

SUMMER VACATION HOLIDAY HOMEWORK

2020-21

CLASS XII

ENGLISH CORE

1. Draft Advertisements for the following (1 each):

A. Household item for sale

You propose to sell your flat as you are going abroad. Draft an advertisement for it to be published in the classified columns of 'The Times of India', New Delhi. (50 words)

B. To-let

Question 2-You are Anurag/Aparna of 110, Swasthya Vihar, New Delhi. You wish to let out a portion of your newly built house. Draft an advertisement in not more than 50 words for publication in the "To-Let" column of The Hindustan Times, giving all necessary details.

C. Required/Vacancy/situation vacant

D. Matrimony

E. Services (Showroom/Gym/Coaching etc.)

3. **Write speech** on the following topics:

- a) "To use the latest technology the right way, is in the hands of the youth today." **Write a speech 150-200** words discouraging the misuse of technological products like cell phones, computers etc and highlighting the need to use them to promote harmony and goodwill in the society.
- b) Our Good Earth", an environmental awareness magazine has launched a marathon 'Clean Your City' campaign. As an active participant **write a speech** to be read out in the morning assembly urging students to participate in the campaign in 150-200 words.

4. **Poster Writing:**

- a. Water is precious and each one of us must stop wastage. **Prepare a poster** in not more than 50 words urging people to employ various methods of rainwater harvesting in their colonies.

- b. M/s Pen India has brought out a new gel pen in many colors. Prepare an eye catching advertisement for the pen, giving all relevant details.
- c. Draft an advertisement announcing the launch of special health drink by Health Care Private Ltd., highlighting its nutritive value.

5. The recent rain caused great havoc in the city. Many buildings collapsed and several trees got uprooted blocking traffic at several places. Write a **report** to be published in a national daily.

6. Recently you went to your native village to visit your grandparents. You saw that some of the children in the age group 5-14 (the age at which they should have been at school) remained at home, were working in the fields or were simply loitering in the streets. **Write a letter in 120-150** words to the editor of a national daily analysing the problem and offering solutions to it.

7. **QUESTIONS FOR PRACTICE**

- a) Who was Charley? What was his problem?
- b) What had Sam written in his letter to Charley?
- c) Why couldn't Sam go back to his old business in Galesburg?
- d) What could have been the poet's childhood fears?
- e) Why has the mother been compared to the late winter's moon?
- f) Why did M. Hamel say about knowing one's language is a key to prison?
- g) Whom did Mr. Hamel blame for not learning the French?
- h) Where has Saheb come from and why?
- i) Mention the hazards of working in the bangle industry.
- j) Why did the Peddler not reveal his true identity when the ironmaster mistakes him to be the Captain?
- k) How did the Tiger King meet his end? What is ironical about his death?
- l) How did the Maharaja manage to save his throne?

----- X -----

Partha Paul

PGT English

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SUMMER VACATION HOLIDAY HOMEWORK 2020-21

CLASS-XII
 SUBJECT- COMPUTER SCIENCE

	Revision Tour of Python	
1.	Write a Python program to calculate the length of a string.	
2.	Write a Python program to count the number of characters (character frequency) in a string. Sample String: 'google.com' Expected Result: {'g': 2, 'o': 3, 'l': 1, 'e': 1, '.': 1, 'c': 1, 'm': 1}	
3.	Write a Python program to get a string from a given string where all occurrences of its first char have been changed to '\$', except the first char itself. Sample String: 'restart' Expected Result: 'resta\$t'	
4.	Write a Python program to remove the nth index character from a nonempty string.	
5.	Write a Python program that accepts a comma separated sequence of words as input and prints the unique words in sorted form (alphanumerically). Sample Words: red, white, black, red, green, black Expected Result: black, green, red, white, red	
6.	Write a Python function to get a string made of its first three characters of a specified string. If the length of the string is less than 3, then return the original string. Sample function and result: first_three('ipy') -> ipy first_three('python') -> pyt	
7.	Write a Python program to check whether a string starts with specified characters. Note: In cryptography, a Caesar cipher, also known as Caesar's cipher, the shift cipher, Caesar's code or Caesar shift, is one of the simplest and most widely known encryption techniques. It is a type of substitution cipher in which each letter in the plaintext is replaced by a letter some fixed number of positions down the alphabet. For example, with a left shift of 3, D would be replaced by A, E would become B, and so on. The method is named after Julius Caesar, who used it in his private correspondence.	
8.	Write a Python program to print the following floating numbers with no decimal places.	
9.	Write a Python program to print the index of the character in a string. Sample string: Python Program Expected output: Current character P position at 0 Current character y position at 1 Current character t position at 2	
10.	Write a Python program to count and display the vowels of a given text.	
11.	Write a Python program to sum all the items in a list.	
12.	Write a Python program to get the largest number from a list.	

13.	Write a Python program to remove duplicates from a list. a = [10,20,30,20,10,50,60,40,80,50,40]	
14.	Write a Python function that takes two lists and returns True if they have at least one common member.	
15.	Write a Python program to shuffle and print a specified list.	
16.	Write a Python program to count the number of elements in a list within a specified range.	
17.	Write a Python program to generate groups of five consecutive numbers in a list.	
18.	Write a Python program to replace the last element in a list with another list. Sample data: [1, 3, 5, 7, 9, 10], [2, 4, 6, 8] Expected Output: [1, 3, 5, 7, 9, 2, 4, 6, 8]	
19.	Write a Python program to create a dictionary from two lists without losing duplicate values. Sample data: ['Class-V', 'Class-VI', 'Class-VII', 'Class-VIII'], [1, 2, 2, 3] Expected Output: defaultdict(<class 'set'>, {'Class-V':{1}, 'Class-VI':{2}, 'Class-VII':{2}, 'Class-VIII':{3}})	
20.	Write a Python program to iterate over dictionaries using for loops.	
Functions		
21.	Write a Python function to find the maximum of three numbers.	
22.	Write a Python function to sum all the numbers in a list. Sample List: (4, 6, 3, 5, 6) Expected Output: 24	
23.	Write a Python function to reverse a string. Sample String: "python123" Expected Output: "321nohtyp"	
24.	Write a Python function that accepts a string and calculates the number of uppercase letters and lowercase letters. Sample String: PythonProgramminG Expected Output: Original String: Python Programming No. of Uppercase characters: 3 No. of Lowercase characters: 14	
25.	Write a Python program to print the even numbers from a given list. Sample List: [1, 2, 3, 4, 5, 6, 7, 8, 9] Expected Result: [2, 4, 6, 8]	
26.	Write a Python function to check whether a number is perfect or not. According to Wikipedia, in number theory, a perfect number is a positive integer that is equal to the sum of its proper positive divisors, that is, the sum of its positive divisors excluding the number itself (also known as its aliquot sum). Equivalently, a perfect number is a number that is half the sum of all of its positive divisors (including itself). Example: The first perfect number is 6, because 1, 2, and 3 are its proper positive divisors, and $1 + 2 + 3 = 6$. Equivalently, the number 6 is equal to half the sum of all its positive divisors: $(1 + 2 + 3 + 6) / 2 = 6$. The next perfect number is 28 = 1 + 2 + 4 + 7 + 14. This is followed by the perfect numbers 496 and 8128.	

27.	<p>22. Write a Python function that prints the first n rows of Pascal's triangle. Note: Pascal's triangle is an arithmetic and geometric figure first imagined by Blaise Pascal.</p> <pre> 1 1 1 1 2 1 1 3 3 1 1 4 6 4 1 </pre> <p>Sample Pascal's triangle: Each number is the two numbers above it added together.</p>	
28.	Write a Python program to make a chain of function decorators (bold, italic, underline, etc.) in Python.	
29.	Write a Python program to access a function inside a function.	
30.	Write recursive code to compute and print sum of squares of n numbers. Value of n is passed as parameter.	
31.	Write recursive code to compute the greatest common divisor of two numbers.	
32.	<p>Create a module lengthconversion.py that stores functions for various lengths conversions, e.g.,</p> <ul style="list-style-type: none"> • Miletokm() to convert miles into kilometres • Kmtomile() to convert kilometres into miles • Feettoinches() • Inchestofoot() <p>It should also store constant values such as value of (mile in kilometre and vice versa) [1 mile = 1.609344 kilometre; 1 foot = 12 inches] Help() function should display proper information.</p>	
33.	<p>Create a module MassConversion.py that stores function for mass conversion, e.g.,</p> <ul style="list-style-type: none"> • Kgtotonne() to convert kg into tonnes • Tonnetokg() to convert tonne into kg • Kgtopound() to convert kg into pound • Poundtokg() to convert pound into kg (<p>Also store constants 1 kg = 0.001 tonne, 1 kg = 2.20462 pound) Help () function should give proper information about the module.</p>	
Using Python Library		
34.	Write a method in Python to find and display the prime numbers between 2 to N. Pass N as argument to the method.	
35.	Write definition of a method ZeroEnding(SCORES) to add all those values in the list of SCORES, which are ending with zero (0) and display the sum. [Delhi 2018] For example, If the SCORES contain [200,456,300,100,234,678] The sum should be displayed as 600	
Data File Handling		
36.	Write a function file_long() that accepts a filename and reports the file's longest line.	
37.	Write a function remove_lowercase() that accepts two file names, and copies all lines that do not start with a lower case letter from the first file to the second file.	
38.	Write a method in Python to write multiple lines of text contents into a text file daynote.txt line.	

39.	Write a user-defined function in Python that displays the number of lines starting with 'H' in the file Para.txt. Example, if the file contains: Whose woods these are I think I know. His house is in the village though; He will not see me stopping here To watch his woods fill up with snow. Then the line count should be 2.	
40.	Consider a binary file Employee.dat containing details such as empno: ename: salary (separator ':'). Write a Python function to display details of those employees who are earning between 20000 and 40000 (both values inclusive).	
41.	Write a function countmy() in Python to read the text file "DATA.TXT" and count the number of times "my" occurs in the file. For example, if the file "DATA.TXT" contains— "This is my website. I have displayed my preferences in the CHOICE section." —the countmy() function should display the output as: "my occurs 2 times".	
42.	Write a method in Python to read lines from a text file DIARY.TXT and display those lines which start with the alphabet 'P'.	
43.	Write definition of a method MSEARCH(STATES) to display all the state names from a list of STATES which start with the alphabet M. For example: If the list STATES contains ["MP","UP","WB","TN","MH","MZ","DL","BH","RJ","HR"] The following should get displayed: MP MH MZ	
44.	Write a method in Python to read lines from a text file MYNOTES.TXT and display those lines which start with the alphabet 'K'.	
45.	Write a program using Dictionary and Text files to store roman numbers and find their equivalents.	
46.	Write a program to display all the records in a file along with line/record number.	
47.	Write a program that copies a text file "source.txt" onto "target.txt" barring the lines starting with a "@" sign.	
48.	Write a menu-driven program to perform read and write operations using a text file called "student.txt" containing student roll_no, name and address using two separate functions as given below: <ul style="list-style-type: none"> • student_record(filename)—Entering student details While writing to a file (student.txt), the roll_no field will be separated from the remaining fields with a comma operator. • student_readdata(filename)—Display student details • student_search(filename)—Search a student on the basis of roll_no 	
49.	Write a method/function DISPLAYWORDS() in Python to read lines from a text file POEM.TXT and display those words which are less than 4 characters.	

MATHS

CLASS-12

1. If $f, g: \mathbb{R} \rightarrow \mathbb{R}$ be two functions defined as $f(x) = |x| + x$ and $g(x) = |x| - x$ for all $x \in \mathbb{R}$. Then find $f \circ g$ and $g \circ f$. Hence, find $f \circ g(-3)$, $f \circ g(5)$ and $g \circ f(-2)$.
2. Let $A = \mathbb{R} - \{3\}$ and $B = \mathbb{R} - \{1\}$. Consider the function $f: A \rightarrow B$ defined by $f(x) = \frac{x-3}{x+3}$. Show f is one-one and onto and hence find f^{-1} .
3. Let R be the relation in set $A = \{0, 1, 2, 3, 4, 5\}$ given by $R = \{(a, b): 2 \text{ divides } a-b\}$. Show R is an equivalence relation and find equivalence class of $[0]$
4. Evaluate $\int_0^{\pi} \sin x \cos x \, dx$
5. Find the value of x $\frac{1}{x^2} = -\frac{1}{x^3}$
6. Express in simplest form
 i) $\frac{1}{\sqrt{2} + \sqrt{3}}$
 ii) $\frac{1}{\sqrt{2} - \sqrt{3}}$
7. If λ and μ are eigenvalues of a matrix A then $\lambda + \mu$ is an eigenvalue of $A + I$. Then find λ and μ so that $\lambda + \mu = 1$.
8. Find the matrix A such that $A^2 = A$
9. Express the matrix $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ as sum of symmetric and skew symmetric matrix.
10. If $\sin x = \frac{1}{2}$ then $\sin 2x = \frac{1}{2}$ for every positive integer n .

Holiday Homework

Class: XII

Subject: Physics

1. Revise the topics taught.
2. Do NCERT intext and back exercises in Homework Notebook (To be made separately).
3. Do the Worksheet given in Homework Notebook.

WORK SHEET I

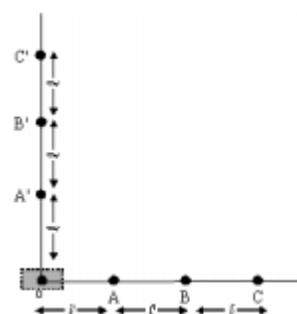
SUBJECT: PHYSICS

CLASS – XII

LESSON—ELECTROSTATICS

- Q1. Two point charges q_1 and q_2 are placed close to each other. What is the nature of the force between them when: (i) $q_1q_2 < 0$ and (ii) $q_1q_2 > 0$? 1
- Q2. Name the quantity with unit J/C. Is it a scalar or vector quantity? 1
- Q3. An electric dipole of dipole moment 2×10^{-6} C m is enclosed by a closed surface. What is the flux passing out of the surface? 1
- Q4. What is the angle between the directions of electric field at any (i) axial point and (ii) equatorial point due to an electric dipole? 1
- Q5. Two point charges placed at a distance r in air exert a force F on each other. At what distance will these charges experience the same force F in a medium of dielectric constant K ? 1
- Q6. Consider a dipole of length $2a$. What is the magnitude and direction of electric field at the midpoint of the length of the dipole? 2
- Q7. Two charges $+10\mu\text{C}$ and $-20\mu\text{C}$ are placed 15 cm apart. At what point on the line joining the two charges is the electric potential zero? 2
- Q8. The following data was obtained for the dependence of the magnitude of electric field, with distance, from a reference point O, within the charge distribution in the shaded region. 2

Field points	A	B	A'	B'
Magnitude of field	E	E/8	E/2	E/16



- (i) Identify the charge distribution and justify your answer.
- (ii) If the potential due to this charge distribution has a value V at the point A, what is its value at the point B and C.
- Q9. Derive expression for electric field at a point on the equatorial line of dipole. 3
- Q10. Using Gauss Theorem, show mathematically that for a point outside a shell, the field due to a uniformly charged thin shell is the same as if the entire charge of the shell is concentrated at the centre. Why do you expect electric field inside the shell to be zero according to this theorem? 3

Q11. An electric dipole of dipole moment p is placed in a uniform electric field. Write the expression for the torque experienced by the dipole. Identify two pairs of perpendicular vectors in the expression. Show diagrammatically the orientation of the dipole in the field for which the torque is (i) Maximum (ii) Half the maximum value (iii) Zero. 3

Q12. Derive expression for energy stored in parallel plate capacitor. Net capacitance of three identical capacitors in series is $1\mu\text{F}$. What will be their net capacitance if connected in parallel? Find the ratio of energy stored in the two configurations if they are both connected to the same source. 5

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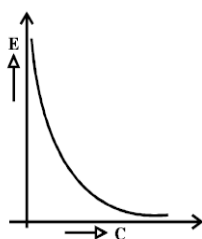
WORK SHEET II

SUBJECT: PHYSICS

CLASS – XII

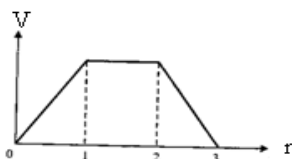
LESSON—ELECTROSTATICS

- Q1. The graph shown here, shows the variation of the total energy U stored in a capacitor against the value of the capacitance itself. Which of the two – the charge on the capacitor or the potential used to charge it is kept constant for this graph? 1



- Q2. In which orientation a dipole placed in uniform electric field is in (i) stable (ii) unstable equilibrium? 1

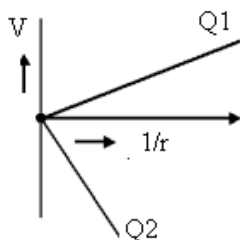
- Q3. The electric potential as a function of distance x is shown in Fig. Construct a graph of the electric field strength E . 2



- Q4. The two graphs drawn below, show the variation of electrostatic potential (V) with $1/r$ being distance of point from the point charge for two point charges Q_1 and Q_2 . 1

(iii) What are the signs of the two charges?

(ii) Which of the two charges has a larger magnitude?



- Q5. A hollow metal sphere of radius 5 cm is charged such that the potential on its surface is 10 V. What is the potential at the centre of sphere. 1
- Q6. Define electric potential. Derive an expression for the electric potential at a distance r from a point charge q . 2
- Q7. Why two equipotential do not cross each. Draw equipotential surface for electric field which is decreasing along X-axis. 2
- Q8. A uniformly charged conducting sphere of 2.4m diameter has a surface charge density $8.0 \times 10^{-7} \text{ C/m}^2$. Find the charge on the sphere. What is the total flux leaving the surface? 2

- Q9. A parallel plate capacitor is charged to a potential difference 'V' by a dc source. The capacitor is then disconnected from the source and a dielectric slab of dielectric constant 'K' is inserted between the plates. How does the (i) the capacitance, (ii) electric field between the plates and (iii) the energy stored in the capacitor be affected? Justify your answer in each case. 3
- Q10. A conducting slab of thickness 't' is introduced between the plates of a parallel plate capacitor, separated by a distance 'd' ($t < d$). Derive expression for capacity of capacitor. 3
- Q11. State Gauss's Law in electrostatics. Using it derive expression for electric field due to uniformly charged infinite plane sheet. 3
- Q12. Briefly explain the principle and working of Van de graff generator with the help of labeled diagram. 5
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WORKSHEET 3

1. A proton is placed in a uniform electric field directed along the positive X-axis. In which direction will it tend to move? 1
2. What is the electric potential due to an electric dipole at an equatorial point? 1
3. If the radius of the Gaussian surface enclosing a charge is halved, how does the electric flux through the Gaussian surface change? 1
4. Can two equipotential surfaces intersect each other? Justify your answer. 1
5. A metal plate is introduced between the plates of a charged parallel plate capacitor. What is its effect on the capacitance of the capacitor? 1
6. Calculate the amount of work done in turning an electric dipole of dipole moment $3 \times 10^{-8} \text{ C-m}$ from its position of unstable equilibrium to the position of stable equilibrium in a uniform electric field of intensity 10^3 NC^{-1} . 2
7. The sum of two point charges is 7 Nc they repel each other with a force of 1 N when kept 30 cm apart in free space. Calculate the value of each charge. 2
8. Two point charges $q_1 = 10 \times 10^{-8} \text{ C}$ and $q_2 = -2 \times 10^{-8} \text{ C}$ are separated by a distance of 10 cm in air
 - (iv) What is distance from charge q_1 would the electric potential be zero? 2
 - (ii) Also, calculate the electric potential energy of the system. 2
9. State Gauss's law in electrostatics. Use this law derive an expression for the electric field due to a long straight wire of linear charge density $\lambda \text{ C-m}$. 3
10. State the principle of the device that can build-up high voltages of the order of a few million volts. Draw its labeled diagram. A stage reaches in this device when the potential at the outer sphere cannot be increased further by piling up more charge on it. Explain why? 3
11. A parallel plate capacitor is charged by a battery. After some-times, the battery is disconnected and a dielectric slab of dielectric constant K is inserted between the plates. How would
 - (v) the capacitance
 - (ii) the electric field between plates
 - (vi) the energy stored in the capacitor, be affected? 3Justify your answer.
12. (i) Define electric flux. Write its SI units.
 - (vii) Using Gauss's law, prove that electric field at a point due to a uniformly charged infinite plane sheet is independent of the distance from it.
 - (iii) How is the field directed if
 - (a) the sheet is positively charged
 - (b) Negatively charged? 5

IMPORTANT FORMULAE IN ELECTROSTATICS

1. Electrostatic force between two charges

$$F = K \cdot \frac{q_1 q_2}{r^2} = \frac{1}{4\pi\epsilon_0\epsilon_r} \cdot \frac{q_1 q_2}{r^2}$$

For air, $\epsilon_r = 1$

$$F_{\text{air}} = \frac{1}{4\pi\epsilon_0} \cdot \frac{q_1 q_2}{r^2} = 9 \times 10^9 \frac{q_1 q_2}{r^2}$$

2. Electric field intensity due to a point charge, $\vec{E} = \lim_{q_0 \rightarrow 0} \frac{\vec{F}}{q_0}$

3. Electric field intensity due to infinite linear charge density (λ)

$$E = \frac{1}{4\pi\epsilon_0} \cdot \frac{2\lambda}{r}$$

4. Electric field intensity near an infinite thin sheet of surface charge density σ

$$E = \frac{\sigma}{2\epsilon_0}$$

For thick sheet = $\frac{\sigma}{\epsilon_0}$.

5. Electric potential, $V = \lim_{q_0 \rightarrow 0} \frac{W}{q_0}$

Electric potential due to a point charge, $V = \frac{1}{4\pi\epsilon_0} \cdot \frac{q}{r}$

6. Relation between electric field and potential $E = -\frac{dV}{dr} = \frac{V}{r}$ (numerically)

7. Dipole moment, $\vec{P} = q \cdot 2\vec{l}$

8. Torque on a dipole in uniform electric field, $\vec{\tau} = \vec{p} \times \vec{E}$.

9. Potential energy of dipole, $U = -\vec{p} \cdot \vec{E} = -pE \cos \theta$

10. Work done in rotating the dipole in uniform electric field from orientation Q_1 to Q_2 is

$$W = U_2 - U_1 = pE(\cos \theta_1 - \cos \theta_2)$$

11. Electric field due to a short dipole

(i) at axial point, $E_{\text{axis}} = \frac{1}{4\pi\epsilon_0} \cdot \frac{2p}{r^3}$

(ii) at equatorial point, $E_1 = \frac{1}{4\pi\epsilon_0} \cdot \frac{p}{r^3}$

12. Electric potential due to a short dipole

(i) At axial point, $V_{\text{axis}} = \frac{1}{4\pi\epsilon_0} \cdot \frac{p}{r^2}$

(ii) At equatorial point, $V = 0$.

13. Dielectric constant, $K = \frac{\epsilon}{\epsilon_0} = \frac{C_{\text{med}}}{C_{\text{air}}}$

14. Capacitance of parallel plate capacitor

(i) $C = \frac{A\epsilon_0 K}{d}$, in medium of dielectric constant K

(ii) $C = \frac{A\epsilon_0}{d - t(1 - \frac{1}{K})}$; if space between plate partially filled with dielectric of thickness t.

15. Combination of capacitors :-

(i) In series, $\frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3}$, $q_1 = q_2 = q_3$, $V = V_1 + V_2 + V_3$

(ii) In parallel, $C = C_1 + C_2 + C_3$, $q = q_1 + q_2 + q_3$, $V_1 = V_2 = V_3 = V$

16. Energy stored by capacitor

$$U = \frac{1}{2} CV^2 = \frac{Q^2}{2C} = \frac{1}{2} QV$$

17. Electrostatic energy density

$$\vartheta_e = \frac{1}{2} \epsilon_0 E^2, \text{ in air}$$

$$\vartheta_e = \frac{1}{2} \epsilon E^2, \text{ in medium}$$

18. Total electric flux, $\Phi = \oint \vec{E} \cdot \vec{ds} = \frac{1}{\epsilon_0} \times \text{net charge enclosed by the surface}$

NUMERICALS

LEVEL I

1. What is the charge acquired by a body when 1 million electrons are transferred to it?

2. An attractive force of 5N is acting between two charges of +2.0 μC & -2.0 μC placed at some distance. If the charges are mutually touched and placed again at the same distance, what will be the new force between them?

3. A charge of +3.0 $\times 10^{-6}$ C is 0.25 m away from a charge of -6.0 $\times 10^{-6}$ C.
 - a. What is the force on the 3.0 $\times 10^{-6}$ C charge?
 - b. What is the force on the -6.0 $\times 10^{-6}$ C charge?_____

4. An electric dipole consist of a positive and a negative charge of 4 μC each placed at a distance of 5mm. Calculate dipole moment.

5. Three capacitors of capacitances 2 μF , 3 μF and 4 μF are connected in parallel. What is the equivalent capacitance of the combination? Determine charge on each capacitor, if the combination is connected to 100V supply?

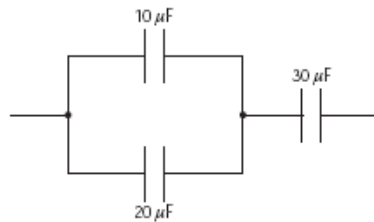
6. An electric dipole with dipole moment 4 $\times 10^{-9}$ C-m is aligned at 30 $^\circ$ with direction of electric field of magnitude 5 $\times 10^4$ N/C. Calculate the magnitude of the torque acting on the dipole.

7. A point charge of 2 μC is at the centre of cubic Gaussian surface 9.0 cm in edge. What is the net electric flux through the surface?

8. What is the amount of work done in moving a 200nC charge between two points 5 cm apart on an equipotential surface?

9. How much work must be done to charge a $24\text{ }\mu\text{F}$ capacitor, when the potential difference between the plates is 500 V ?

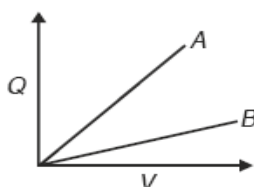
10. What is the equivalent capacity of the network given below?





LEVEL II

1. What is the work done in moving a charge of $100\mu\text{C}$ through a distance of 1cm along the equatorial line of dipole?
2. The given graph shows that variation of charge q versus potential difference V for two capacitors C_1 and C_2 . The two capacitors have same 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?



3. Two point charges $5\mu\text{C}$ and $-4\mu\text{C}$ are separated by a distance of 1 m in air. At what point on the line joining the charges is the electric potential zero?

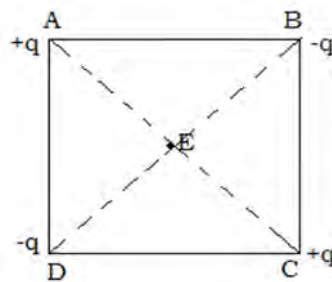
4. Two charges $+5\mu\text{C}$ and $+20\mu\text{C}$ are placed 15 cm apart. At what point on the line joining the two charges is the electric field zero?

5. Two charges $+16\mu\text{C}$ and $-9\mu\text{C}$ are placed 8 cm apart. At what point on the line joining the two charges is the electric field zero?

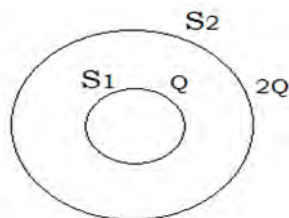
6. A 600 pF capacitor is charged by a 200 V supply. It is then disconnected and from the supply and is connected to another uncharged 600 pF capacitor. How much electrostatic energy is lost in the process.

-
-
-
7. Keeping the voltage of the charging source constant, what will be the percentage change in the energy stored in a parallel plate capacitor if the separation between its plates were to be decreased by 10%.

-
-
-
8. Four charges are placed at the vertices of a square of side d as shown in the figure. (i) Find the work done to put together this arrangement. (ii) A charge q_0 is brought to the center E of the square, the four charges being held fixed at its corners. How much extra work is needed to do this?



-
-
-
9. If S_1 and S_2 are two hollow spheres enclosing charges Q and $2Q$ respectively as shown in the figure



- (i) What is the ratio of the electric flux through S_1 and S_2 ?
- (ii) How will the flux through the sphere S_1 change, if a medium of dielectric constant 5 is filled in the space inside S_1 .

10. A charge of $24\mu\text{C}$ is given to a hollow sphere of radius 0.2m . Find the potential

(i) at the surface of the sphere, and

(ii) at a distance of 0.1 m from the centre of the sphere.

(iii) at the centre



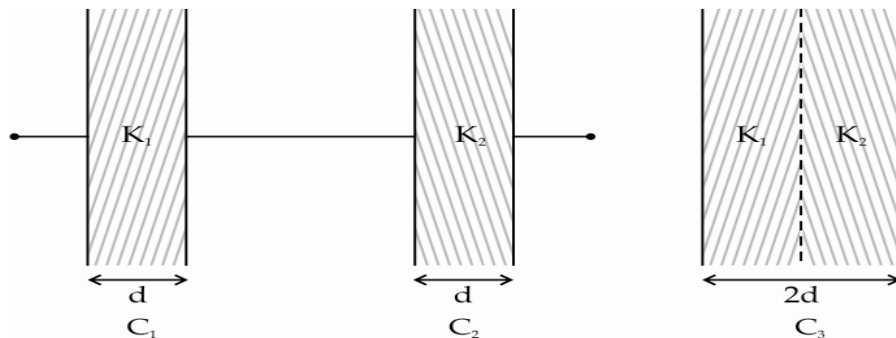
LEVEL III

1. A slab of material of dielectric constant κ has the same area as the plates of a parallel plate capacitor but has a thickness $3d/4$, where d is the separation of the plates. How is the capacitance changed when the slab is inserted between the plates?

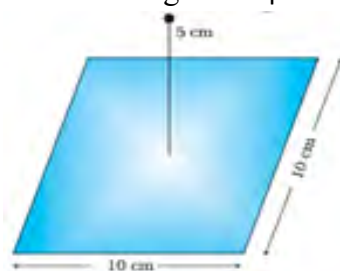
2. A parallel plate capacitor with air between the plates has a capacitance of $8\mu\text{F}$. What will be the capacitance if the distance between the plates is doubled and the space between them is filled with a substance of dielectric constant $K=6$?

3. Two dipoles, made from charges $\pm q$ and $\pm Q$, respectively, have equal dipole moments. Give the (i) ratio between the 'separations' of these two pairs of charges (ii) angle between the dipole axis of these two dipoles.

4. The capacitors C_1 , and C_2 , having plates of area A each, are connected in series, as shown. Compare the capacitance of this combination with the capacitor C_3 , again having plates of area A each, but 'made up' as shown in the figure.



5. A point charge $+10\mu\text{C}$ is at a distance 5cm directly above the centre of a square of side 10cm as shown in fig. What is the magnitude of flux through the square?

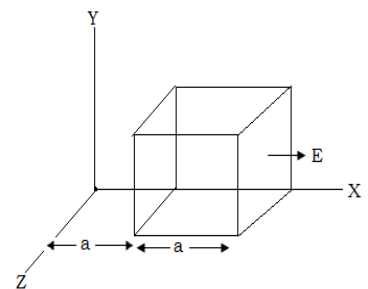


6. Calculate equivalent capacitance of the given network and determine the charge and voltage across each capacitor.

7. Two identical charges Q each are kept at a distance r from each other. A third charge q is placed on the line joining the two charges such that all the three charges are in equilibrium. What is magnitude, sign and position of the charge q ?

8. ABCD is a square of side 5m. Charges of $+50\text{C}$, -50C and $+50\text{C}$ are placed at A,C and D respectively . Find the magnitude of resultant electric field at B.

9. A cube with each side a is kept in electric field given by $E = Cx$ as shown in the figure where C is a positive dimensional constant. Find
- (i) The electric flux through the cube, and
- (ii) The net charge inside the cube.



10. Two parallel plate capacitor X and Y have same area of plates and same separation between them. X has air between the plates whereas Y has a dielectric of constant $k=4$
- (i) Calculate capacitance of each capacitor if equivalent capacitance is $4\text{ }\mu\text{F}$.
- (ii) Calculate potential difference between the plates of X and Y.
- (iii) What is the ratio of electrostatic energy stored in X and Y.

UNIT: I ELECTROSTATICS

ANSWERS

LEVEL I

1. $Q = Ne \ 1.6 \times 10^{-13} C$
2. $F=0$
3. $F_{AB} = F_{BA}=2.736N$
4. $P=2 \times 10^{-8} \text{ C-m}$
- 5.
6. $10^{-4} Nm$
7. $2.26 \times 10^5 Nm^2/C$
8. $W=0$
9. $W=3J$
10. $C=15 \mu F$

LEVEL II

1. 0
2. A
3. $\frac{5}{9}m$ from $5 \mu C$ charge
4. 5 cm from $5 \mu C$ charge
5. 24cm from $-9 \mu C$ charge
6. $6 \times 10^{-6} J$
7. 11.11%
8. $\frac{q^2}{4\pi\epsilon_0}(4 - \sqrt{2})$, 0
9. 1:3, $\phi = \frac{Q}{5\epsilon_0}$
10. (i) $1.08 \times 10^6 V$ (ii) $1.08 \times 10^6 V$ (iii) $1.08 \times 10^6 V$

LEVEL III

1. $\frac{4k}{k+3} C_0$
 $24 \mu F$
2. $q \ a=Q \ A$ or $a/A=Q/q \ \theta = 0$
3. $C_3= C_{eq}$
4. $1.88 \times 10^5 Nm^2/C$
- 5.
6. $\frac{200}{3} pF, 100 V, 50V, 50V, 200V, 10^{-8}C, 10^{-8}C, 10^{-8}C, 2 \times 10^{-8} C$
7. $Q/4$, Positive, $r/2$
8. $2.7 \times 10^{10} N/C$
9. $a^3 C \ N-m^2/C, a^3 C \epsilon_0$ Coulombs.
10. $C_x=5 \mu F \ C_y= 20Mf$

➤ **WORK SHEET-I**

ONE MARKS QUESTIONS

1. Write the expression for the displacement current?
2. The charging current for capacitor is 0.5 A. What is the displacement current across its plate?
3. Write an expression for the speed of e.m. waves in free space.
4. For an electromagnetic wave, write the relationship between amplitude of electric and magnetic fields in free space.
5. What was the range of wavelength of em waves produced by Professor J.C.Bose?

TWO MARKS QUESTIONS

6. What is displacement current? Why was this concept introduced?
7. Give one uses of each of the following:
 - a. Microwave
 - b. Infra-red wave
 - c. Ultra violet radiation
 - d. Gamma rays
8. Identify the following electromagnetic radiation as per the wavelength given below. Write one application of each.
 - a. 1mm
 - b. 10^{-3} nm

THREE MARKS QUESTIONS-

9. Identify the following electromagnetic radiation as per the wavelength given below. Write one application of each.
 1. 10^{-12} m
 2. 10^{-4} m
 3. 10^6 m
10. Name the electromagnetic radiation having the wavelength range from 1mm to 700nm. Give its two important applications.
11. What is meant by electromagnetic spectrum? Give its four uses.

Answer of work sheet -1

1. $I_D = \epsilon_0 \frac{d\phi_E}{dt} = \epsilon_0 \frac{d}{dt} (EA)$
2. According to the property of conductivity,
The displacement current = Charging current. = 0.25A
3. The speed of an em wave in free space is
$$c = \frac{1}{\sqrt{\mu^o \epsilon^o}}$$
4. $c = E^o/B^o$
5. 25mm to 5mm
6. The displacement current is that current which comes into existence, in addition in to the conduction current, whenever the electric field and hence the electric flux changes with time.
7. A. radar b. treatment of muscular complaints c. sterilizing surgical instruments d. radiation therapy.
8. A. microwave used in radar system b. infra red used in treatment of muscular complaints.
9. Identification:- a. gamma rays use- radiotherapy b. Infrared rays use – haze photography c. long radio wave use in radio communication.
10. X-rays used in a. medical diagnosis and b. in study of crystal structure.
11. All the known radiation from the big family of electromagnetic wave which stretch over a long range of wavelengths. The orderly distribution of the electromagnetic wave in accordance with their wavelengths or frequency in to distinct group having widely different properties is called electromagnetic spectrum. For example the X rays is one part of spectrum whose use are-
 - (i) used in detecting fractures in bones
 - (ii) used in detecting faults, cracks, haws & holes in metal sheets
 - (iii) used in studying crystal structure
 - (iv) used in radiotherapy
 - (v) used in detecting pearls, oysters etc.

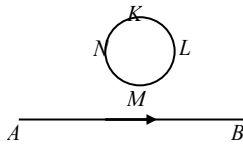
12. An oscillating charge radiates electromagnetic waves and these waves carry energy.



Worksheet 1 EMI and AC

One mark questions

1. The magnitude of electric current is increasing from A towards B. If there is any induced current in the loop shown in figure, what will be its direction? (Understanding and Application of Lenz's law)



2. Why is transformer core laminated? (Knowledge and Understanding)
3. In an L-R circuit reactance and resistance are equal. Calculate phase by which voltage differ from current? (Numerical application)
4. For circuits used for transporting electric power, a low power factor implies large power loss in transmission. Explain. (Understanding)
5. Current in a circuit falls from 5 A to 0 A in 0.1s. If an average emf of 200V induced, give an estimate of the self-inductance of the circuit. (Application)

Two marks questions

1. Prove that an ideal capacitor, in an a.c. circuit does not dissipate power.

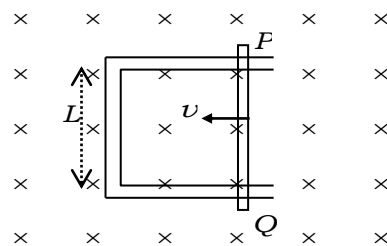
OR

Prove that an ideal inductor, in an a.c. circuit does not dissipate power.

2. Derive an expression for the self-inductance of a long air-cored solenoid of length l and number of turns N .
3. What are eddy currents? Give two applications of eddy currents.

Three marks questions

1. How is the mutual induction of pair of two coils affected when:
(i) separation between the coils is increased?
(ii) the number of turns of each coil is increased?
(iii) a thin iron sheet is placed between the two coils, other factors remaining the same? Explain your answer in each case.
2. A 0.5m long metal rod PQ completes the circuit as shown in the figure. The area of the circuit is perpendicular to the magnetic field of flux density 0.15T. If the resistance of the total circuit is 3 ohm, calculate the force needed to move the rod in the direction as indicated with a constant speed of 2m/s.



3. Derive the expression for the average power dissipation in an a.c. circuit. Hence explain power factor.

OR

Explain the principle and working of an a.c. generator using a suitable labelled diagram. Also deduce the expression for the instantaneous emf.

Five marks question

1. Draw phasor diagram of a series L-C-R circuit. Using it derive an expression for the impedance of the circuit and phase angle between voltage and current when frequency of the source is greater than resonance frequency. Draw the impedance – frequency graph for two different values of resistance of the circuit and interpret it.

OR

What is a transformer. Write the principle of transformer. Draw a sketch diagram and briefly explain its working. Establish the following relation for an ideal transformer.

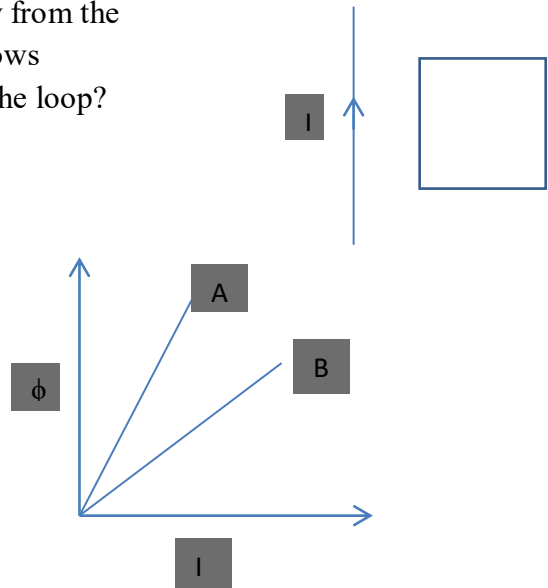
$$\frac{N_s}{N_p} = \frac{e_s}{e_p}$$

Write about the energy losses in a transformer.

Worksheet 2 EMI and AC

One marks Questions

1. When an alternating current is passed through a moving coil galvanometer, it shows no deflection. Why? (knowledge and understanding)
2. A rectangular loop of wire is pulled to the right, away from the long straight wire through which a steady current I flows upwards. What is the direction of induced current in the loop?



3. A plot of magnetic flux ϕ versus current I is shown in the figure for two inductors A and B. Which of the two has a larger value of self-inductance?
4. The current flowing through a pure inductor of inductance 4mH is $i = 12 \cos 300t$ ampere. What is the (i) rms (ii) average value of current for a complete cycle?
5. Why are the oscillations of a copper disc in a magnetic field highly damped?

Two marks Questions

1. A solenoid is connected to a battery so that a steady current flows through it. If an iron core is inserted into the solenoid, will the current increase or decrease? Whether the current flowing through the solenoid is higher or lower than this value, if instead of a battery, an a.c. source of same effective value would be connected to the solenoid? Also state what type of change in current is observed in this case on insertion of iron core into the solenoid.
2. Define self-inductance of a coil. Show that magnetic energy required to build up the current I in a coil of self-inductance L is given by $\frac{1}{2} LI^2$.

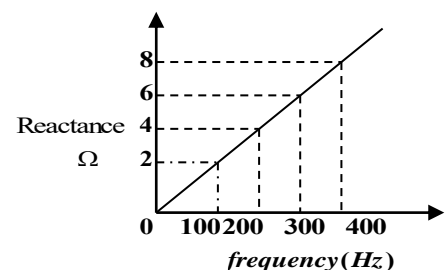
OR

A metallic rod of length ' L ' is rotated with angular frequency ' ω ' with one end hinged at the centre and the other end at the circumference of a circular metallic ring of radius L , about an axis passing through the centre and perpendicular to the plane of the ring. A constant and uniform magnetic field B parallel to the axis is present everywhere. Deduce an expression for the emf induced between the centre and the metallic ring.

3. An alternating voltage of frequency f is applied across a series LCR circuit. Let f_r be the resonance frequency for the circuit. Will the current in the circuit lag, lead or remain in phase with the applied voltage when (i) $f > f_r$ (ii) $f < f_r$? Explain your answer in each case.

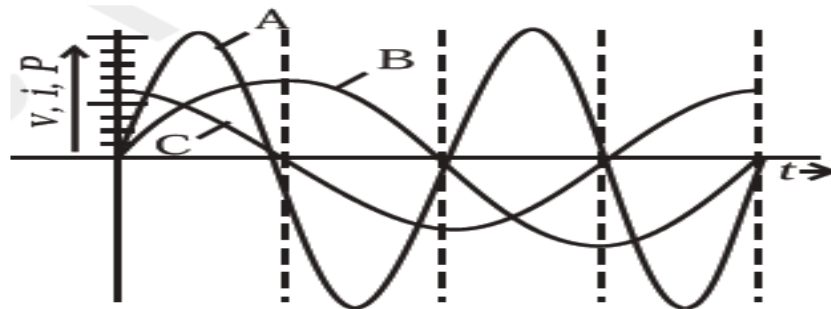
OR

Calculate the inductance of inductor using the following graph.



Three marks questions

- Using the concept of simple harmonic oscillation obtain expression for the frequency of electromagnetic oscillations in parallel LC circuit. Hence show that the energy remains conserved during these oscillations in an ideal LC circuit.
- When an inductor L and a resistor R in series are connected across a 12 V, 50 Hz supply, a current of 0.5A flows in the circuit. The current differs in phase from applied voltage by $\pi/3$ radian. Calculate the value of R .
- A device 'X' is connected to an a.c. source. The variation of voltage, current and power in one complete cycle is shown in the figure.
 - Which curve shows power consumption over a full cycle?
 - What is the average power consumption over a cycle?
 - Identify the device 'X'.



OR

When an alternating voltage of 220V is applied across a device X , a current of 0.5A flows through the circuit and in phase with the applied voltage. When the same voltage is applied across another device Y , the same current again flows through the circuit but it leads the applied voltage by $\pi/2$ radians. (i) Name the devices X and Y , (ii) Calculate the current flowing in the circuit when the same voltage is applied across the series combination of X and Y .

Five marks questions

- Show analytically, that Lenz's law is a consequence of the law of conservation of energy.
 - A horizontal straight wire of length L extending from east to west is falling with speed v at right angles to the horizontal component of Earth's magnetic field B .
 - Write the expression for the instantaneous value of the e.m.f. induced in the wire.
 - What is the direction of the e.m.f.?
 - Which end of the wire is at the higher potential?

OR

A town is situated 15 km away from a power plant generating power at 440V, requires 800 kW of electric power at 220V. The resistance of the two wire line carrying power is 0.5 ohm per km. The town gets power from the line through a 4000-220V step down transformer at a substation in the town.

- Find the line power losses in the form of heat.
- How much power must the plant supply, assuming there is negligible power loss due to leakage?
- Characterize the step up transformer at the plant.

General Instruction:-

1. Questions 1 to 5 carry 1 mark each.
2. Questions 6 to 8 carry 2 marks each.
3. Questions 9 to 11 carry 3 marks each.
4. Question 12 carries 5 marks.

1. When is Magnetic Flux linked with surface: (i) maximum (ii) minimum.
2. State Faraday's Laws of EMI and express it mathematically.
3. How does Self Inductance of a coil change when an iron rod is introduced in it?
4. What is the phase angle between current and voltage in AC circuit containing R only?
5. Why does the metallic piece become very hot when it is surrounded by a coil carrying high frequency ac?
6. What is eddy current? Give some of its Application.
7. The turns ratio of a transformer is 12.5. If its primary is connected with ac mains of 220V, determine the voltage obtained across the secondary.
8. How does the self inductance of an air core coil changes when –
(i) no. of lines in the coil is decreased
(ii) an iron rod is introduced in the coil
9. A sinusoidal emf $E = 200 \sin 314t$ is applied to a resistor of 10Ω resistance, calculate
(i) RMS value of voltage
(ii) RMS value of current
(iii) Power dissipated as heat in watt.
10. Discuss the phenomenon of resonance in LCR series circuit. A capacitor of 15Ω and 101.5mH inductor are placed in series with a 50 Hz AC source. Calculate the capacity of capacitor if the current is observed in phase with voltage.
11. The area of a coil of 25 turns is 1.6 cm^2 . This coil is inserted in 0.3 sec in a magnetic field of 1.8 Wb/m^2 such that its plane is perpendicular to the flux line of the field. Calculate the emf induced in the coil. Also calculate the total charge that passes through the wire, if its resistance is 10Ω .
12. Explain the term 'inductive reactance'. Show graphically the variation of inductive reactance with frequency of the applied alternating voltage. An a.c. voltage $E = E_0 \sin \omega t$ is applied across a pure inductor of inductance L . Show mathematically that the current flowing through it lags behind the applied voltage by a phase angle of $\pi/2$.

OR

Explain the term 'capacitive reactance'. Show graphically the variation of capacitive reactance with frequency of the applied alternating voltage. An a.c. $E = E_0 \sin \omega t$ voltage is applied across a pure capacitor of capacitance C . Show mathematically that the current flowing through it leads the applied voltage by a phase angle of $\pi/2$.

CLASS-XII
SUBJECT-CHEMISTRY

1. State the condition resulting in reverse osmosis. (1)
2. 2.5 g each of two solutes X and Y (molar mass of $X > Y$) are dissolved separately in 50 g each of the same solvent. Which will show greater elevation in boiling point? (1)
3. Write the mathematical form of Raoult's law of relative lowering of vapour pressure. (1)
4. What is the value of van't Hoff factor for a compound which undergoes tetramerisation in an organic solvent? (1)
5. How is the molarity of a solution different from its molality? (1)
6. Why does solution of ethanol and cyclohexane show positive deviation from Raoult's law. (2)
7. Why do gases always tend to be less soluble in liquids as the temperature is raised? (2)
8. How many grams of potassium chloride should be added to 1.5 kg of water to lower its freezing point to -7.5°C ? K_f for water = $1.86^{\circ}\text{C kg mol}^{-1}$. (2)
9. Sodium chloride solution boils at higher temperature than water, while it freezes at lower temperature than water. Explain. (2)
10. Why is the freezing point depression of 0.1 M KCl solution nearly twice that of 0.1 M sucrose solution? (2)
11. A solution contains 0.8960 g of K_2SO_4 in 500 mL solution. Its osmotic pressure is found to be 0.690 atm at 27°C . Calculate the value of Van't Hoff factor. ($R = 0.082 \text{ L atm K}^{-1} \text{ mol}^{-1}$) (3)
12. State Raoult's law. How would you distinguish between ideal and non-ideal solutions with the help of the law. (3)
13. Why do we get sometimes abnormal molar masses of the substances by using colligative properties of the solutions? State the factors with suitable examples which bring abnormality in results. (3)
14. Two aqueous solutions containing respectively 7.5 g of urea (molar mass = 60) and 42.57 g of substance X in 100 g of water freeze at the same temperature. Calculate the molecular mass of X. (3)
15. Benzene and toluene form ideal solution over the entire range of composition. The vapour pressure of pure benzene and toluene at 300 K are 50.71 mm Hg and 32.06 mm Hg, respectively. Calculate the mole fraction of benzene in vapour phase if 80 g of benzene is mixed with 100 g of toluene. (3)
16. (a) What is relative lowering in vapour pressure? Show that relative lowering in vapour pressure is a colligative property.
(b) Calculate the normal freezing point of a sample of sea water containing 3.8 % NaCl and 0.12% MgCl_2 by mass. Given $K_f = 1.86 \text{ K kg mol}^{-1}$, molar mass of NaCl = 58.5 and $\text{MgCl}_2 = 95 \text{ g mol}^{-1}$.
(c) Calculate the volume of 80% H_2SO_4 by weight (density = 1.8 g/mol) required to prepare 1L of 0.2 M solution. (5)

1. Give the units of conductivity and molar conductivity. (1)
2. Write the overall cell reaction for lead storage battery. (1)
3. Define Faraday's second law of electrolysis. (1)
4. What is the role of ZnCl_2 in a dry cell? (1)
5. Out of copper and zinc vessels, which vessel would be suitable for storing 1M HCl? (1)
6. Predict the products of electrolysis in each of the following : (2)
 - (i) An aqueous solution of AgNO_3 with silver electrode.
 - (ii) A dilute solution of H_2SO_4 with platinum electrodes.
7. How much electricity is required in Coulombs to produce 40 g of Al from molten Al_2O_3 ? (2)
8. Conductivity of 0.00241 M acetic acid is $7.896 \times 10^{-5} \text{ S cm}^{-1}$. Calculate its molar conductivity. If Λ_m° for acetic acid is $390.5 \text{ S cm}^2 \text{ mol}^{-1}$, what would be its dissociation constant? (2)
9. Write cell reactions which occur in lead storage battery
 - (i) When battery is in use
 - (ii) When the battery is on charging. (2)
10. Give two points of differences between emf and potential difference. (2)
11. Write the Nernst equation and calculate e.m.f. of the following cell at 298 K : (3)

$$\text{Sn}(s) | \text{Sn}^{2+}(0.050\text{M}) || \text{H}^+(0.020 \text{ M}) | \text{H}_2(1 \text{ atm}) \text{ Pt.}$$
12. Explain the following :
 - (i) Electrical protection for preventing rusting of iron pipes in underground water.
 - (ii) Can you store copper sulphate solution in a zinc pot or not?
 - (iii) Effect of dilution on molar conductivity. (3)
13. Write the chemical equations for all the steps involved in the rusting of iron. Explain why does alkaline medium inhibits the rusting of iron. (3)
14. State Kohlrausch law of independent migration of ions. Mention one application of the law. (3)
15. List main differences between electrochemical cells and electrolytic cells? (3)
16. (a) The cell in which the following reaction occurs :

$$2\text{Fe}^{3+}(aq) + 2\text{I}^-(aq) \longrightarrow 2\text{Fe}^{2+}(aq) + \text{I}_2$$
 has $E^\circ_{\text{cell}} = 0.236 \text{ V}$ at 298 K. Calculate the standard Gibbs energy and the equilibrium constant of the cell reaction.
 - (b) What are fuel cells? Give one example.
 - (c) Give the units of cell constant. (5)

1. Define activation energy of a reaction. (1)
2. 75% of a radioactive substance disintegrates in 50 s. What is its half-life period? (1)
3. For a chemical reaction $A \rightarrow B$, the rate increases by a factor of 2.25 when the concentration of A is increased by 1.5. What is the order of the reaction? (1)
4. Can order of a reaction be fractional? Explain. (1)
5. What is the order of a reaction whose rate constant has same units as the rate of the reaction? (1)
6. The decomposition of ammonia on platinum surface is zero order reaction. What are the rates of production of N_2 and H_2 if $k = 2.5 \times 10^{-4} \text{ mol L}^{-1}\text{s}^{-1}$? (2)
7. Show that half life period of a first order reaction does not depend upon the initial concentration of reactants. (2)
8. A first order reaction is 15% complete in 20 minutes. How long will it take to complete 60%? (2)
9. Give differences between rate constant and rate of a reaction. (2)
10. A reaction is of second order with respect to a reactant. How is the rate of reaction affected if the concentration of the reactant is reduced to half? What is the unit of rate constant for such a reaction? (2)
11. The rate of a particular reaction quadruples when the temperature changes from 293 K to 313 K. Calculate the energy of activation for such a reaction. (3)
12. A first order reaction has a rate constant of 0.0051 min^{-1} . If we begin with 0.10 M concentration of the reactant, what concentration of the reactant will be left after 3 hours? (3)
13. Explain the following: (3)
 - (i) pseudo first order reactions
 - (ii) graphical method for measuring rate of a reaction.
14. Discuss the effect of temperature on the rate of a reaction. How can this temperature effect on rate constant be represented quantitatively? (3)
15. During nuclear explosion one of the products is ^{90}Sr with half-life of 28.1 years. If 1 μg of ^{90}Sr was absorbed in the bones of a newly born baby instead of calcium, how much of it will remain after 10 years and 60 years if it is not lost metabolically? (3)
16. (a) What is meant by order and molecularity of a reaction? How do these differ?
 (b) Derive an expression for the rate constant of a zero order reaction.
 (c) A reaction rate is first order in A and second order in B. How is its rate affected on increasing concentrations of A and B two and three times respectively? (5)

HOLIDAYS HOMEWORK

CHEMISTRY

CHAP. SOLUTION, ELECTROCHEMISTRY, CHEMICAL KINETICS

M.C.Q.

Q1. Which of the following will have highest elevation in boiling point?

- a) 0.1N glucose b) 0.1N KNO_3 c) 0.1N K_2SO_4
d) 0.1N K_3PO_4

Q2. 8g of a Carbohydrate in 100g water shows a density of 1.03g/ml. The osmotic pressure of this solution at 27°C is noticed as 6 atm. What will be the molar mass of Carbohydrate?

- a) 313.2 b) 389.4 c) 372.6 d) 390.3

Q3. On dissolving sugar in water at room temp., solution feels cool to touch. Under which of the following case dissolution sugar will be most rapid?

- a) Sugar Crystals in cold water
b) Sugar Crystals in hot water
c) powdered sugar in cold water
d) powdered sugar in hot water

Q4. At high altitudes, the boiling of water takes place below 100°C because:

- a) atmospheric pressure is low
b) temp. is low
c) atmospheric pressure is high
d) None of the above

Q5. In cold countries, ethylene glycol is added to water in the radiators of cars during winters. It results in:

- a) lowering in boiling point, b) Reducing viscosity
c) Reducing specific heat, d) lowering in freezing point.

Q6. Each pair form ideal solution except:

- a) $\text{C}_2\text{H}_5\text{Br}$ and $\text{C}_2\text{H}_5\text{I}$
b) $\text{C}_6\text{H}_5\text{Cl}$ and $\text{C}_6\text{H}_5\text{Br}$
c) C_6H_6 and $\text{C}_6\text{H}_5\cdot\text{CH}_3$ (Toluene)
d) $\text{C}_2\text{H}_5\text{I}$ and $\text{C}_2\text{H}_5\text{OH}$

Q7 which condition is not satisfied by an ideal solution?

- a) $\Delta H_{\text{mix}} = 0$ b) $\Delta V_{\text{mix}} = 0$
c) $\Delta S_{\text{mix}} = 0$ d) obedience of Raoult's law

Q8 which is not a colligative property?

- a) lowering of vapour pressure
b) Depression in freezing point
c) osmotic pressure
d) Elevation of boiling point

Q9 on the basis of intermolecular forces, predict the correct order of decreasing boiling points of the compounds:

- a) $\text{CH}_3\text{OH} > \text{H}_2 > \text{CH}_4$ b) $\text{CH}_3\text{OH} > \text{CH}_4 > \text{H}_2$
c) $\text{CH}_4 > \text{CH}_3\text{OH} > \text{H}_2$ d) $\text{H}_2 > \text{CH}_4 > \text{CH}_3\text{OH}$

Q10 which of the following liquid pairs show a positive deviation from Raoult's law?

- a) Acetone-chloroform b) Benzene-methanol
c) water-nitric acid d) water-Hydrochloric acid

Q11 During electrolysis of aq. CuSO_4 sol. if 11.2 litre of O_2 is liberated at anode, how much mass of Cu deposited at cathode.

- a) 63.8 b) 31.75 c) 638 d) 3.175

Q12 E° for $\frac{1}{2} \text{Cl}_2 + e^- \rightarrow \text{Cl}^-$ is 1.36V. what is E° for $2 \text{Cl}^- \rightarrow \text{Cl}_2 + 2e^-$?

- a) -1.36V b) 0.68V c) -0.68V d) +1.36V

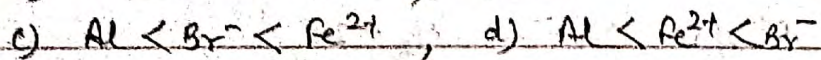
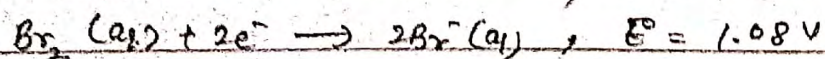
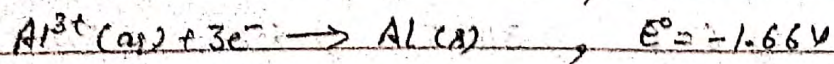
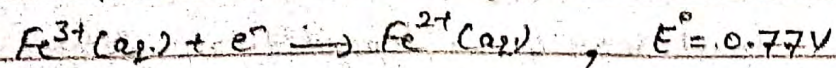
Q13 while charging the lead storage battery:

- a) PbSO_4 at anode is reduced to Pb
b) PbSO_4 at cathode is reduced to Pb
c) PbSO_4 at cathode is oxidised to Pb
d) PbSO_4 at anode is oxidised to PbO_2

Q14 on electrolysis a solution of dil. H_2SO_4 between platinum electrodes, the gas evolved at the anode and cathode are respectively is

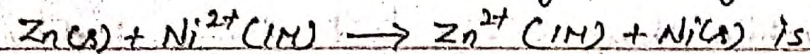
- a) SO_2 and O_2 b) SO_3 and H_2
c) O_2 and H_2 d) H_2 and O_2

Q15 Based on the data, Correct order of Reducing power is:

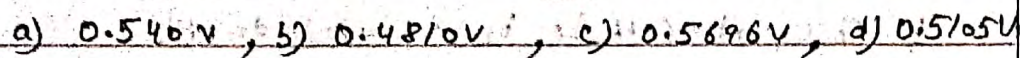


Q16

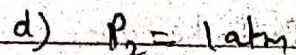
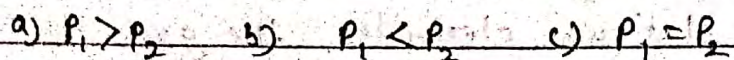
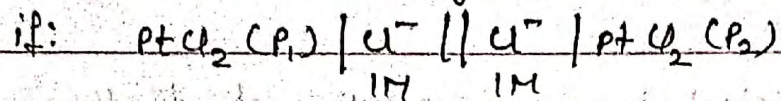
The e.m.f of cell involving following changes



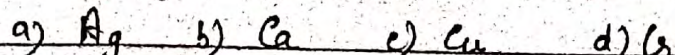
0.5105V. The E°_{cell} is



Q17 The cell reaction for given cell is spontaneous



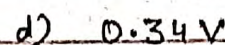
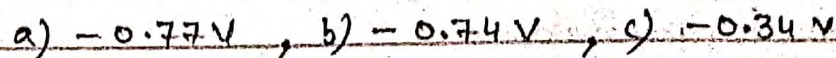
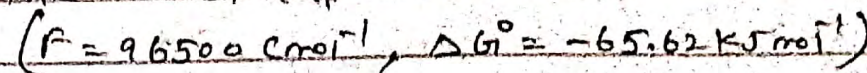
Q18 The metal that cannot be obtained by electrolysis of an aqueous sol. of its salt is:



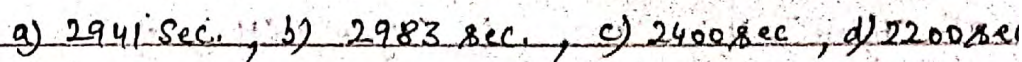
Q19 Two Faraday of electricity is passed through a solution of CuSO_4 . The mass of Cu deposited at cathode is: (at mass of Cu = 63.5 amu)



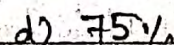
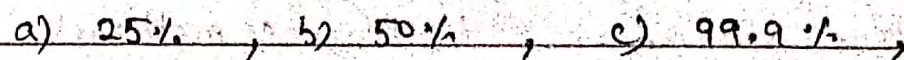
Q20 what is the E° of a couple whose reaction is the reduction of a divalent ion?



Q21 A substance decompose having the rate constant $6.8 \times 10^{-2} \text{ L mol}^{-1} \text{ sec}^{-1}$. Calculate its half life if A_0 was 0.05M



Q22 Half-life of 1st order rxn is 10 min. what percentage of reaction will be complete in 100 min?



Q23 The unit and value of rate constant and that of rate of reaction are same for:

- a) first order , b) Zero order , c) second order
- d) none of these.

Q24 For the Rxn, $4A + B \rightarrow 2C + 2D$, statement not correct

- a) Rate of disappearance of B is $\frac{1}{4}$ the rate of disapp. of A
- b) Rate of app. of C is half the rate of disapp. of B
- c) Rate of formation of D is half the rate of Consumption of A
- d) Rate of formation of C & D are equal

Q25 The rate constant of a Rxn depends on:

- a) temp. b) initial Conc. of reactants
- c) time of rxn d) extent of reaction

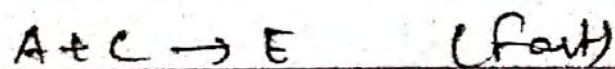
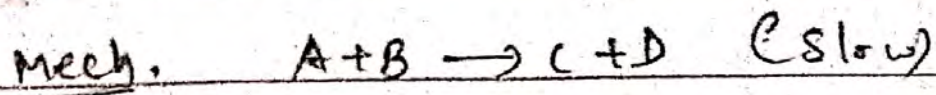
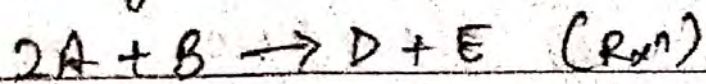
Q26 In Arrhenius equation $k = Ae^{-E_a/RT}$, the quantity $e^{-E_a/RT}$ is referred as

- a) Boltzmann factor b) Frequency factor
- c) Activation factor d) None of these

Q27 Unit of frequency factor A in $k = Ae^{-E_a/RT}$ is

- a) time^{-1} b) $\text{mol litre}^{-1} \text{t}^{-1}$ c) $\text{litre mol}^{-1} \text{t}^{-1}$
- d) dependent of order of reaction

Q28 Following mechanism proposed for a Rx^n



a) $r = k[A]^2[B]$ b) $r = k[A][B]$

c) $r = k[A]^2$ d) $r = k[A][C]$

Q29 The reaction $L \rightarrow M$ is started with 10g of L. After 30 min & 90 min, 5g & 1.25g L left respectively. Order of Rx^n is

a) Zero b) IInd c) Ist d) IIIrd

Q30 The rate of a reaction doubles when its temperature changes from 300K to 310K. Activation energy of such a Rx^n will be

$$(R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1} \quad \& \quad \log_{10} 2 = 0.301)$$

a) 58.5 kJ mol⁻¹ b) 60.5 kJ mol⁻¹

c) 53.6 kJ mol⁻¹ d) 48.6 kJ mol⁻¹

SUBJECT-BIOLOGY

CLASS-XII

1. Copy all the practical work from the lab manual
2. Start your investigative project and start writing in A4 size paper
3. Prepare any one topic from first four chapters for presentation in class and write it in a separate copy
4. Write one page on corona virus and your views on today's flight of students
5. Write three5 marks questions without diagrams from lessons 2 3 and 4
6. Draw any five diagrams labelled and self-explanatory from lessons 2 and 3

केंद्रीय विद्यालय वायु सेना स्थल बोरझार

सत्र 2020-2021

ग्रीष्मावकाश गृहकार्य

कक्षा -12वीं

निम्नलिखित विषयों पर पत्र लिखिये-

१-लॉकडाउन में लोगों द्वारा की जा रही जमाखोरी की शिकायत करते हुए थानाध्यक्ष को एक पत्र लिखिए ।

२-पुस्तकालय में हिंदी पुस्तकों की संख्या बढ़ाने के लिए प्रधानाचार्या को एक प्रार्थना पत्र लिखिए ।

३-आपकी खोई हुई पुस्तक किसी अपरिचित द्वारा लौटाए जाने पर आभार व्यक्त करते हुए एक पत्र लिखिए ।

४-आपको जन्मदिन पर अपने पिताजी की ओर से मिले उपहार की उपयोगिता बताते हुए तथा धन्यवाद देते हुए एक पत्र लिखिए ।

निम्न लिखित विषयों पर निबंध लिखिए -

१-कोरोना : वैश्विक महामारी

२-आतंकवाद की समस्या और निदान

३-विद्यार्थी और अनुशासन

४-करत -करत अभ्यास के जड़मति होत सुजान

*आपके विद्यालय में हुए वार्षिक समारोह पर एक रिपोर्ट प्रस्तुत कीजिये

*पत्रकारिता क्या है? पत्रकारिता के विविध आयामों का वर्णन कीजिये।

***पाठ्यपुस्तक के प्रश्न :-**

१- भक्तिन पाठ का सारांश अपने शब्दों में लिखिए ।(200 शब्द)

२-आत्मपरिचय कविता का सारांश अपने शब्दों में लिखिए।(200शब्द)

३-सिल्वर वेडिंग कहानी का सारांश अपने शब्दों में लिखिए।(200शब्द)

४-बाज़ार दर्शन पाठ के प्रश्न उत्तर कॉपी में लिखिए ।

५- पतंग कविता का सारांश अपने शब्दों में लिखिए ।(150 शब्द)

6- 30 पेज रोज सुलेख लिखिए (वर्तनी का विशेष ध्यान रखिये)

नोट:- प्रत्येक पेज पर अभिभावक का हस्ताक्षर होना चाहिए।

ऋचा पाण्डेय

DATA HANDLING USING PANDAS

ASSIGNMENTS-1 (Summer Vacation)

Sub: IP Sub Tr. Manoj Kumar Singh, PGT CS

Data Series

Q.1 What is Series?

Q2. Create a Series using List.

Q3. Create Series using a NumPy Array.

Data Frame

Q.1 Which method is used to make a DataFrame?

Q.2 Write the syntax of DataFrame method.

Q.3 Is series is a one-dimensional array which is labelled and can hold any data type?

Q.4 Which function allows us to manipulate data and create new variables in pandas library?

Q.5 Which function is used to read the dataset from a large text file?

Q.6 Are DataFrames container for Series?

Q.7 Data structures in Pandas can be mutated in the terms of ____ but not of ____.

Q.8 Explain Series in pandas. How to Create Copy of Series In pandas?

Q.9 Define Python pandas

Q.10 Mention the Different Types of Data Structures in pandas?

Q.11 What is a pandas DataFrame? How we can create an Empty DataFrame In pandas?

Q.12 Explain Reindexing in pandas.

Q.13 Write the name of methods used with series with their purpose

Q.14 Write the name of methods used with DataFrame with their purpose

Q.15 How can we calculate the standard deviation from the Series?

Q.16 Create a Series using List and Dictionary.

Q.17 Create series using NumPy functions.

Q.18 Get index and values of a series.

Q.19 Rename DataFrame Columns.

Q.20 Filter DataFrame rows using isin.

Q.21 Drop DataFrame Column(s) by Name or Index.

Q.22 Add new column to DataFrame.

Q.23 Get list of the column headers.

Q.24 Generate DataFrame with random values.

Q.25 Select multiple columns from DataFrame.

Q.26 Convert Dictionary into DataFrame.

Q.27 Check that DataFrame is empty.

Q.28 Slice DataFrame using loc .

Q.29 Differentiate loc vs iloc slicing in DataFrame.

Q.30 Add row at end of DataFrame.

Q.31 Get mean(average) of rows and columns of DataFrame .

Q.32 Calculate sum across rows and columns.

Q.33 Delete missing data rows from DataFrame

Q.34 Write python program to find minimum and maximum values of DataFrame

Q.35 Find index position of minimum and maximum values

#####

Accountancy
Holiday Homework for Summer Vacation

Q1. Solve questions from chapter Not For Profit organisation.[ANY 10 QUESTIONS]

Q2. Solve questions from chapter Partnership-Fundamentals of partnership.[any 10 questions]

Q3. Solve FIVE questions from “change in profit sharing ratio”.

Q4. Solve FIVE question from “goodwill”.

Q5. Do following MCQ in your notebook:

1) Under fluctuation method of capital, what is the treatment of ‘Interest on capital’?

- a) Credited to capital account (b) Debited to capital account
(c) No treatment or adjustment needed (d) Credited to current account

2) Which of the following is not generally the characteristic of a partnership business?

- a) Limited life (b) Ease of formation (c) Mutual agency (d) Limited liability

3) In which year was the Partnership Act passed?

- a) 1932 (b) 1956 (c) 1947 (d) 1956

4) What time would be taken into consideration if equal monthly amount is drawn as drawings at the beginning of every quarter ?

- a) 5 ½ months (b) 6 months (c) 7 months (d) 7 ½ months

5) Which of the following is an appropriation of profit?

- a) Interest on loan (b) Interest on Capital (c) Employees’ salary (d) Rent

6) Liability of a partner is :

- (a) Limited (b) Unlimited (c) Limited to Capital (d) None of these

7) The written agreement of partnership is most commonly referred to as :

- (a) Agreement (b) Partnership Deed (c) Partnership contract (d) Partnership Act

8. A Partnership is reconstituted due to:

- (a) Change in profit sharing ratio among existing partners
(b) Admission of a partner
(c) Retirement/death of a partner
(d) All above.

9. Any change in the relationship of existing partners which results in an end of the existing agreement and enforces making of a new agreement is called

- (a) Revaluation of partnership (b) Reconstitution of partnership
(c) Realisation of partnership (d) None of the above

10. Sacrificing ratio of a partner is computed as:

- (a) Old Ratio-New Ratio (b) New Ratio-Old Ratio
- (b) Old Ratio-Gaining Ratio (d) None of these

11. A, B and C are partner in a firm sharing profits in the ratio 3:2:1. They decided to share profits equally in future. B's sacrifice/gain will be:

- (a) Sacrifice $\frac{1}{6}$
- (b) Gain $\frac{1}{6}$
- (c) No change
- (d) None of these

12. The average capital employed of a firm is Rs.4,00,000 and the normal rate of return is 15%. The average profit of the firm is Rs.80,000 per annum. If the remuneration of the partners is estimated to be Rs.10,000 per annum, then on the basis of two years purchase of super-profit, the value of the Goodwill will be

- (A) 10,000
- (B) 20,000
- (C) 60,000
- (D) 80,000

13. Under the capitalisation method, the formula for calculating the goodwill is:

- (A) Super profits multiplied by the rate of return
- (B) Average profits multiplied by the rate of return
- (C) Super profits divided by the rate of return
- (D) Average profits divided by the rate of return

14. Gaining ratio of a partner is computed as:

- (a) Old Ratio-New Ratio (b) New Ratio-Old Ratio
- (c) New Ratio-Sacrificing Ratio (d) None of these.

15. A and B are partners in a firm sharing profits and losses equally. They decided to share profits in the ratio of 3:2 in future. A's sacrifice/gain will be

- (a) Sacrifice $\frac{1}{10}$
- (b) Gain $\frac{1}{10}$
- (c) Sacrifice $\frac{3}{5}$
- (d) Gain $\frac{3}{5}$

16. X, Y and Z are partners sharing profits in the ratio of 3: 2:1. They decided to share future profits in the ratio 2:1:1. Thus, Z's sacrifice/gain will be

- (a) $\frac{4}{12}$ gain
- (b) $\frac{3}{12}$ gain
- (c) sacrifice $\frac{1}{12}$
- (d) $\frac{1}{12}$ gain

17. Goodwill is assets.

- (a) Wasting
- (b) Intangible
- (c) Tangible
- (d) Fictitious

18. Capital invested in a firm is 5,00,000. Normal rate of return is 10%. Average profits of the firm are 64,000 (after an abnormal loss of 4,000). Value of goodwill at four times the super profits will be:

- (A) 72,000
- (B) 40,000
- (C) 2,40,000
- (D) 1,80,000

19. P and were partners sharing profits and losses in the ratio of 3:2. They decided that with effect from 1st January, 2019 they would share profits and losses in the ratio of 5:3. Goodwill is valued at Rs. 1,28,000. In adjustment entry:

- (A) Cr. P by 3,200; Dr. Q by 3,200
- (B) Cr. P by 37,000; Dr. Q by 37,000
- (C) Dr. P by 37,000; Cr. Q by 37,000
- (D) Dr. P by 3,200 Cr. Q by 3,200

20. The Goodwill of the firm is NOT affected by:

- (A) Location of the firm
- (B) Reputation of firm
- (C) Better customer service
- (D) None of the above

21. Weighted average method of calculating goodwill is used when :

- (A) Profits are not equal
- (B) Profits show a trend
- (C) Profits are fluctuating
- (D) None of the above

22. The profits earned by a business over the last 5 years are as follows 12,000; 13,000; 14,000; 18,000 and 2,000 (loss). Based on 2 years purchase of the last 5 years profits, value of Goodwill will be :

- (A) 23,600
- (B) 22,000
- (C) 1,10,000
- (D) 1,18,000

Business Studies
Holiday Homework for Summer Vacation

Chapter -1
Nature and Significance of Management

- 1.** The process of creating an internal environment, where individual work effectively and efficiently for achievement of goal is known as
 - (a) Coordination
 - (b) Delegation
 - (c) Management
 - (d) Planning
- 2.** When a worker achieves target production of 100 unit at a higher cost, he is
 - (a) Efficient
 - (b) Effective
 - (c) Both Effective and Efficient
 - (d) None of the above
- 3.** Management is a process because
 - (a) It involves series of steps
 - (b) It leads to systematic working
 - (c) It involves one single activity
 - (d) None of the above
- 4.** Management is always denoted by 'We' and not by 'I' because
 - (a) It is a process
 - (b) It is continuous
 - (c) It is a group activity
 - (d) It is intangible
- 5.** Management works with the following objectives
 - (a) Objective of profit maximisation
 - (b) Objective of sales maximisation
 - (c) Objective of becoming market leader
 - (d) Multiple objective
- 6.** A good manager focuses on
 - (a) Prosperity of management
 - (b) Prosperity of employees
 - (c) Prosperity of both management and employees
 - (d) None of the above
- 7.** Managers apply management principles by using creativity. This is related to
 - (a) Management as Science
 - (b) Management as an Art
 - (c) Management as both Science and Art
 - (d) Management as a profession

8. Liaison with the outside world is the function of
 - (a) TopLevel
 - (b) Supervisory Level
 - (c) MiddleLevel
 - (d) All of the above
9. Providing good working conditions and ensuring quality work is the function of
 - (a) TopLevel
 - (b) MiddleLevel
 - (c) SupervisoryLevel
 - (d) All of the above
10. As Top Level is responsible for the welfare and operations of whole organisation, Middle Level is responsible for the welfare and operations of
 - (a) Workers
 - (b) Department
 - (c) Both(a)and(b)
 - (d) None of the above
11. Dheerj is working as 'Operations Manager' in Tifco Ltd. Name the managerial level at which he is working. State any four functions he will perform as 'Operations Manager' in this company.
12. Explain any four importance of management .
13. Define coordination .give its four importance.
14. Is management a Science.Give any three reasons in support of your answer.
15. Describe in brief any five function of top level management.

Chapter -2

Principles of Management

1. When a superior does not fulfil the promise to raise the salary/wages of workerson achievement of target effectively and efficiency, it is violation of
 - (a) Principle of Remuneration
 - (b) Principle of Discipline
 - (c) both(a)and(b)
 - (d) None of the above
2. Management Principles provide
 - (a) Readymade solution to managerial problems
 - (b) Guidelines for managerial action
 - (c) Guarantee for success of an organisationn
 - (d) All of the above
3. Gang Plank permits direct communication between
 - (a) Employees working at same level
 - (b) Any employees irrespective of their level
 - (c) Employees of same department only
 - (d) None of the above
4. Organisation Interest supersede employees interest is indicated in
 - (a) Principle of Subordination of Individual Interest to General Interest
 - (b) Principle of Espirit De Corps
 - (c) Principle of Initiative
 - (d) Principle of Discipline

5. The employees should be judiciously penalised for their actions against the organisation is indicated in
 - (a) Principle of Equity
 - (b) Principle of Responsibility, Authority
 - (c) Principle of Discipline
 - (d) None of the above
6. Principle of Responsibility and Authority insists on
 - (a) Responsibility > Authority
 - (b) Authority > Responsibility
 - (c) Responsibility = Authority
 - (d) All of the above
7. Frequent transfer and turnover of employees lead to violation of
 - (a) Principle of Espirit De Corps
 - (b) Principle of Discipline
 - (c) Principle of Initiative
 - (d) Principle of Stability of Personnel
8. Principle of Initiative-
 - (a) Boosts up the morale of employees
 - (b) Brings down the morale of employees
 - (c) Does not effect on morale of employees
 - (d) None of the above
9. Unity of Command insists on
 - (a) One Boss One employee
 - (b) Orders from a single superior
 - (c) Match between orders of different bosses
 - (d) All of the above
10. If a manager is biased in dealing with people from different states, he is violating
 - (a) Principle of Discipline
 - (b) Principle of Espirit De Corps
 - (c) Principle of Remuneration
 - (d) Principle of Equity
11. State any four features of principles of management
12. Enumerate any two techniques of scientific management.
13. Explain any five principles of Henry Fayol.
14. Explain in brief any four principles of Scientific Management.

Chapter-3 Business Environment

1. Business environment includes
 - (a) Surroundings of Business
 - (b) Forces, Factors, Institutions which directly or indirectly effect business
 - (c) Customers and Employees
 - (d) None of the above

2. The forces in Business Environment that effect all the business houses are known as
 - (a) General
 - (b) Specific
 - (c) Particular
 - (d) Influential
3. The conditions in Business Environment keep changing as it is
 - (a) External Environment
 - (b) Complex
 - (c) Dynamic
 - (d) None of the above
4. The environment scanning helps to identify
 - (a) Opportunities
 - (b) Threats
 - (c) Both(a)and(b)
 - (d) None of the above
5. The importance of business environment which help to know in advance forthcoming constraints and threats of business is
 - (a) Helpful in getting first mover advantage
 - (b) Early warning signals
 - (c) Assist in planning and policy making
 - (d) All of the above
6. Change in taxes is part of
 - (a) Economic Environment
 - (b) Political Environment
 - (c) Legal Environment
 - (d) Social Environment
7. Demonetisation had direct impact on
 - (a) Social Environment
 - (b) Political Environment
 - (c) Economic Environment
 - (d) None of the above
8. It is compulsory that advertisement on baby food must inform that mother's milk is the best is related to
 - (a) Social Environment
 - (b) Economic Environment
 - (c) Political Environment
 - (d) Legal Environment
9. Relaxation or removal of strict rules and regulations is part of
 - (a) Liberalisation
 - (b) Globalisation
 - (c) Privatisation
 - (d) All of the above
10. Opening doors for private sector in the area reserved for public sector is known as
 - (a) Privatisation
 - (b) Liberalisation
 - (c) Globalisation
 - (d) None of the above
11. Explain dimensions of business environment.
12. Explain importance of business environment.
13. State features of business environment.

Class :- 12 C & D

Summer vacation work

Sub: ECONOMICS

Note:- Complete all reasoning based and Numerical based questions.

Whether the following items will be included in National Income? Give reasons for your answer.

- (i) Payment of electricity bill by a factory.
- (ii) Dividend on shares.
- (iii) Increase in stock of consumer goods with households.
- (iv) Bus fare paid by a passenger.
- (v) Gains from sale of shares.
- (vi) Rent earned by Reliance from its building in USA.
- (vii) Gifts from Abroad.
- (viii) Retained earnings of resident companies from abroad.
- (ix) Expenses of foreign visitors in India.
- (x) Gifts to a trust from Japan.
- (xi) Purchase of books by a student.
- (xii) Bonus to employees.
- (xiii) Interest paid by an individual on loan taken.
- (xiv) Expenditure on repair of fixed capital asset.
- (xv) Free medical facilities by the employer.
- (xvi) Financial help to flood victims.
- (xvii) Payment of telephone bill.
- (xviii) Employers' contribution to Provident Fund.
- (xix) Rent received by an Indian from Building rented to Chinese Embassy.
- (xx) Free meals to employees.
- (xxi) Free meals to beggars.
- (xxii) Wages received by an Indian working in British Embassy.
- (xxiii) Medical facilities to government employees.
- (xxiv) Purchase of vegetables by a restaurant.
- (xxv) Government Expenditure on street light.
- (xxvi) Purchase of a second hand machine from a domestic firm.
- (xxvii) Interest received on loans taken by government.
- (xxviii) Leave travel allowance paid to employees by a company.
- (xxix) Direct purchases made by resident households.
- (xxx) Interest received on debentures by debenture-holders.
- (xxxi) Monthly allowance received by a college student from home.
- (xxxii) Expenditure incurred by a firm on sponsoring a Reality show.
- (xxxiii) Expenditure incurred by normal residents on foreign travel.

66. Calculate Net Domestic Product at Market Price: {CBSE, All India 2015 (III)}

Particulars	₹ in crores
(i) Private Final Consumption Expenditure	400
(ii) Opening stock	10
(iii) Consumption of Fixed Capital	25
(iv) Imports	15
(v) Government Final Consumption Expenditure	90
(vi) Net factor income to abroad	(-) 5
(vii) Gross Domestic Fixed Capital Formation	80
(viii) Closing stock	20
(ix) Exports	10

Net Domestic Product at Market Price = ₹ 550 Crore

{CBSE, Foreign 2015 (III)}

67. Calculate Net National Product at Market Price.

Particulars	₹ in crores
(i) Net Factor income to abroad	(-) 10
(ii) Social security contributions by employees	11
(iii) Consumption of fixed capital	40
(iv) Compensation of employees	700
(v) Corporate tax	30
(vi) Undistributed profits	10
(vii) Interest	90
(viii) Rent	100
(ix) Dividends	20
(x) Net Indirect tax	110

Net National Product at Market Price = ₹ 1,070 Crore

{CBSE, Delhi Comptt. 2015}

68. From the following data, calculate net value added at factor cost.

Particulars	₹ in crores
(i) Sales	300
(ii) Opening stock	40
(iii) Depreciation	30
(iv) Intermediate consumption	120
(v) Exports	50
(vi) Change in stock	20
(vii) Net indirect taxes	15
(viii) Factor income to abroad	10

Net Value Added at Factor Cost = ₹ 155 Crore

{CBSE, Delhi Comptt. 2015 (I)}

69. Calculate National Income.

Particulars	₹ in crores
(i) Private final consumption expenditure	500
(ii) Net domestic fixed capital formation	100

(iii) Net factor income from abroad	30
(iv) Change in stock	20
(v) Net exports	40
(vi) Net indirect taxes	50
(vii) Mixed income	300
(viii) Government final consumption expenditure	200
(ix) Consumption of fixed capital	60

National Income = ₹ 840 Crore

{CBSE, Delhi Comptt. 2015 (II)}

70. Calculate Net National Product at Factor Cost:

Particulars	₹ in crores
(i) Government final consumption expenditure	500
(ii) Mixed income	1,500
(iii) Net indirect taxes	100
(iv) Net exports	60
(v) Change in stock	(-) 50
(vi) Net factor income to abroad	70
(vii) Net domestic fixed capital formation	250
(viii) Private final consumption expenditure	2,000
(ix) Consumption of fixed capital	30

Net National Product at Factor Cost = ₹ 2,590 Crore

71. Calculate gross value added at factor cost.

{CBSE, All India Comptt. 2015 (I, III)}

Particulars	₹ in crores
(i) Domestic sales	3,000
(ii) Change in stock	(-) 100
(iii) Depreciation	300
(iv) Intermediate consumption	2,000
(v) Exports	500
(vi) Indirect taxes	250
(vii) Net factor income from abroad	(-) 50

Gross Value Added at Factor Cost = ₹ 1,150 Crore

72. From the following data, calculate Gross National Product at Market Price:

{CBSE, All India Comptt. 2015}

Particulars	₹ in crores
(i) Dividends	300
(ii) Compensation of employees	3,000
(iii) Rent	500
(iv) Depreciation	200
(v) Interest	800

(vi) Net factor income to abroad	100
(vii) Mixed income	5,000
(viii) Net indirect taxes	400
(ix) Profit	1,500

Gross National Product at Market Price = ₹ 11,300 Crore

73. Calculate Net Domestic Product at Market Price.

{CBSE, All India Comptt. 2016}

Particulars	₹ in crores
(i) Compensation of employees	4,000
(ii) Dividend	500
(iii) Mixed income	8,000
(iv) Social security contribution by employers	400
(v) Net factor income to abroad	600
(vi) Net indirect taxes	1,000
(vii) Rent	800
(viii) Consumption of fixed capital	1,200
(ix) Profit	1,500
(x) Interest	700

Net Domestic Product at Market Price = ₹ 16,000 Crore

74. Calculate Gross National Product at Factor Cost.

{CBSE, Delhi Comptt. 2016 (I)}

Particulars	₹ in crores
(i) Rent	400
(ii) Compensation of employees	3,000
(iii) Dividend	200
(iv) Change in Stock	300
(v) Net factor income to abroad	700
(vi) Net factor taxes	800
(vii) Consumption of fixed capital	1,000
(viii) Interest	600
(ix) Profits	800
(x) Mixed income	6,000

Gross National Product at Factor Cost = ₹ 11,100 Crore

75. Calculate Net Domestic Product at Factor Cost:

{CBSE, Delhi 2017 (I)}

Particulars	(₹ crores)
(i) Private final consumption expenditure	8,000
(ii) Government final consumption expenditure	1,000
(iii) Exports	70
(iv) Imports	120
(v) Consumption of fixed capital	60
(vi) Gross domestic fixed capital formation	500

	100
(vii) Change in stock	40
(viii) Factor income to abroad	90
(ix) Factor income from abroad	700
(x) Indirect taxes	50
(xi) Subsidies	(-) 30
(xii) Net current transfers to abroad	

Net Domestic Product at Factor Cost = ₹ 8,840 Crores
{CBSE, All India 2017 (I)}

76. Calculate National Income:

Particulars	(₹ crores)
(i) Compensation of employees	2,000
(ii) Rent	400
(iii) Profit	900
(iv) Dividend	100
(v) Interest	500
(vi) Mixed income of self-employed	7,000
(vii) Net factor income to abroad	50
(viii) Net exports	60
(ix) Net indirect taxes	300
(x) Depreciation	150
(xi) Net current transfers to abroad	30

National Income = ₹ 10,750 Crores

77. Calculate Net Domestic Product at Factor Cost:

{CBSE, All India Comptt. 2017 (I)}

Particulars	(₹ crores)
(i) Dividends	50
(ii) Social security contributions by employers	40
(iii) Corporate profit tax	30
(iv) Consumption of fixed capital	60
(v) Net factor income to abroad	20
(vi) Retained earnings of private corporate sector	20
(vii) Interest	150
(viii) Net current transfers to rest of the world	(-) 10
(ix) Rent	100
(x) Net indirect tax	70
(xi) Compensation of employees	600

Net Domestic Product at Factor Cost = ₹ 950 Crores

Kendriya vidyalaya, Borjhar

Summer vacation home work 2020-21

Subject- History

Class 12th

1. complete notes and exercise question answer of history lesson one to four.
2. complete extra questions of lesson one to four.
3. complete all maps that I have been given in map note book.
4. make separate map not book compulsory and locate all map in that map note book.
5. make one marks 20 questions, three marks 10 questions and eight marks 10 questions with answer in soft copy.
6. write three passage make its related 15 marks questions.

Holiday Home Work

(Geography, Class – 12 D)

1. Map work(World)
 - a. The largest country in each continents in terms of area
 - b. Areas of subsistence gathering
 - c. Major areas of nomadic herding of the world
 - d. Major areas of commercial livestock rearing
 - e. Major areas of extensive commercial grain farming
 - f. Major areas of mixed farming
 - g. Ruhr region, Silicon Valley, Appalachian region, Great lakes region
 - h. Terminal stations of Trans Siberian Railway, Trans Canadian Railway, Trans – Australian Railway
 - i. Major Sea Ports: North Cape, London, Hamburg, Vancouver, San Francisco, New Orleans, Rio-De-Janeiro, Colon, Valparaíso, Suez, Cape town, Yokohama, Sanghai, Hong Kong, Aden, Karachi, Kolkata, Perth, Sydney, Melbourne, Suez Canal, Panama Canal, Rhine Waterway, St. Lawrence Seaway
 - j. Major Airports: Tokyo, Beijing, Mumbai, Jeddah, Johannesburg, Nairobi, Moscow, Paris, Berlin, Rome, Chicago, New Orleans, Mexico City, Buenos Aires, Santiago, Darwin, Wellington, Sao Paulo
2. Map work(India) :
 - a. State with highest level of urbanisation and lowest level of urbanisation
 - b. One state with highest level of HDI & One lowest level of HDI
 - c. State with higher level of population density & one state with lowest level of population density(2011)
 - d. City with more than 10 million population - Greater Mumbai, Delhi, Kolkata, Chennai, Bengaluru
3. Leading producing states of the following crops:
 - a. Rice, b. Wheat, c. Cotton, d. Jute, e. Sugarcane, f. Tea, g. Coffee
 - b. Iron –ore mines: Mayurbhanj, Bailadila, Ratnagiri, Bellary
 - c. Manganese mines: Balaghat, Shimoga
 - d. Copper mines: Hazaribagh, Singhbhum, Khetri
 - e. Bauxite mines: Katnai, Bilaspur, Koraput
 - f. Coal mines: Jharia, Bokaro, Barauni
 - g. Oil Refineries: Mathura, Jamnagar
 - h. Iron & steel Plants: Bhadravati, Bhilai, Durgapur, Raurkela, Jamshedpur
 - i. Cotton Textile: Surat, Varanasi, Murshidabad, Sholapur, Coimbatore
 - j. Software technology Park: Gandhinagar, Srinagar, Mohali, Noida, Indore, Hyderabad,

- k. Major Industrial Regions
- l. Important nodes on North – South, east – West Corridor & Golden Quadrilateral.
- m. Major Sea Ports: Kandla, Mumbai, Marmagao, Kochi, Mangalore, Tuticorin, Chennai, Vishakhapatnam, Paradwip, Haldia
- n. International Air ports: Ahmedabad, Kolkata, Guwahati, Delhi, Amritsar, Thiruvananthapuram

Frame every possible one mark question along with answer from each chapter as assigned:

Name of the Book

Name of the Students

(Fundamentals of Human Geography)

(Chapter No. 1,2,3 & 4)

Namrata, Dorothi, Bhavna, Sheetal

(Chapter No. 5,6,7 & 8)

Laxmi, Barsha, Barasha, Plabita

(Chapter NO. 9 & 10)

Nayana, Julie

India (People & Economy)

(Chapter-1, 2 & 3)

Ankit, Raju, Shubham

(Chapter- 4,5 &6)

Sang, Sanu, Vishal

(Chapter – 7,8 & 9)

Gungun, Karan, Wasim

(Chapter – 10,11 & 12)

Shejal, Debangshi, Rosy

1st Part (Fundamentals of Human Geography):

Suparna, Rashmi, Parismita, Sangita, Judismith, Rajib, Ashma, Ashish and all others will frame 3 marks questions with answers from the chapters taught till date.

Shekhar will compile last five years question in accordance with order of marks i.e. 1 mark, 3 marks & 5 marks questions altogether.

Note: Prepare question answer in soft copy.

Date of submission: 22nd june, 2020

SubJect teacher-Ajay Narayan)

KENDRIYA VIDYALAYA, AFS BORJHAR
SUMMER HOLIDAY HOMEWORK
SUBJECT: SOCIOLOGY
CLASS 12th, SESSION 2020-21
DATED: 08/05/2020

1. Try to find out why the birth rate is slow to decline but the death rate can fall relatively fast?
2. What are some of the factors that might influence a family or couple's decision about the number of children they should have?
3. Does the changing age structure offer a 'demographic dividend' for India?
4. Discuss the importance of demographic study in Sociology.
5. What impact do you think the age structure has on inter-generational relationships?
6. Do you think a high dependency ratio could create conditions for increasing tension between older and younger generation or would it make for closer relationships and stronger bonds between young and old? Justify your answer.
7. What are the some of the rules that the caste system imposes?
8. In your opinion, does caste system still exist in the Indian society? Do you have any experience on it? Justify your answer.
9. What do you think why tribes have been extent of incorporation in to the Hindu society?
10. Discuss the role of social reformers against caste system during colonial period.

KV AFS, BORJHAR

HOLIDAYS HOME WORK

CLASS- XII

SUBJECT – PHYSICAL EDUCATION

Solve the following questions.

1. What do you mean by Planning in sports? Write the objectives of planning.
2. Define combination tournament. Draw a fixture of 16 teams using League cum Knock-out method.
3. Elucidate the pre, during and post game responsibilities of officials of various committees for organising a sports tournament.
4. What do you mean by Food Myths? Explain any five food myths prevailing in contemporary society.
5. What do you mean by Asthama? Explain any one asana recommended for curing Asthma.
6. What do you mean by Obesity? Explain any one asana recommended for curing obesity.
7. What do you mean by Back pain? Explain any one asana which is beneficial in preventing as well as curing back pain.
8. Explain the Nutritive and Non-Nutritive components of diet.
9. Any one game of your choice out of the following games(Labelled diagram of field & equipment, rules , regulations & skills) = Basketball, Football, Cricket, Kabaddi, Kho-kho, Handball, Hockey, Volleyball,

HOLIDAY HOMEWORK FOR SUMMER VACATION 2020-21
Library

S.No.	Class & Sec	Homework
1	VI	1. Write a book review of your favorite book in library copy or submit it on library blog. (Book review format available on library blog) 2. Make two bookmarks. 3. Write a story with moral. (English or Hindi) 4. Write two biography of famous Hindi author.
2	VII	
3	VIII	
4	IX	1. Write two book reviews of your favourite book. (submit it on library blog) 2. Write an essay on Importance of Technology in Education (500 words). (submit it on library blog)
5	X	
6	XI	
7	XII	

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