DAV PUBLIC SCHOOL, BISTUPUR, JAMSHEDPUR

Class XII Summer vacation Assignments (SESSION 2025-26) [SCIENCE]

Subject: English

1.What to do? Make a collage on the poem Keeping Quiet using or drawing appropriate pictures.

Where to do? English Notebook.. Literature section

Parameters:- Originality of idea, Creativity and Presentation.

2. Comic Strip/drawing/doodle art

What to do? Make a comic strip of the chapter Tiger King.

Where to do? In English Notebook

Parameters:- Content , creativity, relevance .

3. Read any one of the following chapter

A) The Rattrap.

B) The Enemy

What to do? Write the review of the lesson in 200-250 words keeping in mind the given aspects.

 Favourite character and his/her role in the story

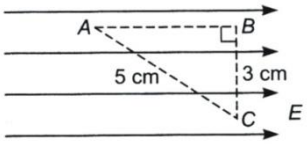
Where to do? In English notebook.

Parameters for Assessment:- Content, language and accuracy.

PHYSICS:

Assignments (Electric potential,potentialenergy and equipotential surface)

1. Why direction of electric field is perpendicular to the equipotential surface ?
2. Why the potential inside a hollow spherical charged conductor is constant and has same value as on its surface?
3. Plot a graph comparing the variations of potential V and electric field E due to a point charge.
4. Find potential difference between the points (i) A andC (ii) B and A



5.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.

6.Derive an expression for potential energy of an electric dipole placed in an uniform electric field. State the conditions under which the dipole is in i) stable equilibrium ii) unstable equilibrium. Find the work done to turn an electric dipole from its stable equilibrium to unstable equilibrium position.

7. 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.

8. 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, charges will always flow from the inner sphere to the outer sphere irrespective of the magnitude of the two charges.

9.Two copper spheres of same radii , one hollow and other solid are charged to same potential. Which, if any, of the two will have more charge ?

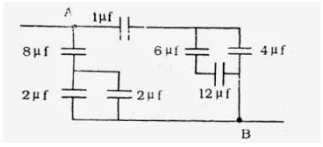
10. The kinetic energy of a charged particle decreases by 10 J as it moves from a point at 100 V to a point at potential 200 V. Find the charge on the particle.

ASSIGNMENTS (CAPACITANCE AND CAPACITORS)

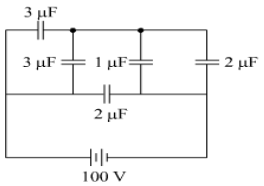
Q1. How is the electric field due to a charged parallel plate capacitor affected, when a dielectric slab is inserted between the plates fully occupying the intervening region ? Hence define dielectric constant in terms of capacitance.

Q2.Sketch a graph to show how the capacitance C of a capacitor varies with the charge Q given to it.

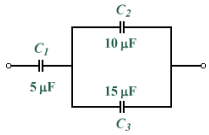
Q3.Find the equivalent capacitance between the points A and B.



Q4. Calculate the total energy stored by the network



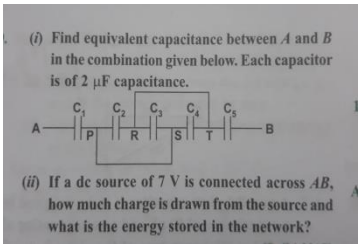
Q5. Find total energy stored in the system if energy stored in 15 μF capacitor is 15 Joules.



Q6.. A 20 μF capacitor is charged by a 30 V d.c.supply and then connected across an unchanged 50μF capacitor. Calculatei) the final potential differene across the combination,

ii) Initial and final energies. How will you account for the difference in energies.

Q7.


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

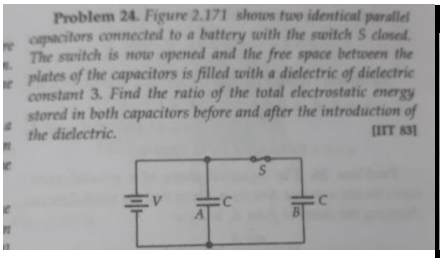
(*ii*) If a dc source of 7 V is connected across *AB*, how much charge is drawn from the source and what is the energy stored in the network?

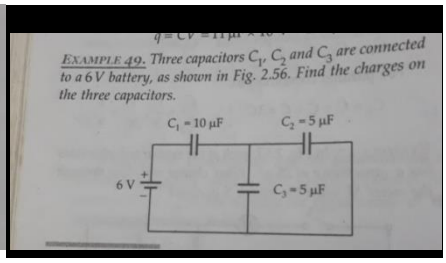
Q8. An uncharged capacitor is connected to a battery. Show that half the energy supplied by the battery is lost as heat while charging the capacitor.

Q9. A parallel plate capacitor is charged to a potential difference V by a d.c. source. The capacitor is then disconnected from the source. If the distance between the plates is doubled, state with reason how the following will change :

i) Electric field between the plates,
ii) Capacitance and
iii) Energy stored in the capacitor.

Q10.


Problem 24. *Figure 2.171 shown two identical parallel capacitors connected to a battery 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 3. Find the ratio of the total electrostatic energy stored in both capacitors before and after the introduction of the dielectric.* [IIT 83]


EXAMPLE 49. Three capacitors C_1, C_2 and C_3 are connected to a 6 V battery, as shown in Fig. 2.56. Find the charges on the three capacitors.

CHEMISTRY:

.1.(a) If Solubility product of CuS is 6 x 10 $^{-16}$, Calculate the maximum molarity of CuS in aqueous solution.

(b) Why excess intake of coomon salt is not advised to person suffering from High Blood pressure.

(c) Suggest type of intermolecular attractions present in $I_2$and CCl_4 , Methanol and acetone .

2. (a) What is the value of vant Hoff factor i for $K_4[Fe(CN)_6]$ (b) The preservation of fruits by adding concentrated sugar Solution protect against bacterial action.

(c) when 2 gram of benzoic acid is dissolved in25 g of benzene ,the experimentally determined molar mass is always greater than the true value .

(d) H_2S is a toxic gas with rotten egg smell is used for qualitative analysis. If solubility of H2S in water at STP is 0.195m ,calculate Henrys constant.

3.(a) Determine the Osmotic pressure of a solution prepared by dissolving 25 mg of K_2SO_4 in 2 L water at 25^{o}C ,assuming to be completely dissociated.(at mass of K=39 and S=32) (b)

Give one example of Maximum and Minimum boiling Azeotrope.

4. (a) What will be the Osmotic pressure of 58.5 g/l of NaCl . (at mass of Na=23 and Cl =35.5) (B) Define Reverse Osmosis with one use.

(c) Why 0.9 % NaCl is used as intravenous liquid and is administered to human body.

5.(a) write Units of Ebullioscopic constant and write its definition. (b) Why aquatic species are more comfortable in cold water than in warm water.

(c) Give formula of Raoults law with graphs of Positive and negative deviation.

6.Three electrolytc cells A,B and C containing ZnSO4 ,CuSO4 and AgNO3 are connected in series .A steady current of 1.5 amperes is passed till 1.45 g of Ag was deposited .How long did the current flow ,what massed of zinc and copper got deposited.

7.Draw a neat diagram of Dry cell.Lead storage battery and fuel cell .Also write theirAnodic and cathodic reactions.

8.What are concentration cells .Draw the diagram and write chemical reactions .
9. write the Nernst equation for the following and calculate Ecell. Zn (s) / Zn(0.004M) // Cu (0.200M)/Cu (s) .
10. Write electrolysis for the aq AgNO3 containing Platinum electrodes.

HOLIDAY HOME WORK FOR CLASS XII (SUBJECT :MATHEMATICS)

1. Check the consistency of the following system of equations using MATRIX METHOD :

   (i) $3x - y + 2z = 3$, $2x + y + 3z = 5$, $x - 2y - z = 1$

   (ii) $x - y + z = 3$, $2x + y - z = 2$, $x + 2y - 2z = -1$

2. If A is any invertible matrix of order $n \times n$,then prove that

   (i) $(A^{-1})^T = (A^T)^{-1}$.

   (ii) $adj(A^T) = (adjA)^T$.

   (iii) $|adjA| = |A|^{n-1}$.

   (iv) $adj(adjA) = |A|^{n-2} A$

3. $Show\ that\ \ f : \mathbf{N} \to \mathbf{N}\ \ defined\ \ by\ \ f(n) = \begin{cases} \dfrac{n+1}{2}, & if\ \ n\ \ is\ \ odd \\ \dfrac{n}{2}, & if\ \ n\ \ is\ \ even \end{cases}$

   $is\ \ many-one\ \ onto\ \ function.$

4. Show that each of the relation R in the set A = {x ∈Z : 0 ≤ x ≤ 12}, given by R = {(*a, b) :* |a – b| is a multiple of 4} is an equivalence relation. Find the set of all elements related to 1 .

5. Let **Q**be the set of rational numbers and R be a relation on **Q**defined by $R = \{(x, y) : x^2 + y^2 = 5, x \in Q, y \in Q\}$.Check whether the relation R is reflexive ,Symmetric or transitive.

6. Prove that the function $f : [0, \infty) \to [-5, \infty)$ $defined\ \ by\ \ f(x) = 4x^2 + 4x - 5$ is both one-one and onto.

7. $\Pr ove\ \ that\ \ \cot^{-1} x = \cos^{-1}\left(\dfrac{x}{\sqrt{1+x^2}}\right),\ x \in \mathbf{R}$

8. *Evaluate* $\cot^{-1}(13)+\cot^{-1}(21)+\cot^{-1}(-8)$

9. *Prove that* $\tan^{-1}\left(\frac{\sqrt{1+x}-\sqrt{1-x}}{\sqrt{1+x}+\sqrt{1-x}}\right)=\frac{\pi}{4}-\frac{1}{2}\cos^{-1}x \;;\; -1\le x\le 1$

10. *Prove that* $2\sin^{-1}\left(\frac{3}{5}\right)-\tan^{-1}\left(\frac{17}{31}\right)=\frac{\pi}{4}$

ACTIVITIES:

1. To verify that the relation R in the set L of all lines in a plane, defined by R = {(*l*, *m*) : *l* ⊥ *m*} is symmetric but neither reflexive nor transitive.

2. To verify that the relation R in the set L of all lines in a plane, defined by R = {(*l*, *m*) : *l* || *m*} is an equivalence relation.
3. To demonstrate a function which isnot one-one but is onto.
4. To demonstrate a function which is one-one but not onto.
5. To draw the graph of $\sin^{-1}x$, using the graph of sin *x* and demonstrate the concept of mirror reflection (about the line *y* = *x*).

(COMPUTER SCIENCE)

Unit/Topic: Revision Tour of class XI

I. Answer the following questions with appropriate example:

i) Differentiate the terms Mutable and Immutable

ii) List and Dictionary

iii) and , or operator

iv) Suntax and Runtime errors

v) Phishing and Pharming

II. Programming in Python:

i) WAP to find the 2nd largest word in a sentence.

ii) WAP to display all the palindrome numbers present in a list of n integers

iii) WAP to create a dictionary containing n no.of names of students as keys and percentage as values. Find the following out of it.

A) Find the name of the topper/toppers
B) Find the average percentage
C) Display the name of students having same percentage.

II) Answer the following questions:

Topic: User Defined Function

i) Answer following questions with appropriate example:

a) Positional and Keyword argument

b) nonlocal and global keyword

c) What is the use of return keyword.

Programming:

i) WAP to create a function accepting a list of n no. of words as argument and create a dictionary out of it. The keys of dictionary will be 'vowel' and 'consonant'. The values will the tuple of words start with vowel and consonant respectively.

ii) WAP to create a function to check elements of tuples (Elements are float values) whether they are arranged or not. If arranged return 'A' for ascending, 'D' for descending and 'U' for unordered.

iii) Write a menu driven program to check an integer whether it is a) Armstrong b) Special c) Prime d) Niven e) Spy numbers using separate user defined function.

d) Find the output of the following program code:

i)

```
x=5
def fun(a,b=10):
        global x
        for I in range(a,b):
                x+=i
        return x
print(fun(4))
print(fun(10,15))
```

ii)

```
def f1(a,b):
        C=10
        A+=b+c
        b-=c
        print(a,b,c)
        def f2(n):
                nonlocal c
                while n:
                        c+=n%10
                        n//=10
                else:
                        return c
        c=f2(543)
        print(c)
f1(15,25)
```

iii)

```
s='ENCYCLOPEDIA'
def prn(n=2):
        st=''
        for I in range(len(s)-1,n,-1):
                st=st+s[i].lower()
        return st
```

```
print(prn())
print(prn(3))

iv)
s='CbsE@AiisCE23-24'
def fun(lst):
        x=0
        while x<len(s):
                if s[x].isalpha():
                        if s[x].islower():
                                        lst.append(s[x].upper())
                        elif s[x].isupper():
                                lst.append(s[x+1])
                elif s[x].isdigit():
                        lst.append(chr(ord(s[x])+1))
                else:
                        lst.append('#')
                x+=1
        else:
                return lst
#Main Block
lst=fun(list(s))
print(lst)

v)
def outer():
        x='welcome'
        def inner():
                x='goodbye'
        inner()
        print('x=',x)
outer()

vi)
def outer():
        x='welcome'
        def inner():
                nonlocal x
                x='goodbye'
        inner()
        print('x=',x)
outer()

vii)
def outer():
        x='welcome'
        def inner():
                nonlocal x
                x='goodbye'
        inner()
        print('x=',x)
```

```
outer()
```

viii)

```
a=1
def block3():
    a=2;b=3
    print('block3:',a,b)
    def block2():
        global a
        a=a+100
        print('block2:',a,b)
        def block1():
            print('block1:',a,b)
        block1()
    block2()
block3()
```

ix)

```
a=1
def block3():
    a=2;b=3
    print('block3:',a,b)
    def block2():
        #nonlocal a
        global a
        a=a+100
        print('block2:',a,b)
        def block1():
            print('block1:',a,b)
        block1()
    block2()
block3()
```

x.

```
import random
a="Wisdom"
b=random.randint(1,6)
for i in range(0,b,2):
    print(a[i],end='#')
```

(A) W# (B) W#i# (C) W#s# (D) W#i#s#

PROGRAMMING

A) Write a Python function that displays all the words containing @cmail from a text file "Emails.txt".

B) Write a Python function that finds and displays all the words longer than 5 characters from a text file "Words.txt".

C) Write a function in Python to read a text file, Alpha.txt and displays those lines which begin with the word ‘You’.

D) Write a function, vowelCount() in Python that counts and displays the number of vowels in the text file named Poem.txt.

E) Write a function to create a text file , write no.of sentences as per user's choice . Write another function to read those files which are ending with the word 'India'.

Subject - BIOTECHNOLOGY

Holiday homework

1.Theoretical Work:

Chapter Revision: Prepare and revise specific chapters from the textbook, possibly including a block test to assess understanding.

Assignments: Complete assigned homework questions and exercises.

Concept Clarification: Clarify any doubts or confusing concepts from the textbook.

2. Practical Work:

Practical File: Complete the practical file with experiments performed in class.

3. Project Work: Prepare a project based on a specific biotechnology topic, following school guidelines.

Project Introduction & Theory: Write an introduction and theoretical background for the project.

Project Preparation:

Project Selection:

Choose a suitable biotechnology topic for the project, possibly related to areas like genetic engineering, bioethics, or biotechnology applications.

Data Collection:

Collect relevant data for the project, which may include research, experiments, or observations.

Project Report:

Prepare a comprehensive project report, including an introduction, methodology, results, and conclusion.

PHYSICAL EDUCATION

Make a Practical File of the following topic.

- Practical-1: Fitness tests administration. (SAI Khelo India Test)
- Practical-2: Procedure for Asanas, Benefits & Contraindication for any two Asanas for each lifestyle disease.

- Practical-3: Anyone one IOA recognized Sport/Game of choice. Labelled diagram of Field & Equipment. Also, mention its Rules, Terminologies & Skills.

SUBJECT: ECONOMICS

PART-1

Answer the following questions:

1. Classify the following as factor income or transfer income (Give Reason)
a. Rent received by the owner of a factory building from the industrialist
b. Dearness Allowance added to the basic salary of an employee
c. Financial Help to the flood victims
d. Salary received by an employee of SBI
e. Old Age Pension received by an old man
1. Differentiate between Final Good & Intermediate Good
2. Why does National Income include only the final good
3. GNP at MP of an imaginary economy is Rs 1,20,000 Cr. Its capital stock is worth Rs 30,000 Cr &it capital stock depreciation is @20% per annum. Indirect tax is RS 30,000 Cr& subsidies are Rs 15,000Cr. What is National income?
4. When does NFIA becomes Positive or negative?
5. State whether the following statement is true or false? (With reason)

a. Capital formation is a flow
b. Bread is always consumer goods
c. Gross Value of output refers to the market value of final goods & services
d. Intermediate consumption refers to non-factor inputs which can be used over & over again
e. Services produced for self-consumption are included in the estimation of NI
f. Increase in stock of inventories is included in the estimation of national income
g. Services of domestic help are not included in the national income

6." All Producer Goods are not Capital Goods" Comment
7. Why are transfer payments not included in the estimation of national income?
8. A company maintains depreciation reserve fund for replacing its fixed assets after the expiry of its life time.

Can the company claim that the machines are protected against obsolescence?

9.Write down the three identities of Calculating GDP of a country by three different methods. Also explain why each of these should give us the same value of GDP?
10.Differentiate between National income at current price & National income at constant price
11.What is double counting ? Name the method to avoid it
12. Describe the value added method
13. What is GNP deflator?

PART -2

A. How are the following treated in the estimation of national income

1. Rent free house given to an employee by an employer
2. Payment for cloth by a garment manufacturing firm
3. Money received from sale of second hand goods
4. Payment of wealth tax
5. Purchase of a truck to carry goods by a production units
6. Expenditure by the Govt for providing free education
7. Services rendered by the family members
8. Commission received by a dealer from buyer & seller

9. Wheat produced by a farmer for self- consumption
10. Taking care of old parents
11. Payment of corporate tax
12. Expenditure on providing police service by the Govt
13. Addition of stock during a year
14. Purchase of taxi by a taxi driver
15. Bonus paid to employees

PART -3

B. How are following treated in the estimation of domestic factor income?

1. Profits earned by a branch of foreign bank in India
2. Old age pension given by the Govt
3. Profits earned by a company in India which is owned by a non- resident
4. COE of to the resident of Japan working in Indian Embassy in Japan
5. Factor income from abroad
6. Profits earned by a branch of SBI in England
7. Salaries to Indian residents working in the Russian Embassy in India
8. Rent received by an Indian resident from Russian Embassy in India

C. How are following treated in the estimation of GDP at MP

1. Fees to a mechanic paid by a firm
2. Interest paid by an individual on a car loan taken from bank
3. Expenditure on purchasing car by a firm.