SARALA BIRLA PUBLIC SCHOOL

Mahilong, Ranchi

Assignment - 1 (2023-24)

Class : XII ***SCIENCE***

ENGLISH (301)

1. Prepare one A4 sheet for your class magazine on the theme 'SDG'. You can use paper of any colour and material. Do decorate it.
2. Tracing the roots: Prepare a PPT tracing your family's ancestry and take a trip down the memory lane. Talk to your grandparents and find out about their roots and whereabouts.

PHYSICS (042)

Following activities needs to be done in activity file (Shoelace file with interleaf pages)

SECTION A

1. To assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse and a power source.
2. To assemble the components of a given electrical circuit.
3. To draw the diagram of a given open circuit comprising at least a Battery, resistor/rheostat, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also the circuit diagram.

SECTION B

1. To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab.
2. To observe diffraction of light due to a thin slit.
3. To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses.

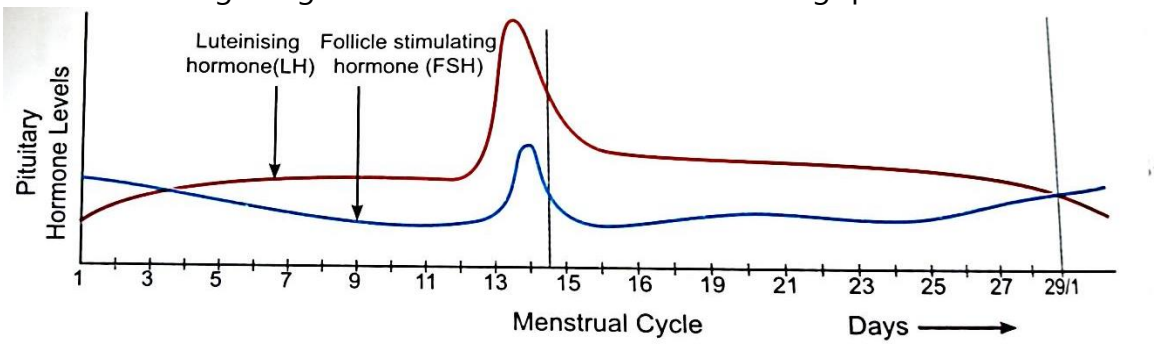
CHEMISTRY (043)

1. Write the IUPAC names of the following compounds:
   (i) Isopropyl alcohol
   (ii) $ClCH_2C \equiv CCH_2OH$.
2. Write the structures of the following organic compound:
   (i) 4 - tert - Butyl - 3 – iodoheptan-1-ol,
   (ii) 2-Methylpropan-2-ol.
3. Write the mechanism of the following reaction: $C_2H_5OH + H_2SO_4$ (Conc.)$\rightarrow CH_2=CH_2 + H_2O$
4. Explain why:
   (i) The boiling point of ethanol is higher than Methanol.
   (ii) Phenol is more acidic than Methanol.
   (iii) (±) 2 - Butanol is optically inactive.
   (iv) The dipole moment of Phenol is lower than that of cyclohexyl alcohol.
   (v) The boiling points of ethers are lower than isomeric alcohol.
5. Complete the following reactions equations:
   (a) $CH_3 - CH_2 – CH_2 – OH \xrightarrow[\text{heat}]{\text{conc.}H_2SO_4}$
   (b) $(CH_3)\ C\ Br + KOH\ (aq.) \longrightarrow$
   (c) $CH_3CH_2CH = CH_2 + H_2O \xrightarrow{H^+}$
   (d) $C_2H_5OH \xrightarrow[\text{heat}]{Cu}$

6. Arrange the following compounds in increasing order of acidity and give a suitable explanation:
   (i) Phenol, o-Nitrophenol and o-Cresol
   (ii) Phenol, Ethanol and Salicylic acid
7. What happens when:
   (i) Ethyl chloride is treated with aqueous KOH.
   (ii) Phenol is treated with concentrated HNO_3.
   (iii) Methyl bromide is treated with sodium ethoxide.
8. A compound 'A' having molecular formula $C_4H_{10}O$ is found to be soluble in concentrated sulfuric acid. It does not react with sodium metal or potassium permanganate. On heating with excess of HI, it gives A single alkyi halide. Deduce the structure of compound 'A' and explain all the reactions.
9. Distinguish between:
   (i) CH_3OH & C_2H_5OH
   (ii) Phenol & Methanol
   (iii) C_6H_5OH & C_6H_7OH (Benzyl alcohol)
10. How the following conversion can be carried out?
   (i) Propane to Propan - 1 - ol
   (ii) 1 - Bromopropanol to 2 - Bromopropanol
   (iii) Toluene to Benzyl alcohol
   (iv) 2 - Bromopropanol to 1 - Bromopropanol
   (v) Ethyl alcohol to Propanoic acid.
11. Write short notes of the following reactions;
   a) Williamson synthesis
   b) Kolbe's reaction
   c) Reimer Tiemann reaction.

BIOLOGY (044)

1. Draw a labelled sketch of a mature 7-celled, 8-nucleate embryo -sac.
2. A) Mention any four strategies adopted by flowering plants to prevent self-pollination.
   B) Why is geitonogamy also referred to as genetical autogamy?
3. Observe the diagram given below and answer the following questions.



   A) What is the importance of LH surge?
   B) Identify the ovarian phases during the menstrual cycle.
      1) 5^{th} day to 12^{th} day of the cycle.
      2) 14^{th} day of the cycle.
   C) Menstrual cycles are absent during pregnancy. Why?

STANDARD MATHEMATICS (041)

1. Solve the following system of equations, using matrix method:

$$\frac{2}{x}+\frac{3}{y}+\frac{10}{z}=4 \quad , \qquad \frac{4}{x}-\frac{6}{y}+\frac{5}{z}=1 \quad , \qquad \frac{6}{x}+\frac{9}{y}-\frac{20}{z}=2 \quad ; x,y,z\neq 0$$

2. There are two real value(s) of, for which the value of the determinant $\Delta = \begin{bmatrix} 1 & -2 & 5 \\ 2 & x & -1 \\ 0 & 4 & 2x \end{bmatrix}$

   Is 86. Find the value(s) of x.

3. Let A = $\begin{bmatrix} 0 & -\tan\frac{x}{2} \\ \tan\frac{x}{2} & 0 \end{bmatrix}$ $and\ I\ is\ the\ identity\ matrix\ of\ order\ 2\ .\ Show\ that\ \ (I+A) =$

   $(I-A).\begin{bmatrix} Cos\ x & -Sin\ x \\ Sin\ x & Cos\ x \end{bmatrix}$

4. If A = $\begin{bmatrix} x & y \\ z & -x \end{bmatrix}$ $and\ A^2 = I, then\ obtain\ a\ relation\ between\ x, yand\ z.$

5. If A = $\begin{bmatrix} 3 & 1 \\ 7 & 5 \end{bmatrix}$ $, find\ x\ \&y\ such\ that\ A^2 + xI = yA. Hence, find\ A^{-1}$.

6. Find the inverse of $\begin{bmatrix} 2 & -3 & 3 \\ 2 & 2 & 3 \\ 3 & -2 & 2 \end{bmatrix}$.

7. Examine the consistency of the following system of equations

   x-y+ z =3

   2x +y -z = 2

   -x – 2y +2z = 1.

   If possible, also find the solution.

8. If A and B are symmetric matrices of the same order, then show that (AB – BA) is skew symmetric.

9. Write the element a of a 3 × 3 matrix A = $[a_{ij}]$, whose elements are given by $a_{ij} = |i-j|/2$

10. Find the area of triangle whose vertices are A(-2, -3), B(3, 2) and C(-1, -8).

APPLIED MATHEMATICS (241)

1. Solve the following system of equations, using matrix method:

   $\frac{2}{x}+\frac{3}{y}+\frac{10}{z}=4 \quad , \qquad \frac{4}{x}-\frac{6}{y}+\frac{5}{z}=1 \quad , \qquad \frac{6}{x}+\frac{9}{y}-\frac{20}{z}=2 \quad ;\ x,y,z \neq 0$

2. There are two real value(s) of, for which the value of the determinant $\Delta = \begin{bmatrix} 1 & -2 & 5 \\ 2 & x & -1 \\ 0 & 4 & 2x \end{bmatrix}$

   Is 86. Find the value(s) of x.

3. Let A = $\begin{bmatrix} 0 & -\tan\frac{x}{2} \\ \tan\frac{x}{2} & 0 \end{bmatrix}$ $and\ I\ is\ the\ identity\ matrix\ of\ order\ 2\ .\ Show\ that\ \ (I+A) =$

   $(I-A).\begin{bmatrix} Cos\ x & -Sin\ x \\ Sin\ x & Cos\ x \end{bmatrix}$

4. If A = $\begin{bmatrix} x & y \\ z & -x \end{bmatrix}$ $and\ A^2 = I, then\ obtain\ a\ relation\ between\ x, yand\ z.$

5. If A = $\begin{bmatrix} 3 & 1 \\ 7 & 5 \end{bmatrix}$ $, find\ x\ \&y\ such\ that\ A^2 + xI = yA. Hence, find\ A^{-1}$.

6. Find the inverse of $\begin{bmatrix} 2 & -3 & 3 \\ 2 & 2 & 3 \\ 3 & -2 & 2 \end{bmatrix}$.
7. Examine the consistency of the following system of equations

   x-y+ z =3

   2x +y -z = 2

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   If possible, also find the solution.
8. If A and B are symmetric matrices of the same order, then show that (AB – BA) is skew symmetric.
9. Write the element a of a 3 × 3 matrix A = $[a_{ij}]$, whose elements are given by $a_{ij} = |i-j|/2$
10. Find the area of triangle whose vertices are A(-2, -3), B(3, 2) and C(-1, -8).

ECONOMICS (030)

Macro Economics

1 Will the following be included in gross domestic product / Domestic Income of India? Give reasons for each answer.
   a) Services charges paid to a dealer (broker) in exchange of second-hand goods.
   b) Purchase of new shares of a domestic firm.
   c) Profits earned by a foreign bank from its branches in India.
   d) Consultation fee received by a doctor.

2 How will you treat the following in estimating national income of India? Give reasons for your answer.
   a) Scholarship given to Indian students studying in India by a foreign company.
   b) Profits earned by branch of a foreign bank.
   c) Profit earned by a branch of foreign bank in India.
   d) Payment of salaries to its staff by an embassy located in New Delhi.
   e) Interest received on loan given to a foreign company in India.

3. From the following data calculate (a) Gross domestic product at factor cost and (b) Factor income to abroad :

		Rs. (cr)
a)	Compensation of employees	800
b)	Profits	200
c)	Dividends	50
d)	Gross national product at market price	1400
e)	Rent	150
f)	Interest	100
g)	Gross domestic capital formation	300
h)	Net fixed capital formation	200
i)	Change in stock	50
j)	Factor income from abroad	60
k)	Net indirect tax	120

4. From the following data calculate Gross national product at market price by (a) Income method and (b) expenditure method:

		Rs. (cr)
a)	Net domestic capital formation	375
b)	Compensation of employees	600
c)	Net indirect taxes	150
d)	Profit	450
e)	Private final consumption expenditure	1100
f)	Rent	200
g)	Consumption of fixed capital	115
h)	Government final consumption expenditure	700
i)	Interest	250
j)	Mixed income of self-employed	500
k)	Net factor income from abroad	(-) 15
l)	Net exports	(-) 25

INDIAN ECONOMIC DEVELOPMENT

5. What were the various forms of revenue settlement adopted by the British in India? What was its impact?
6. Name those parts of Pakistan which were the part of British India. Why were those parts so important to India from the economic point of view?
7. What are the basic requirements for setting up any modern industry? Explain with few examples.
8. Prepare a pie chart for the occupational structure in India at the time of independence and current year. Do you find any change in it? Write your views on changing trends on occupational structure.

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.

INFORMATION PRACTICE (065)

Reference Chapter: Python Pandas (Data Series)

Q1. 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.

Q2. Create a series State Language 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.

Q3. Create a series Mobile Generation from a dictionary containing mobile generations as indexes and their key feature as the corresponding value.

Q4. Create a series storing even numbers from 1 to 20 with default indexes

Q5. 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

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) 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.
4) Discuss the role of various committees and their responsibilities to organise National level sports events.

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