SARALA BIRLA PUBLIC SCHOOL

Mahilong, Ranchi

Assignment - 1 (2022-23)

Class : XII (Science)

Subject: English Core (301)

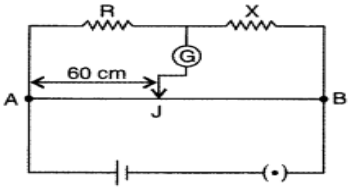
Do the following assignment in your English notebook.

Answer the questions (1 to 3 in about 100-120 words.)

1. Write a poem based on any deep thought/idea/experience, similar to 'My Mother at Sixty-six' dealing with the element of Stream of Consciousness.
2. Draw a sketch/painting and give a description of yourself at the age of 66.
3. 'Loss of one's mother tongue is loss of one's identity'. Throw light on this statement with reference to International Mother Language Day observed on 21st February every year.
4. Write a notice for your school notice board informing the students about the upcoming English Debate Competition to be held in the school auditorium. Invite the students to participate in the event. You are Rohan/Megha, the Head Boy/Girl of the Sunshine Public School, Meerut. (Word Limit: 50 words)
5. In your English notebook, create a page drawing and depicting the content in your heart. As every child is unique, each one will have a different content. Present your thoughts and views creatively.

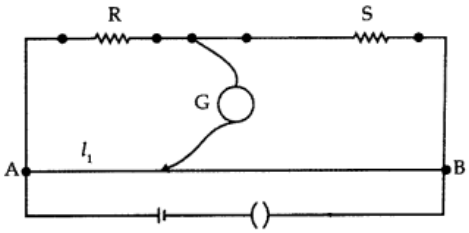
Subject: Physics (042)

1. Define mobility of a charge carrier. Write the relation expressing mobility in terms of relaxation time. Give its SI unit.
2. Define relaxation time of the free electrons drifting in a conductor. How is it related to the drift velocity of free electrons? Use this relation to deduce the expression for the electrical resistivity of the material.
3. In an experiment on meter bridge, a student obtains the balance point at the point J such that AJ = 60 cm as shown in the figure. The values of 'R' and 'X' are both doubled and then interchanged. Find the new position of the balance point. If the galvanometer and battery are also interchanged, how will the position of balance point be affected?

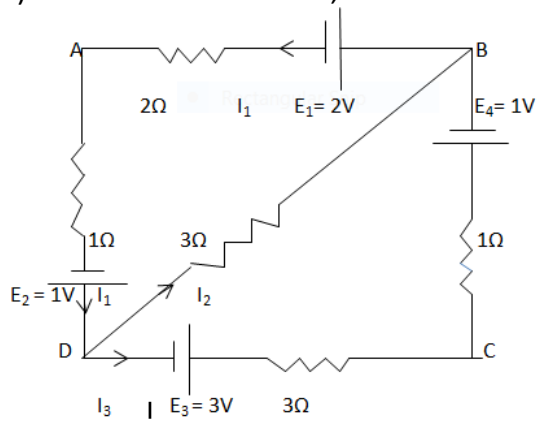


4. A potentiometer wire of length 1 m has a resistance of 5 Ω. It is connected to a 8 V battery in series with a resistance of 15 Ω. Determine the emf of the primary cell which gives a balance point at 60 cm.
5. (a) Why are the connections between the resistors in a meter bridge made of thick copper strips?
   (b) Why is it generally preferred to obtain the balance point in the middle of the meter bridge wire?
   (c) Which material is used for the meter bridge wire and why?
6. (a) Write the principle of working of a metre bridge.
   (b) In a metre bridge, the balance point is found at a distance l_1 with resistances R and S as shown in the figure.

   An unknown resistance X is now connected in parallel to the resistance S and the balance point is found at a distance l_2. Obtain a formula for X in terms of l_1, l_2 and S.

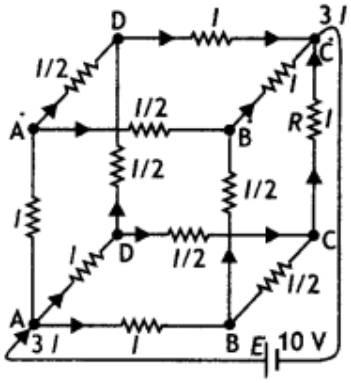


7. (a) State the working principle of a potentiometer. With the help of the circuit diagram, explain how a potentiometer is used to compare the emf's of two primary cells. Obtain the required expression used for comparing the emfs.
   (b) Write two possible causes for one sided deflection in a potentiometer experiment.
   (c) Write two factors on which the sensitivity of a potentiometer depends.
8. A potential difference V is applied across the ends of copper wire of length l and diameter D. What is the effect on drift velocity of electrons if
   (i) V is halved
   (ii) l is doubled
   (iii) D is halved
9. Under what condition will the current in a wire be the same when connected in series and in parallel of n identical cells each having internal resistance r and external resistance R?
10. (a) Draw the circuit diagram showing a Wheatstone bridge. Use Kirchhoff's law to obtain the balanced condition in terms of the values of the four resistances.
    (b) In the network shown, find the values of the currents I_1, I_2 and I_3.



Or

A battery of 10 V and negligible internal resistance is connected across the diagonally opposite corners of a cubical network consisting of 12 resistors each of resistance 1 Ω. Determine the equivalent resistance of the network and the current along each edge of the cube.



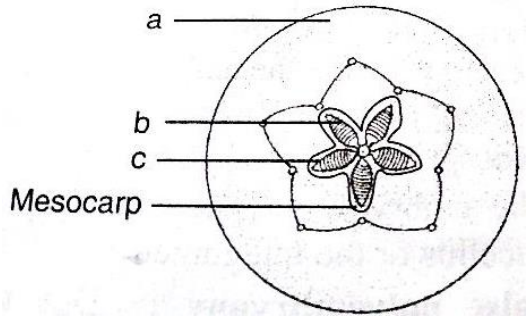
Subject: Chemistry (043)

1. Define Glycosidic linkage.
2. Three amino acids are given below:
   Alanine CH_3CH (COOH)(NH_2) Aspartic acid HOOC-CH_2CH(COOH)(NH_2)
   and Lysine H_2N- $(CH_2)_4$-CH(COOH)(NH_2)
   a) Make two tripeptides using these amino acids and mark the peptide linkage in both cases.
   b) Represent Alanine in the zwitter ionic form.
3. a) Write the main structural difference between DNA & RNA.
   b) What is meant by denaturation of proteins?
4. Define the terms osmosis and osmotic pressure. Is the osmotic pressure of solution a colligative property? Explain.
5. Calculate the boiling point of a solution prepared by adding 15.00g NaCl to 250.0g of water.(Kb for water = 0.512 K kg mol^{-1}, molar mass of NaCl = 58.44g.)

Subject: Biology (044)

1) In the following figure of fruit, label the part which is protective in function and that which is responsible for producing new plants.

2) What are gemmules and conidia? Name an organism each in which these are formed.
3) Draw a labelled figure of a mature pollen grain.
4) Given below is the T.S. of an apple. Identify a, b and c.



5) Out of many papaya plants growing in your garden only a few bear fruits. Give reason.
6) Explain the role of two accessory glands in human male reproductive system and draw a labelled diagram of male reproductive system
7) Write the location and function of sertoli cells in humans.
8) Draw a diagrammatic section of view of mammary gland.

Subject: Mathematics (041)

1. Find the value of the determinant: $\begin{vmatrix} a+ib & c+id \\ -c+id & a-ib \end{vmatrix}$.

2. If $A=\begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$, then show that $A^2-4A-5I=O$.

3. If $A=\begin{bmatrix} 1 & 3 & 2 \\ 2 & 2 & -1 \\ -3 & -2 & 1 \end{bmatrix}$, find A^{-1} and use it to solve the system of equations : $x+2y-3z=6$; $3x+2y-2z=3$; $2x-y+z=2$.

4. If $f(x)=\begin{bmatrix} \cos x & -\sin x & 0 \\ \sin x & \cos x & 0 \\ 0 & 0 & 1 \end{bmatrix}$, then show that $f(x).f(y)=f(x+y)$.

5. Solve the linear equations by matrix method: $\frac{1}{x}-\frac{1}{y}+\frac{1}{z}=4$; $\frac{2}{x}+\frac{1}{y}-\frac{3}{z}=0$; $\frac{1}{x}+\frac{1}{y}+\frac{1}{z}=2$.

6. If the matrix $A=\begin{bmatrix} 3 & -3 \\ -3 & 3 \end{bmatrix}$ and $A^2=\lambda A$, then find the value of λ.

7. Find the cofactor of the element in the second row and third column of the matrix whose determinant is: $\begin{vmatrix} 1 & 2 & -3 \\ -4 & 3 & 6 \\ 2 & -7 & 9 \end{vmatrix}$.

8. If $A=\begin{bmatrix} x & 5 \\ -5 & y \end{bmatrix}$, then find the value of *x* and y so that A be a skew symmetric matrix.

9. If $A=\begin{bmatrix} 1 & 1 & -1 \\ 2 & 0 & 3 \\ 3 & -1 & 2 \end{bmatrix}$, $B=\begin{bmatrix} 1 & 3 \\ 0 & 2 \\ -1 & 4 \end{bmatrix}$ and matrix $C=\begin{bmatrix} 1 & 2 & 3 & -4 \\ 2 & 0 & -2 & 1 \end{bmatrix}$, then show that $(AB)C = A(BC)$.

10. If matrix $A=\begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix}$, then prove that $A^3 - 6A^2 + 7A + 2I = 0$.

Subject: Computer Science (083)

Reference Chapter: Python Revision Tour-1

1. Write short notes on the following:
   Tokens, Keywords, Identifiers, Literals, Operators, Data Types, Type Casting, Compound Statement, Looping Statement
2. Write program in Python:

(a) To accept number of seconds and then express it in terms of minutes and seconds.
(b) To print one of the words negative, zero, or positive, according to the entered value in a variable x.
(c) That accepts two integers from the user and prints a message saying if the first number is divisible by second number or if it is not.
(d) That asks the user the day number in a year in the range 2 to 365 and asks the first day of the year – Sunday or Monday or Tuesday etc. then the program should display the day on the day number that has been input.
(e) That returns 'True' if the input number is an even number, 'False' otherwise.

Subject: Informatics Practice (065)

Reference Chapter: Python Pandas (Data Series)

1. Create a series EngDict from a dictionary containing 10 words and their meanings. Make words the index labels and there meaning as the corresponding value.
2. Create a series StateLanguage from a dictionary containing information of at least 10 states and the language spoken in that state. Make state names as indexes and the language spoken as the corresponding value.
3. Create a series MobileGeneration from a dictionary containing mobile generations as indexes and their key feature as the corresponding value.
4. Create a series storing even numbers from 1 to 20 with default indexes
5. Create a series storing following percentages of 5 students stored in the form of a list with indexes from 1 to 5.
   90, 85, 78.5, 90.5, 56.5

Subject: Physical Education (048)

1) What is the meaning of tournament? Draw knock-out fixture for 27 teams.
2) What is league tournament? Draw a fixture of 9 teams on the basis of league tournament using cycle method. Explain American method to declare the winner.
3) Clarify the meaning of balance diet in brief.
4) Now a days yoga plays a very important role in cure of various disease. Justify the statement by giving suitable examples of asanas for hypertension.

Subject: Hindustani Music Vocal (034)

1. Write the detail description of Rag Bhairav with Aaroh Avroh and Pakad.
2. Write the taal notation of Jhaptaal with dugun tigun and chougun.

Subject: Painting (049)

1. Draw any still life composition with your own imagination and shade with pencil.
2. Describe(write) Rajasthani school of miniature painting, with their sub-schools(three sub schools) paintings, method and materials in details. Paste related pictures of the paintings.

NOTE-Make your assignment in a decorated file.

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