HOLIDAY HOMEWORK

PHYSICAL EDUCATION

1.What do you understand by Seeding?

2. What do you mean a Bye?

3. Define Planning?

4. Explain any two objectives of intramurals?

5. Briefly explain any two objectives of extramural?

6. Explain the procedure of placement of teams in each quarter on knock-out basis?

7. What do mean by Knock-out Tournament? Draw the fixture of 21 teams on knock-out basis?

8. What do mean by Knock-out Tournament? Discuss the advantages and disadvantages of knock-out tournament?

9. What do you mean by Specific Sports Programmes? Explain about health runs and run for unity in detail?

10. What is a league tournament? Draw a fixture of six teams using round robin method?

Discuss the pre, during and post responsibilities of committees?

11.What do you mean by balanced diet?

12.Define balanced diet?

13.Define health weight?

14.What do you mean by food myths? Briefly explain about four food myths?

Briefly mention about nutrition during competition?

15.What do you mean by macronutrients? Explain about any four macronutrients?

16.What do you mean by non-nutritive components of diet? Explain various non-nutritive components in brief?

CLASS XII SUB: MATHEMATICS

1. Consider $f: R_+ \to [-9, \infty)$ given by $f(x) = 5x^2 + 6x - 9$. Prove that f is invertible with $f^{-1}(y) = \frac{\sqrt{5y+54}-3}{5}$.
2. Determine whether the relation R on the set of real numbers R as R = $\{(a,b): a,b \in R \text{ and } a - b + \sqrt{3} \in S, \text{where } S \text{ is the set of irrational numbers}\}$ is reflexive , symmetric and transitive.
3. A function $f: N \to N$ given by $f(x) = x^2 + x + 1$. Check whether the function is injective.
4. If $f(x) = x + 7 \text{ and } g(x) = x - 7, \text{find } (f \circ g)(7)$.
5. Using elementary transformations, find the inverse of the matrix

$$\begin{pmatrix} 1 & 2 & 3 \\ 2 & 5 & 7 \\ -2 & -4 & -5 \end{pmatrix}$$

6. Using properties of determinants , prove that

$$\begin{vmatrix} b+c & a-b & a \\ c+a & b-c & b \\ a+b & c-a & c \end{vmatrix} = 3abc - a^3 - b^3 - c^3$$

7. Using matrix method , solve the following system of equations

$x + y + z = 3$; $x - 2y + 3z = 2$; $2x - y + z = 2$

8. If a, b, c are positive and are the $p^{th}, q^{th} \text{ and } r^{th}$ terms of G.P, then Show that $\begin{vmatrix} \log a & p & 1 \\ \log b & q & 1 \\ \log c & r & 1 \end{vmatrix} = 0$
9. If points $(2,0), (0,5), \text{and } (x,y)$ are collinear , show that $\frac{x}{2} + \frac{y}{5} = 1$
10. Prove that $\begin{vmatrix} a & b & ax+by \\ b & c & bx+cy \\ ax+by & bx+cy & 0 \end{vmatrix} = (b^2 - ac)(ax^2 + 2bxy + cy^2)$

ENGLISH

Q1.NOTE MAKING AND SUMMARY. (Do in a ruled sheet)

Choose any 3 comprehension passages and do note making and summary. (Follow and stick to the format and the rules taught in the class.)

Q2.Read the newspaper daily and cut samples of the following:-

a. Reports
b. Articles
c. Posters
d. Classified advertisements

Paste them neatly in the writing skills section for reference.

Q3. Write a report in 120-150 words on any place that you have visited in your summer holidays

BIOLOGY

1. Prepare a power point presentation on the given topic of the chapter Environmental Issues

SUB: PHYSICS

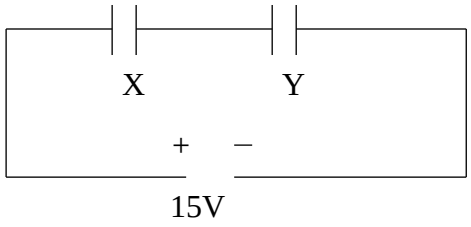
CHAPTER- ELECTOSTATIC POTENTIAL AND CAPACITANCE

1. (i) An electric dipole is held in a uniform electric field. Using suitable diagram show that it does not undergo any translatory motion. Derive the expression for the torque acting on it. (ii) What would happen if the field in non-uniform? (iii) What would happen if the external electric field is increasing a) parallel to **P** and (b) anti-parallel to **P**?

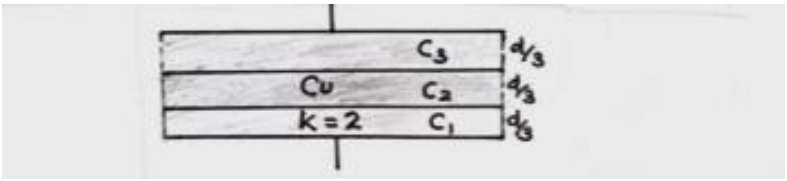
2. Two parallel plate capacitors X and Y have the same area of plates and same separation between them. X has air between the plates while Y contains a dielectric medium

(i) Calculate capacitance of each capacitor if equivalent capacitance of the combination is 4 pF. (ii) Calculate the potential difference between the plates of X and Y.

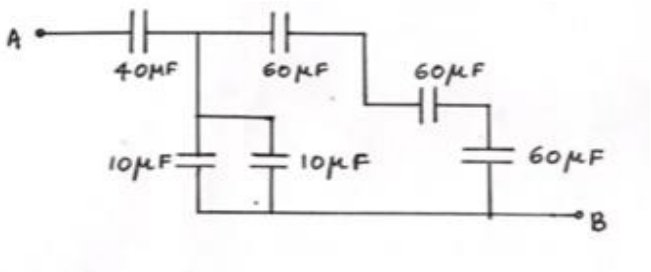
(iii) Estimate the ratio of electrostatic energy stored in X and Y.



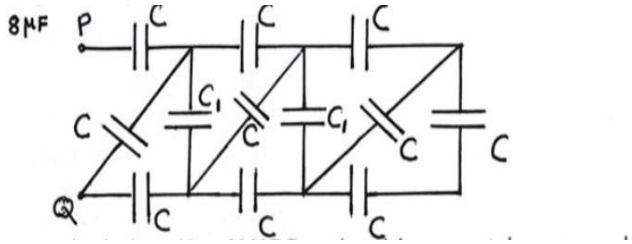
3. Between the plates of a parallel plate capacitor of area A, a copper plate sits on a dielectric slab of k = 2. Find the equivalent capacitance of this arrangement.



4. Find the equivalent capacitance of the combination of capacitors between the points A and B. Also calculate the total charge that flows in the circuit when a 100V battery is connected between the points A and B.

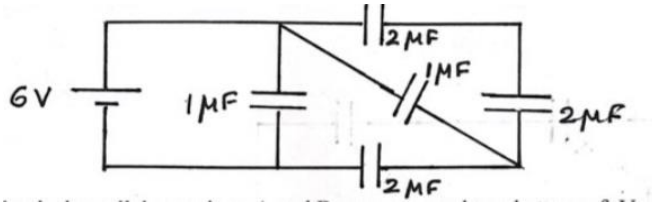


5. Find the equivalent capacitance between the points P and Q as shown in the fig. Given $C_1 = 12\mu F$, $C = 18\mu F$.

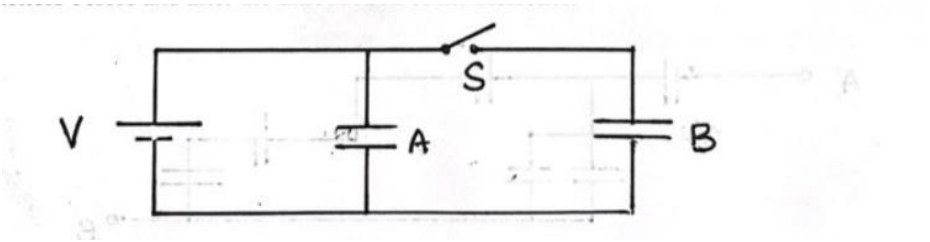


6. A 10 μF capacitor is charged by a 30 V DC supply and then connected across an uncharged 50μF capacitor. Calculate i) potential difference across the combination and ii) the initial and final energies. How will you account for the energy loss?

7. Find the total energy stored in the capacitors in the following network.



8. Two identical parallel capacitors A and B are connected to a battery of V volts with the switch S closed. The switch is now opened and the free space between 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.



9. A parallel plate capacitor, each with plate area A and separation d is charged to a potential difference of V volts. What change, if any, will take place in i) charge on the plates ii) electric field intensity between the plates iii) potential difference between the plates iv) capacitance of the capacitor and the energy stored in the capacitor, when a dielectric slab of thickness d and dielectric constant k is now placed between the plates when a) the battery is disconnected and b) when the battery remains connected. Justify your answer.

10. The insulated plates of a parallel plate capacitor has a charge density σ. Show that the work done in changing the distance from d_1 to d_2 is $U = \frac{\sigma^2}{2k}\frac{A}{\epsilon_o}$ (d_2-d_1).