

Kendriya Vidyalaya Mankhurd Mumbai

class XII

Science Holiday Homework (2009)

Biology

Answer the following questions

1. Explain why meiosis & gametogenesis are always interlinked?
2. Define the following
 - a. Juvenile phase,
 - b. Reproductive phase
 - c. Senescent phase
3. Differentiate between
 - a. Zoospores & zygote
 - b. Gametogenesis & Embryogenesis
4. Why are the off springs of the oviparous animals at a greater risk as compared to the offsprings of the viviparous animals?
5. Explain the role of tapatum in the formation of pollen grain wall.
6. Explain & describe with the help of an example, the parts of a typical angiosperm ovule.
7. Explain the 7 celled, 8 nucleate nature of the female gametophyte.
8. What is apomixis & what is its importance.
9. With the help of a diagram, describe the logistic population growth curve .
10. Write a short note on the following

- a. Adaptation in the desert animals .
 - b. Mutualism
 - c. Parasitism
11. Name the important defense mechanisms in plant against herbivory.
 12. What is population growth & on what factors does it depend?
 13. Draw diagrams showing vegetative propagation in angiospermae.
 14. Prepare an Investigatory project .Topic for project will be discussed in lecture class.

CHEMISTRY

1) Investigatory Project

- Maximum two students per project.

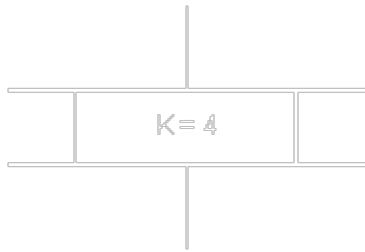
2) Solve NCERT text book intext questions and exercises of solid state and solutions.

Physics

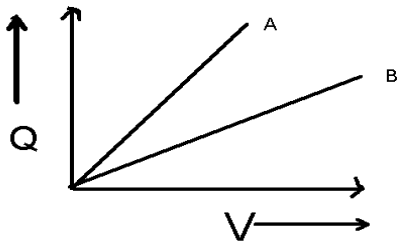
ELECTROSTATICS

1. What would be the work done if a point charge $+q$ is taken from a point A to the point B on the circumference of the circle, which is having a $+q$ point charge at the centre?(1marks)

2. Consider a parallel plate capacitor of capacity 10 mF with air filled in the gap between the plates. Now one half of the space between the plates is filled with a dielectric of dielectric constant $K = 4$ as shown in figure. (1 marks)



3. The graph shows the variation of charge q versus potential difference V for C_1 and C_2 . The two capacitors have some plate separation, but the plate area of C_2 is double than that of C_1 . Which of the lines in the graph correspond to C_1 and C_2 and why?(1 mark)

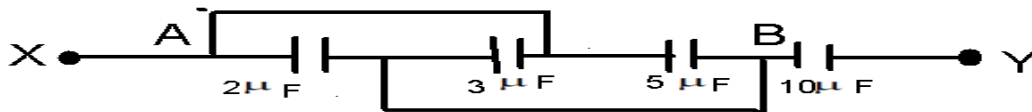


4. Name the dielectric whose molecules have non zero and zero dipole moment.(1 marks).

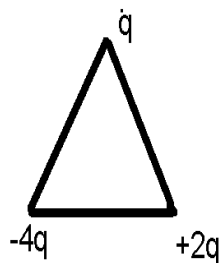
5. What orientation of electric dipole in a uniform electric field corresponds to stable equilibrium?(1 marks)

6. Two point charges $+9e$ and e are kept at distance x apart. At what distance a charge q should be placed from charge $+e$, so that q is in equilibrium. (2 marks)

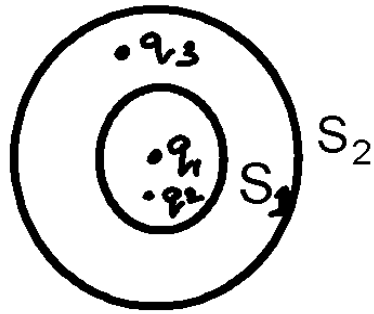
7. Four capacitors are connected as shown in the figure calculate the equivalent capacitance between the points X and Y. (2 marks)



8. Calculate the work done to dissociate the system of three charges placed on the vertices of a triangle as shown $q = 1.6 \times 10^{-10}\text{C}$ (2 marks)



9. What is the relation between the charges q_1 , q_2 , q_3 if the electric flux through surface S_2 is 8 times of S_1



10. Two point charges A and B of value $+5 \times 10^{-9} \text{ C}$ and $+3 \times 10^{-9} \text{ C}$ are 6 cm apart in air. Calculate the work done when charge B is moved by 1 cm towards charge A. (2 marks).

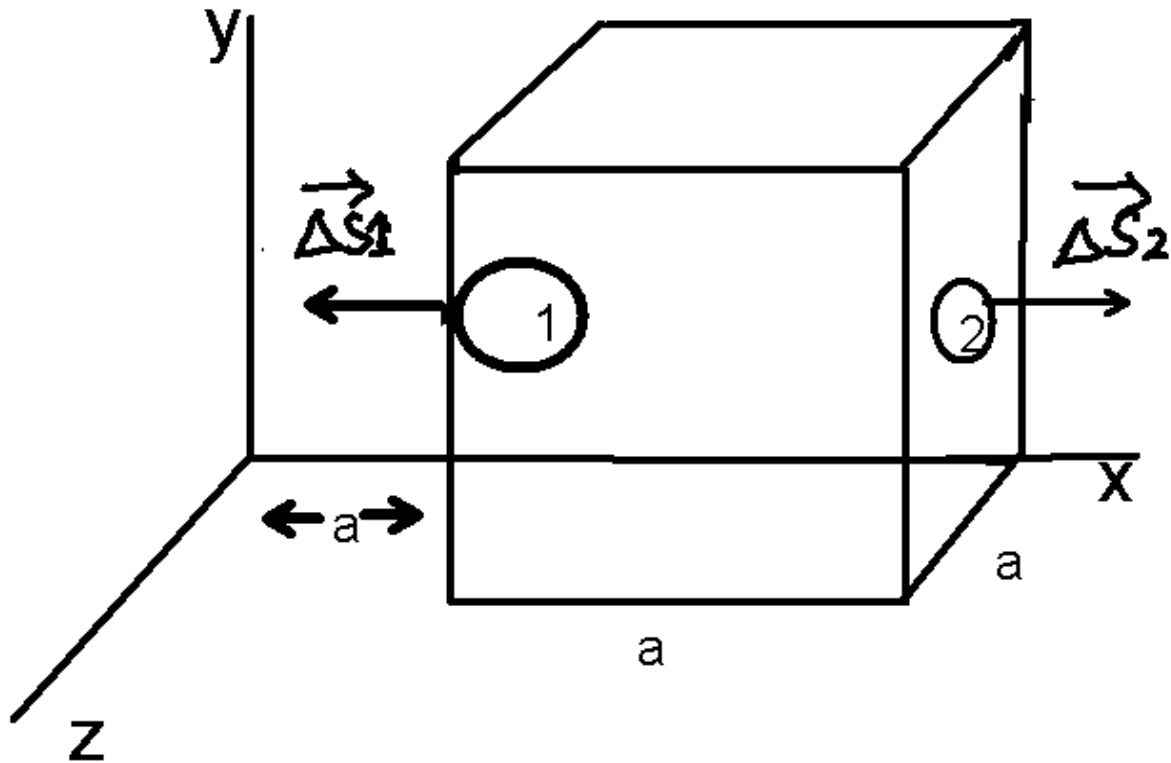
11. A 300PF capacitor is charged by a 200v supply. it is then disconnected from the supply and is connected to another uncharged 300PF capacitor. How much energy is lost in the process?(3 marks)

12. Derive an expression for energy stored in a parallel plate capacitor, and hence derive an expression for energy density of a capacitor. (3 marks).

13. Derive an expression for torque and potential energy of a dipole (3 marks).

14. Derive the expression for the electric potential due to an electric dipole at any point on its axis (3 marks).

15.



The electric field components in the figure shown $E_x = \alpha x^{1/2}$, $E_y = E_z = 0$ in which $\alpha = 800 \text{ N/Cm}^{1/2}$. Calculate the electric flux through the cube and the charge within the cube. The side of cube $a = 0.1 \text{ cm}$.

16. State and prove Gauss theorem and give its applications (5 marks)

17. Derive an expression for the electric field strength at a distant point on the axis and along the equatorial line of the electric dipole. (5 marks).

COMPUTER SCIENCE

- Q What is the difference between LAN and MAN?
- Q Explain internet and intranet.
- Q What is the difference between LAN and internet?
- Q Explain following
- a) Router
 - b) Bridge
 - c) Gateway
 - d) firewall
- Q Compare coaxial cable and optical fibre cable
- Q What is the difference between packet switching and message switching.
- Q Write two applications of cyber law.
- Q What do crackers and hackers mean?
- Q What are cookies?
- Q What is meant by network topologies?
- Q Name a broadband communication channel.
- Q Expand the following terminologies:
TCP/IP, XML, CDMA, WLL, GSM, URL, SMS, FTP, HTML, WWW
- Q Define nodes and dumb terminals.
- Q Give merits and demerits of
- a) star topologies.

b) ring topologies

c) bus topologies

Q What is meant by client/ server environment?

Q Give the essential requirements for sending e-mails, list two advantages of e-mails.

Q Give What do you understand by bandwidth ? What is its function?

Q Write short note on

a) Browser b) search engines c) video conferencing d) usenet

Q How is gateway different from router?

Q How do we transfer files to our websites?

MATHS

1. Let $f: \mathbb{R} - \{-3/5\} \rightarrow \mathbb{R}$ be a function defined as $f(x) = 2x / (5x + 3)$ find f^{-1} :

range $f \rightarrow \mathbb{R} - \{-3/5\}$

2. Show that the function $f: \mathbb{R} \rightarrow \mathbb{R}$ defined by $f(x) = (2x - 1) / 3$, $x \in \mathbb{R}$ is one

one and onto function. Also find the inverse of the function f

3. Examine which of the following is a binary operation

a) $a * b = (a + b) / 2$, $a, b \in \mathbb{N}$

b) $a * b = (a + b) / 2$, $a, b \in \mathbb{Q}$

4. Show that the relation R in the set $A = \{ x : x \in \mathbb{W}, 0 \leq x \leq 12 \}$

Given by $R = \{ (a, b) : a - b \text{ is a multiple of } 4 \}$ is an equivalence relation. Also find the set of all elements related to 2

5. Let $*$ be a binary operation defined on $\mathbb{N} \times \mathbb{N}$ by $(a, b) * (c, d) = (a+c, b+d)$. Show that $*$ is commutative and associative. Also find the identity element for $*$ on $\mathbb{N} \times \mathbb{N}$ if any

6. If $f(x) = (5x+3)/(4x-5)$ ($x \neq 5/4$) Show that $f(f(x))$ is an identity function

7. Let $*$ be a binary operation on \mathbb{N} , given by $a*b = \text{L.C.M. of } (a,b)$ Find

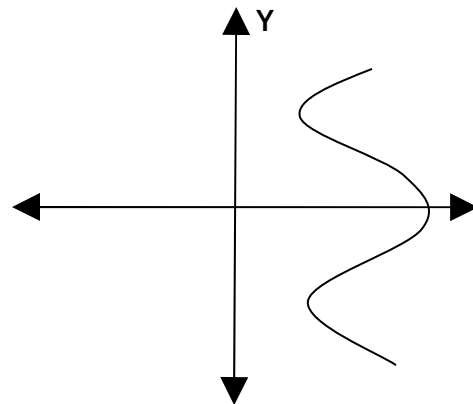
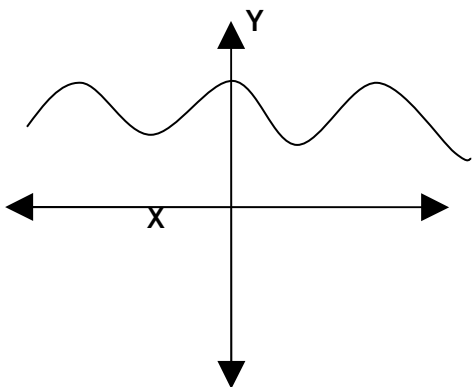
a) $2*3$

b) $5*10$

c) Find identity of operation $*$ on \mathbb{N}

Is $*$ commutative? Is it associative?

8. Which of the following graph represent the function of x ? Why?



ENGLISH

XII A & B

1. Solve at least three comprehension passages per week.
2. Make notes on the same passages.
3. Collect ten classified advertisements (each on different topics) and paste them in your note book. Copy the advertisement below the pasted ones.
4. Write five notices on five different subjects.
5. Read both the books - Flamingo and Vistas, mark difficult words and their meanings.