cell. Using this plot, how does one determine the internal resistance of the cell?

2. Draw a plot showing the variation of resistivity of a (i) conductor and (ii) semiconductor, with the increase in temperature. How does one explain this behaviour in terms of number density of charge carriers and the relaxation time?
   **Ans:** In conductors, average relaxation time decreases with increase in temperature, resulting in an increase in resistivity. In semiconductors, the increase in number density (with increase in temperature) is more than the

decrease in relaxation time; the net result is, therefore, a decrease in resistivity.

3. How does the balancing point of a Wheatstone bridge get affected when
   (i) Position of cell and Galvanometer are interchanged?
   ii) Position of the known and unknown resistances is interchanged?

4. A conductor of length '$\ell$' is connected a dc source of potential 'V'. If the length of the conductor is tripled by gradually stretching it , keeping ' V' constant , how will ( i) drift speed of electrons and (ii) resistance of the conductor be affected? Justify your answer.

5. In a potentiometer experiment, if the area of the cross-section of the wire increases uniformly from one end to the other, draw a graph showing how potential gradient would vary as the length of the wire increases from one end.
   Hint: $V = IR = I\rho\ell/A$ $dV/d\ell = I\rho/dA$

6. Why should the balanced point be obtained in the middle of the meter – bridge wire, while finding the unknown resistance? **Ans**: (i) because it reduces the end error (ii) a small error in locating the null point does not affect the result appreciably and (iii) all the four resistances P, Q, R and S will be of nearly same magnitude and hence the bridge will be more sensitive.

7. What does the no deflection position in the galvanometer of potentiometer experiment tell us about the flow of current? **Ans:** When the balanced point is obtained on the potentiometer wire , no current flows in the galvanometer circuit because the fall of potential across the potentiometer wire between zero end(A) and balance point position become just equal to the emf of the cell, whereas the current in the potentiometer flowing continuously

8. What do you understand by sensitiveness of a potentiometer and how can you increase the sensitiveness of a potentiometer? **Ans:** The sensitiveness of a potentiometer means the smallest potential difference that can be measured with the help of it. The sensitiveness of potentiometer can be increased by decreasing its potential gradient. The same can be achieved (a) by increasing the length of potentiometer wire.(b) If the length of potentiometer wire is fixed, the potential gradient can be decreased by reducing the current in the potentiometer wire.

   **Short Answer Type Questions – 3 Marks:**
9. State the underlying principle of a potentiometer. (a)Why is it necessary to (i) use a long wire, (ii) have uniform area of cross-section of the wire and (iii) use a driving cell whose emf is taken to be greater than the emfs of the primary cells?
10. In a potentiometer experiment, if the area of the cross-section of the wire increases uniformly from one end to the other, draw a graph showing how potential gradient would vary as the length of the wire increases from one end.

11.  4 cells of identical emf E1, internal resistance r are connected in series to a variable resistor. The following graph shows the variation of terminal voltage of the combination with the current output.
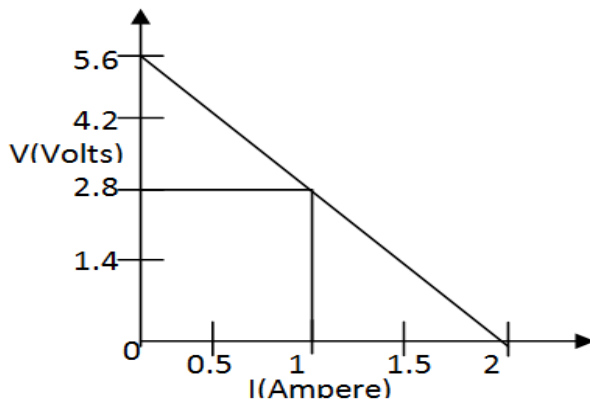


12.

(i)What is the emf of each cell used?
(ii)For what current from the cells, does maximum power dissipation occur in the circuit?
(iii)Calculate the internal resistance of each cell
Ans: 4E = 5.6 E = 1.4 V
When I = 1A, V = 2.8/4 = 0.7V
Internal resistance, r= (E – V)/I = 0.7Ω
The output power is maximum when internal resistance = external resistance = 4r.Imax = 4E/ (4r +4r) = 1A

13.  A battery has an emf E and internal resistance r. A variable resistance R is connected across the terminals of the battery. Find the value of R such that (a) the current in the circuit is maximum (b) the potential difference across the terminal is maximum. (c)Plot the graph between V and R
 Ans: (a) I = E/ (r + R) I = Imax when R =0 Imax = E/r
 (b)V = E R/(r + R) = E /(r/R + 1) V = Vmax when r/R + 1= minimum, r/R = o, V= E

14. With the help of a circuit diagram, describe the method of finding the internal resistance of the Primary Cell using a potentiometer.

15. With the help of a neat circuit diagram describe the method to determine the potential difference across the conductor using a potentiometer.

16. In the potentiometer circuit shown, the balance point is at X. State with reason where the balance point will be shifted when
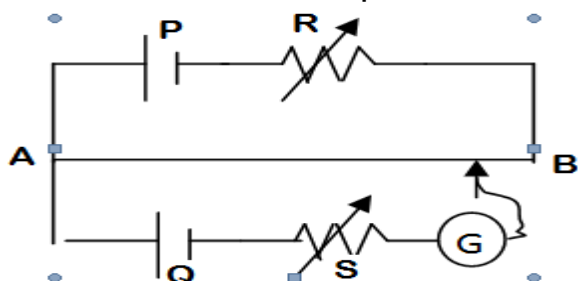


    (i)    Resistance R is increased, keeping all parameters unchanged.
    (ii)    Resistance S is increased keeping R constant.
    (iii)    Cell P is replaced by another cell whose emf is lower than that of that cell Q.
    Ans (ii)No effect (iii) Balance point is not found.

17. For the potentiometer circuit shown in figure represents an unknown emf (E'). A student observed that when jockey is moved from the end A to B of the potentiometer wire, the deflection in the galvanometer in same direction. What are two possible faults in the circuit that could recount in this observation? If the galvanometer deflection at the end B is (i) more (ii) less than that end A, which of the two faults, listed above, would be in the support of your answer.
   *Ans:* Two possible faults are (i) emf (E) applied across AB is less than unknown emf E'].
   (ii) Negative terminal of the source emf is joined with end A of the wire at which positive terminal of the applied emf is connected.
   (b) (i)The galvanometer deflection at the end B of the wire is more. It means source of unknown emf have been joined with its –ve terminal to end A. The current gets divided at point A. As the point C moves towards point 'B' the value of current through galvanometer branch increases because of more and more resistance is offered by increasing length of AC portion( if E'<E).

Q.1     The microscopic pollen grains of the past are obtained as fossils. Mention the characteristic of the pollen grains that makes it happen.

Q.2     Mention the pollinating agent of an inflorescence of small dull coloured flowers with well exposed stamens & large feathery stigma. Give any one characteristic of pollen grains produced by such flowers.

Q.3     Banana is a parthenocarpic fruit whereas oranges show polyembryony. How are they different from each other with respect to seeds?

Q.4     Where are fimbriae present in a human female reproductive system ? Give their function?

Q.5     Explain with the help of a diagram the development of a mature embryo sac from a megaspore mother cell in angiosperm.

Q.6     Study the following flow chart. Name the hormones involved at each stage .Explain their functions.

Hypothalamus ⟶ Pituitary ⟶ Testes ⟶ Sperms

Q.7     The following statements (i) , (ii)  & (iii) seem to describe the water-pollinated submerged plants. Which one of these statements is incorrect?

(i) The flowers do not produce nectar

(ii) The pollen grains have mucilaginous covering

(iii) The brightly coloured female flowers have long stalk to reach the surface.

Q.8     In the T.S of a mature anther given below identify "a" & "b" & mention their function.
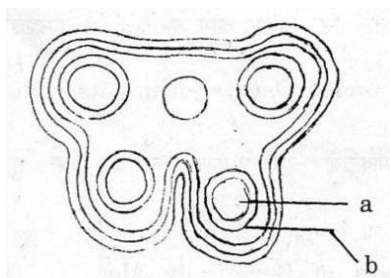


Q.9     What is colostrum ? Why is it important to be given to the newborn infants?

Q.10    (a) Draw a labeled diagram of a mature embryo sac of an angiosperm.

(b) Why does a pollen grain possess two male gametes ? Explain.

Q.11    (a) Identify the figure

(b)Name the initial cell from which this structure has developed.

(c) Draw the next mature stage & label the parts.



Q.12   Study the flow chart given below. Name the hormones involved at each stage & explain their role.

Ovulation ⟶ Pregnancy ⟶ Placenta ⟶ Foetal growth ⟶ Parturition
                    ↘
                  Lactation
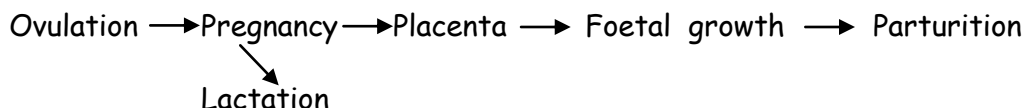
Q.13   Normally one embryo develops in one seed but when an orange seed is squeezed many embryos of different shapes & sizes are seen .  Mention how it has happened ?

Q.14   (a) Draw a labeled diagram of the human female reproductive system.

(b) Enumerate the events in the ovary of a human female during:

(i) Follicular phase

(ii) Luteal phase of menstrual cycle

Q.15   (a) Write the specific location & the functions of the following cells in human males:

(i) Leydig cells

(ii) Sertoli cells

(iii) Primary spermatocyte

(b) Explain the role of any two accessory glands in human male reproductive system.

Q.16   Name the embryonic stage that gets implanted in the uterine wall of a human female .

Q.17   Name the phase all organisms has to pass through before they can reproduce sexually.

Q.18   Draw a labeled diagram of the reproductive system in a human female.

Q.19   Give reasons why:

(a) most zygotes in angiosperms divide only after certain amount of endosperm is formed.

(b) groundnut seeds are exalbuminous & castor seeds are albuminous.

(c) Micropyle remains as a small pore in the seed coat of a seed.

(d) integuments of an ovule harden & the water content is highly reduced, as the seed matures.

(e) apple & cashew are not called true fruits.

Q.20  Give reasons :

(a) Anthers of angiosperm flowers are described as dithecous

(b) Hybrid seeds have to be produced year after year

Q.21  A bilobed , dithecous anther has 100 microspore mother cells per microsporangium. How many male gametophytes this anther can produce?

Q.22  Mention one positive & one negative application of amniocentesis.

Q.23  When  & where are primary oocytes formed in a human female ? Trace the development of these oocytes till ovulation (in menstrual cycle) . How do gonadotropins influence this developmental process?

Q.24  Offsprings derived by asexual reproduction are called clones. Justify giving two reasons.

Q.25  How do copper & hormone releasing IUDs act as contraceptives? Explain.

Q.26  Write the full form of the following:

| | | | | | | |
|---|---|---|---|---|---|---|
| (a)IVF | (b)IUT | (c)ZIFT | (d)ART | (e)GIFT | (f)ET | (g)ICSI |
| (h)AI | (i)IUI | (j)STD's | (k)MTP | (l)PID | (m)RTI | (n)VD |
| (o)HIV | (p)IUD's | (q)MMI | (r)IMR | (s)CDRI | (t)RCH | (u)WHO |
| (v)hCG | (w)hPL | (x)LH | (y)FSH | (z)PEN & PEC | | |

Q.27  Draw the vegetative propagules in angiosperms showing at least 5  examples.

Q.28  Draw the asexual reproductive structures of Chlamydomonas, Penicillium , Hydra & sponge & label them.

Q.29  Draw one microsporangium showing all the wall layers and label & write function of each layer.

Q.30  Draw pistil of Papaver & Michelia & mention the type & condition  of pistil in each.

# DAV PUBLIC SCHOOL, IFFCO, PARADEEP

## CLASS- XII, CHEMISTRY ASSIGNMENT

## SUB: CHEMISTRY CHAPTER: SOLUTIONS

Q.1 State any two characteristics of ideal solution?

Q.2 Why is vapour pressure of solution of glucose in water lower than that of water?

Q.3 State Raoult's law ?

Q.4 Why is osmotic pressure considered a colligative property ?

Q.5 What is expected Van't Hoff factor for $K_3[Fe(CN)_6]$ ?

Q.6 Calculate the molality of $K_2CO_3$ solution which is formed by dissolving 2.5g of it in one litre of solution? Density of solution is 0.85g $ml^{-1}$ .(atomic wt of K=39, C=12, O=16)

Q.7 The freezing point of a solution composed of 5.85g of NaCl in 100g water is $-3.348^0$ C ?Calculate the Van't Hoff factor 'i' for this solution. $K_f$ (water) = 1.86 K Kg $mol^{-1}$.

Q.8 The molality of an aqueous solution is 1.002 mol/Kg. What is the mole fraction of the solute?

Q.9 A solution of sucrose (Mol. Wt. 342) is prepared by dissolving 68.4g of it per litre of solution. What is osmotic pressure at 300 K?(R=8.314 k Pa $dm^3$ $k^{-1}$ $mol^{-1}$)

Q.10 Calculate the normal boiling point of a sample of sea water containing 3.5% of NaCl and 0.13% of $MgCl_2$ by mass. Given $K_b$(water)= 0.52 K Kg $mol^{-1}$ (M. Wt. Of NaCl = 58.5, $MgCl_2$= 95g $Mol^{-1}$)?

Q.11 What is osmotic pressure? How is it dependent on the number of moles of solute?

Q.12 What are ideal and non ideal solutions? What type of non-idealities are exhibited by cyclohexane-ethanol and acetone-chloroform mixture? Give reasons for your answer?

Q.13 A solution containing 12.5 g of a non-electrolyte substance in 175g of water gave a boiling point elevation of 0.70 K. Calculate the molar mass of the substance ($K_b$= 0.52 K Kg $Mol^{-1}$ ?

Q.14 Calculate the freezing point of a 1 molar aqueous solution of KCl. Density of solution = 1.04 g $cm^{-3}$, $K_f$ =1.86 K Kg $Mol^{-1}$?

Q.15 Calculate the amount of KCL which must be added to 1kg of water so that the freezing point is depressed by 3 K ($K_f$ =1.86 K Kg $Mol^{-1}$)