



**DAV MUKHYAMANTRI PUBLIC SCHOOL  
PATRATU, RAJPUR (C.G.)  
Summer Holiday Homework**

**Std. XII (2022–23)**

**Dt: 23.04.2022**

Dear Parents,

Greetings of the Day!

It will be not wrong, if we say, Children have again proved themselves to be the winners as even during this unprecedented time of COVID-19 their learning has not stopped. The spread of this virus has given a new dimension to the Teacher, Student and Parent partnership with the Online Teaching. Thank you very much for your cooperation.

**Summer Vacation: There will be no Online Classes for Students w.e.f. 25<sup>th</sup> April 2022 (Monday).**  
Date of recommencement of Classes after Summer Vacation is **16<sup>th</sup> June 2022.**

As now we are heading towards Summer Vacation of the students, their Teachers have planned for some Activities / Homework for the students. We know that, every child is born with some inherent qualities which we as Teachers / Parents are responsible to develop through varied activities.

Summer Holidays are the time for Parents to become Teachers and Friends. It provides you with an opportunity to spend your precious time with your ward and develop an everlasting bond.

**INFORMATION FOR STUDENTS:**

1. Students need to become productive and constructive instead of relaxing. Utilise your vacation in a positive way”.
2. Stay home, eat healthy homemade foods, abide by the W.H.O. Norms - maintain social distancing, regular hand wash and use mask.
3. Try to help your parents and learn their way of interacting with elders.
4. Use this vacation as power charger, so as to be a healthier, happier & more relaxed person.
5. Read newspaper everyday and get updated. Don't stick to the Mobile Phones. Use mobiles only for the purpose of studies and something beneficial.
6. Remember to complete the Holiday Homework given below along with Project.

**GENERAL INSTRUCTIONS:**

1. **Complete the Note Books, Question & Answers, Work Sheets, Activities and Revise the Chapters of all Subjects taught to you before the Vacation.**
  - **Maths:** Only practice can make you perfect in Maths so, daily do Maths sums connected to the chapters completed.
  - **S.St :-** Practice Map, identify States and Countries and learn new terms .
  - **Languages:** - Practice writing skills and grammar, master spellings and meanings.
2. **Keep all the activities ready in Portfolio Files (1 subject 1 file) safely and submit when the school asks.**

**Please note the information related to the Holiday Homework:**

1. Each child has to prepare the Holiday Homework as per the instruction and submit it in School. The date for submission will be informed in the class.
2. All Holiday Homework to be done on A4 Size Paper as per the instruction given by Teachers and requirement of the Subject.
3. Draw (In Black Ink) a margin leaving a space of one inch from all sides of the A4 Paper before starting the Activity / Homework.
4. After completion of the Holiday Homework of all subjects, arrange all A4 size Papers properly.
5. Aesthetically design a Cover Page and place on the top of all Papers and staple all Papers properly. You can fix / paste a coloured adhesive tape on the left hand side of the papers to give it a look of a Book.
6. On the Cover Page, don't forget to write the Title as “Summer Holiday Homework” also mention Name of the School, Student's Name, Class / Section and Session 2022-23 clearly on the Cover Page.

7. Holiday Homework will be judged on the basis of neatness, creativity and originality of ideas.
8. **It will be assessed for the computation of academic results of the students.**
9. Encourage your ward to do their work independently using their mind, imagination and knowledge.
10. Parents are requested to act as a mentor and guide their child.

**SUMMER HOLIDAY HOMEWORK:**

Read each and every chapter of all subjects completed till 23<sup>rd</sup> April 2022 and complete the following work.

<b>Subject</b>	<b>Activity / Homework</b>
<b>PHYSICS</b>	<ol style="list-style-type: none"><li>1. Solve Examples &amp; Exercise of Chapter 1.</li><li>2. Solve numerical of NCERT Exemplar of Chapter 1.</li><li>3. Additional question given at the end of the note in note copy.</li></ol>
<b>MATHS</b>	<ol style="list-style-type: none"><li>1. Workout the problems in a separate notebook, including all examples and exercises of NCERT Exemplar Mathematics book of the chapters Relation and function.</li></ol>

Stay Home, Stay Safe.

Thank you

## 1 Mark Questions

1. Why do the electrostatic field lines not form closed loop? [All India 2014, Delhi 2012]

2. Why do the electric field lines never cross each other? [All India 2014]

3. Two point charges  $q_1$  and  $q_2$  are placed at a distance  $d$  apart as shown in the figure. The electric field intensity is zero at the point  $P$  on the line joining them as shown. Write two conclusions that you can draw from this. [Delhi 2014c]



4. Define dipole moment of an electric dipole. Is it a scalar quantity or a vector quantity?

[Foreign 2012; All India 2011]

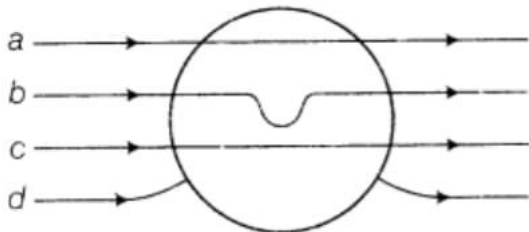
5. Draw a plot showing the variation of electric field ( $E$ ) with distance  $r$  due to a point charge  $Q$ . [Delhi 2012]

6. A proton is placed in a uniform electric field directed along the positive X-axis. In which direction will it tend to move? [Delhi 2011 c]

7. In which orientation, a dipole placed in a uniform electric field is in (i) stable (ii) unstable equilibrium? [Delhi 2011; All India 2008]

8. Two point charges having equal charges separated by  $1\text{m}$  distance experience a force of  $8\text{ N}$ . What will be the force experienced by them if they are held in water at the same distance? (Given,  $K_{\text{water}} = 80$ ). [All India 2010 C]

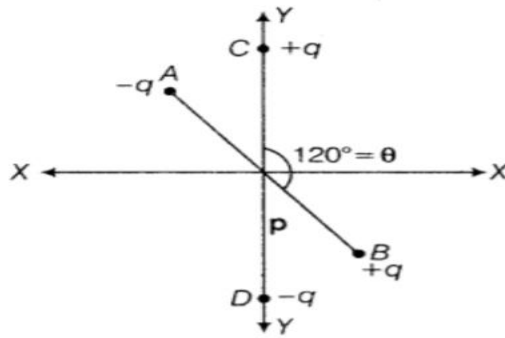
9. A metallic sphere is placed in a uniform electric field as shown in the figure. Which path is followed by electric field lines and why? [HOTS; Foreign 2010]



10. Point out right or wrong for the following statement. The mutual forces between two charges do not get affected by the presence of other charges.

11. A dipole of dipole moment  $p$  is present in a uniform electric field  $E$ . Write the value of the angle between  $p$  and  $E$  for which the torque experienced by the dipole, is minimum. [Delhi 2009 c]

12. Two small identical dipoles AB and CD, each of dipole moment  $p$  are kept at an angle of  $120^\circ$  as



### 2 Marks Questions

14. An electric dipole of length 4 cm when placed with its axis making an angle of  $60^\circ$  with a uniform electric field, experiences a torque of  $4\sqrt{3}Nm$ . Calculate The intensity of electric field if it has charge  $\pm 8$  nC. [Delhi 2014]

15. An electric dipole of length 2 cm when placed with its axis making an angle of  $60^\circ$  with a uniform of electric field, experiences a torque of  $8\sqrt{3}Nm$ . Calculate the intensity of electric field if it has charge of  $\pm 4$  nC. [Delhi 2014]

16. Two point charges  $4Q$  and  $Q$  are separated by 1 m in air. At what point on the line joining of charges, is the electric field intensity zero? [All India 2008]

17. Two identical metallic spherical shells A and B having charges  $+4Q$  and  $-10Q$  are kept a certain distance apart. A third identical uncharged sphere C is first placed in contact with sphere A and then with sphere B, then spheres A and B are brought in contact and then separated. Find the charge on the spheres A and B. [All India 2011 c]

18. Deduce the expression for the electric field  $E$  due to a system of two charges  $q_1$  and  $q_2$  with position vectors  $r_1$  and  $r_2$  at a point  $r$  with respect to common origin. [Delhi 2010c]

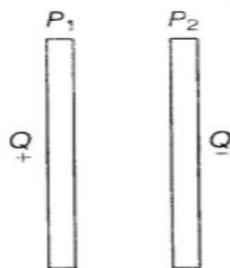
19. The sum of two point charges is 7 microC. They repel each other with a force of 1 N when kept 30 cm apart in free space. Calculate the value of each charge. [Foreign 2009] ( Ans  $2\mu c$  ,  $5\mu c$  )

20. Figure shows two large metal plates and  $P_2$  tightly held against each other and placed between two equal and unlike point charges perpendicular to the line joining

them.

(i) What will happen to the plates when they are released?

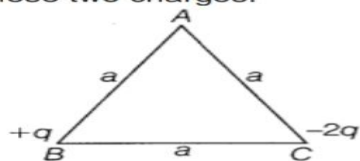
(ii) Draw the pattern of the electric field lines for the system. [HOTS; Foreign 2009]



21. Two charges  $+Q$  and  $-Q$  are kept at points  $(-x_2, 0)$  and  $(x_1, 0)$  respectively, in the XY-plane. Find the magnitude and direction of the net electric field at the origin  $(0, 0)$ . [All India 2009 C]

### 3 Marks Questions

22. Two point charges  $+q$  and  $-2q$  are placed at the vertices B and C of an equilateral triangle ABC of side  $a$  as given in the figure. Obtain the expression for (i) the magnitude and (ii) the direction of the resultant electric field at the vertex A due to these two charges.



[All India 2014 C]

23. Define the term electric dipole moment. Is it a scalar or vector? Deduce an expression for the electric field at a point on the equatorial plane of an electric dipole of length  $2a$ . [All India 2013; Foreign 2009]

24. Sketch the pattern of electric field lines due to  
(i) a conducting sphere having negative charge on it.  
(ii) an electric dipole. [All India 2011 C]

25. A positive point charge ( $+q$ ) is kept in the vicinity of an uncharged conducting plate. Sketch electric field lines originated from the point on to the surface of the plate. [All India 2009; HOTS]

### 4 Marks Questions

26. Deduce the expression for the torque acting on a dipole of dipole moment  $p$  in the presence of a uniform electric field  $E$ . [All India 2014; Delhi 2008]

27. An electric dipole moment  $p$  is held in a uniform electric field  $E$ .

(i) Prove that no translation force acts on the dipole.

(ii) Hence, prove that the torque acting on the dipole is given by  $pE \sin \theta$  indicating the direction along which it acts. [Foreign 2008]