DESIGN OF THE QUESTION PAPER
FIRST TERM EXAMINATION – MCQ'S
Class : X

Subject: Science   **Time : 90 Min.**   **Max. Marks: 40**
YEAR : 2022-23

The weightage or the distribution of marks over different dimensions of the questionpaper shall be as follows :

1. Weightage to Learning Outcomes :

Sr.No	Learning Outcomes	Marks	Percentage of Marks
1.	Knowledge	12	30%
2.	Understanding	16	40%
3.	Application	12	30%
	Total	40	100%

2.Weightage to Content/Subject Units :

Sr. No.	Ch. No.	Units	Marks	Deletions
1	1	Chemical Reactions and Equations	4	No Deletions
2	2	Acids, Bases and Salts	5	No Deletions
3	3	Metals and Non-Metals	4	No Deletions
4	7	Control and Coordination	6	No Deletions
5	8	How do Organisms Reproduce?	7	No Deletions
6	12	Electricity	6	No Deletions
7	13	Magnetic Effects of Electric Current	5	No Deletions
8	14	Sources of Energy	3	No Deletions
		Total	**40**	

3.Weightage to Difficulty level of questions :

S.No.	Estimated difficulty level of question	Percentage
1	Easy	30%
2	Average	60%
3	Difficult	10%

A question may vary in difficulty level from individual to individual, As such, the assessment in respect of each question will be made by the paper setter on the basis of general anticipation from the group as a whole taking the examination. This provision is only to make the paper balanced in its weightage, rather than to determine the pattern of marking at any stage.

4. Number of Questions :

There will be 40 MCQ's of 1 mark each.

DESIGN OF THE QUESTION PAPER
SECOND TERM EXAMINATION – Subjective
Class : X

Subject: Science   Time : 75 Min.   Max. Marks: 30
YEAR : 2022-23

The weightage or the distribution of marks over different dimensions of the question paper shall be as follows :

1. Weightage to Learning Outcomes :

Sr.No	Learning Outcomes	Marks	Percentage of Marks
1.	Knowledge	9	30%
2.	Understanding	12	40%
3.	Application	7	23%
4.	Skill	2	7%
	Total	30	100%

2. Weightage to Content/Subject Units :

Sr. No.	Ch. No.	Units	Marks	Deletions
1	1	Carbon and its Compounds	5	No Deletions
2	2	Periodic Classification of Elements	4	No Deletions
3	3	Life Processes	5	No Deletions
4	7	Heredity and Evolution	3	No Deletions
5	8	Light : Reflection and Refraction	5	No Deletions
6	12	Human Eye and Colorful World	4	No Deletions
7	13	Our Environment	2	No Deletions
8	14	Management of natural resources	2	No Deletions
		Total	**30**	

3.Weightage to Forms of Questions :

Sr.No.	Form of Questions	Marks for each question	Number of questions	Total Marks
1.	Long Answer Type (LA)	4	03	12
2.	Short Answer Type (SA-I)	3	03	09
3.	Short Answer Type (SA-II)	2	03	06
4.	Very Short Answer Type (VSA)	1	03	03
	Total		**12**	**30**

4.The expected time for different types of question would be as follows :

S.No.	Form of Questions	Approx. time for each Question in mins (t)	Number of questions (n)	Approx. time for each form of Questions in mins (n x t)
1	Long Answer Type (LA)	12	03	36
2	Short Answer Type (SA-I)	05	03	15
3	Short Answer Type (SA-II)	06	03	18
4	Very Short Answer Type (VSA)	02	03	06
	Total			**75**

As the total time is calculated on the basis of the number of questions required to be answered and the length of their anticipated answers, it would, therefore, be advisable for the candidates to budget their time properly by cutting out the superfluous words and be within the expected time limits.

5.Scheme of Options

(There will be no overall choice, However, there is an internal choice in 2 subquestions of 4 marks category and 3 marks category.)

6.Weightage to Difficulty level of questions :

S.No.	Estimated difficulty level of question	Percentage
1	Easy	32%
2	Average	50%
3	Difficult	18%

A question may vary in difficulty level from individual to individual, As such, the assessment in respect of each question will be made by the paper setter on the basis of general anticipation from the group as a whole taking the examination. This provision is only to make the paper balanced in its weightage, rather than to determine the pattern of marking at any stage.

7.Number of main Questions :

There will be 3 main questions of 10 marks each.

DESIGN OF THE QUESTION PAPER
FIRST FORMATIVE TEST – Subjective
Class : X
Subject: Science   Time : 60 Min.   Max. Marks: 20
YEAR : 2022-23

The weightage or the distribution of marks over different dimensions of the question paper shall be as follows :

1. Weightage to Learning Outcomes :

Sr.No	Learning Outcomes	Marks	Percentage of Marks
1.	Knowledge	06	30%
2.	Understanding	08	40%
3.	Application	04	20%
4.	Skill	02	10%
	Total	20	100%

2.Weightage to Content/Subject Units :

Sr. No.	Ch. No.	Units	Marks	Deletions
1	1	Chemical Reactions and Equations	5	No Deletions
4	7	Control and Coordination	5	No Deletions
6	12	Electricity	6	No Deletions
8	14	Sources of Energy	4	No Deletions
		Total	**20**	

3.Weightage to Forms of Questions :

Sr.No.	Form of Questions	Marks for each question	Number of questions	Total Marks
1.	Long Answer Type (LA)	4	02	08
2.	Short Answer Type (SA-I)	3	02	06
3.	Short Answer Type (SA-II)	2	02	04
4.	Very Short Answer Type (VSA)	1	02	02
	Total		**08**	**20**

4. The expected time for different types of question would be as follows :

S.No.	Form of Questions	Approx. time for each Question in mins (t)	Number of questions (n)	Approx. time for each form of Questions in mins (n x t)
1	Long Answer Type (LA)	12	02	24
2	Short Answer Type (SA-I)	06	02	12
3	Short Answer Type (SA-II)	09	02	18
4	Very Short Answer Type (VSA)	03	02	06
	Total			**60**

As the total time is calculated on the basis of the number of questions required to be answered and the length of their anticipated answers, it would, therefore, be advisable for the candidates to budget their time properly by cutting out the superfluous words and be within the expected time limits.

5. Scheme of Options

(There is no overall choice as well as no internal choice.

6. Weightage to Difficulty level of questions :

S.No.	Estimated difficulty level of question	Percentage
1	Easy	32%
2	Average	50%
3	Difficult	18%

A question may vary in difficulty level from individual to individual, As such, the assessment in respect of each question will be made by the paper setter on the basis of general anticipation from the group as a whole taking the examination. This provision is only to make the paper balanced in its weightage, rather than to determine the pattern of marking at any stage.

7. Number of main Questions :

There will be 2 main questions of 10 marks each.

DESIGN OF THE QUESTION PAPER
SECOND FORMATIVE TEST – Subjective
Class : X
Subject: Science   TIME : 60 Min.   Max. Marks: 20
YEAR : 2022-23

The weightage or the distribution of marks over different dimensions of the question paper shall be as follows :

1. Weightage to Learning Outcomes :

Sr.No	Learning Outcomes	Marks	Percentage of Marks
1.	Knowledge	06	30%
2.	Understanding	08	40%
3.	Application	04	20%
4.	Skill	02	10%
	Total	20	100%

2. Weightage to Content/Subject Units :

Sr. No.	Ch. No.	Units	Marks	Deletions
1	2	Acids, Bases and Salts	5	No Deletions
2	3	Metals and Non-Metals	4	No Deletions
3	8	How do Organisms Reproduce?	6	No Deletions
4	13	Magnetic Effects of Electric Current	5	No Deletions
		Total	**20**	

3. Weightage to Forms of Questions :

Sr.No.	Form of Questions	Marks for each question	Number of questions	Total Marks
1.	Long Answer Type (LA)	4	02	08
2.	Short Answer Type (SA-I)	3	02	06
3.	Short Answer Type (SA-II)	2	02	04
4.	Very Short Answer Type (VSA)	1	02	02
	Total		**08**	**20**

4.The expected time for different types of question would be as follows :

S.No.	Form of Questions	Approx. time for each Question in mins (t)	Number of questions (n)	Approx. time for each form of Questions in mins (n x t)
1	Long Answer Type (LA)	12	02	24
2	Short Answer Type (SA-I)	06	02	12
3	Short Answer Type (SA-II)	09	02	18
4	Very Short Answer Type (VSA)	03	02	06
	Total			**60**

As the total time is calculated on the basis of the number of questions required to be answered and the length of their anticipated answers, it would, therefore, be advisable for the candidates to budget their time properly by cutting out the superfluous words and be within the expected time limits.

5.Scheme of Options

(There is no overall choice as well as no internal choice.

6.Weightage to Difficulty level of questions :

S.No.	Estimated difficulty level of question	Percentage
1	Easy	32%
2	Average	50%
3	Difficult	18%

A question may vary in difficulty level from individual to individual, As such, the assessment in respect of each question will be made by the paper setter on the basis of general anticipation from the group as a whole taking the examination. This provision is only to make the paper balanced in its weightage, rather than to determine the pattern of marking at any stage.

7.Number of main Questions :

There will be 2 main questions of 10 marks each.

DESIGN OF THE QUESTION PAPER
FIRST TERM EXAMINATION – MCQ'S
Class : X (CWSN)

Subject: General Science　　　　　**Time : 90 Min.**

Max. Marks: 40　　　　　　　　**YEAR : 2022-23**

The weightage or the distribution of marks over different dimensions of the questionpaper shall be as follows :

2. Weightage to Learning Outcomes :

Sr.No	Learning Outcomes	Marks	Percentage of Marks
1.	Knowledge	12	30%
2.	Understanding	16	40%
3.	Application	12	30%
	Total	40	100%

2.Weightage to Content/Subject Units :

Sr. No.	Ch. No.	Units	Marks
1	1	Chemical Reactions and Equations	3
2	2	Acids, Bases and Salts	6
3	3	Metals and Non-Metals	6
4	7	Control and Coordination	7
5	8	How do Organisms Reproduce?	12
6	12	Electricity	6
		Total	**40**

3.Weightage to Difficulty level of questions :

S.No.	Estimated difficulty level of question	Percentage
1	Easy	40%
2	Average	50%
3	Difficult	10%

A question may vary in difficulty level from individual to individual, As such, the assessment in respect of each question will be made by the paper setter on the basis of general anticipation from the group as a whole taking the examination. This provision is only to make the paper balanced in its weightage, rather than to determine the pattern of marking at any stage.

5. Number of Questions :
There will be 40 MCQ's of 1 mark each.

DESIGN OF THE QUESTION PAPER
SECOND TERM EXAMINATION – Subjective
Class : X (CWSN)

Subject: Science **Time : 75 Min.**

Max. Marks: 30 **YEAR : 2022-23**

The weightage or the distribution of marks over different dimensions of the question paper shall be as follows :

1. Weightage to Learning Outcomes :

Sr.No	Learning Outcomes	Marks	Percentage of Marks
1.	Knowledge	9	30%
2.	Understanding	12	40%
3.	Application	7	23%
4.	Skill	2	7%
	Total	30	100%

2.Weightage to Content/Subject Units :

Sr. No.	Ch. No.	Units	Marks
3	3	Life Processes	8
4	9	Sources of energy	4
5	8	Light : Reflection and Refraction	2
6	12	Human Eye and Colorful World	4
7	13	Our Environment	6
8	14	Management of natural resources	6
		Total	**30**

3.Weightage to Forms of Questions :

Sr.No.	Form of Questions	Marks for each question	Number of questions	Total Marks
1.	Long Answer Type (LA)	4	03	12
2.	Short Answer Type (SA-I)	3	03	09
3.	Short Answer Type (SA-II)	2	03	06
4.	Very Short Answer Type (VSA)	1	03	03
	Total		12	30

4.The expected time for different types of question would be as follows :

S.No.	Form of Questions	Approx. time for each Question in mins (t)	Number of questions (n)	Approx. time for each form of Questions in mins (n x t)
1	Long Answer Type (LA)	12	03	36
2	Short Answer Type (SA-I)	05	03	15
3	Short Answer Type (SA-II)	06	03	18
4	Very Short Answer Type (VSA)	02	03	06
	Total			75

As the total time is calculated on the basis of the number of questions required to be answered and the length of their anticipated answers, it would, therefore, be advisable for the candidates to budget their time properly by cutting out the superfluous words and be within the expected time limits.

5.Scheme of Options

(There will be no overall choice, However, there is an internal choice in 2 subquestions of 4 marks category and 3 marks category.)

6.Weightage to Difficulty level of questions :

S.No.	Estimated difficulty level of question	Percentage
1	Easy	40%
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3	Difficult	10%

A question may vary in difficulty level from individual to individual, As such, the assessment in respect of each question will be made by the paper setter on the basis of general anticipation from the group as a whole taking the examination. This provision is only to make the paper balanced in its weightage, rather than to determine the pattern of marking at any stage.

7.Number of main Questions :

There will be 3 main questions of 10 marks each.

FIRST TERM EXAM

Time: 90 Min.   **PAPER CODE: S - 1031**   **SUB: SCIENCE (E)**

Total number of Questions : 40   **Max. Marks : 40**

Instructions: (i) The question paper consist of 40 multiple choice objective

type questions.

(ii) All questions are compulsory.

(iii) Every question has four choices for its answers (A), (B)

(C) and (D) and Only one of them is correct answer.

(iv) Select the one that you consider to be the most

appropriate answer among the four choices.

(v) Each correct answer will carry one mark.

(vi) There will be no negative marking for the wrong answer.

Q.1. Calcium oxide reacts vigorously with water to produce slaked lime.
The molecular formula of slaked lime is _____
A. $Ca(OH)_2$
B. $CaCO_3$
B. CaO
C. $CaOH$

Q2. When lead nitrate powder is heated in a boiling tube, brown fumes
of _____is emitted.
A. nitrogen dioxide
B. lead oxide
C. Nitrous oxide
D. Oxygen

Q3. If a substance gains oxygen or loses hydrogen during a chemical reaction,
it is said to be _____
A. oxidised

B. reduced

C. oxidised and reduced

D. displaced

Q4. In the reaction : $Cu + xHNO_3 \dashrightarrow Cu(NO_3)_2 + yNO_2 + 2H_2O$

The value of x and y are _____

A. X=4, y=2

B. x=2, y=4

C. x=2, y=2

D. x=3 , y=4

Q5.The Sodium compound which is used for softening hard water is _____

A. $NaHCO_3$

B. NaCl

C. NaOH

D. Na_2CO_3

Q6. From the following an example of olfactory indicator is _____

A. Turmeric

B. Methyl Orange

C. Vanilla

D. Litmus

Q7. Gas generated by all acids on reacting with metals is _____

A. Chlorine

B. Nitrogen

C. Hydrogen

D. Oxygen.

Q8. pH paper on testing with a solution X, showed dark blue colour. Therefore, the solution x should be _____

A. Very acidic

B. Very alkaline

C. mild acidic

D. Neutral

Q9.Care must be taken while mixing Nitric acid or Sulphuric acid with water because _____

A. It results in decrease in concentration of ions.

B. The process is highly endothermic one.

C. It generates H^+ (aq) ions.

D. It generates OH^- ion

Q10. The ability of metals to be drawn into thin wires is called _____
 A. malleability
 B. ductility
 C. lustre
 D. Sonorous

 Q11. An example of metal oxide which react with both acids and bases to
       produce salt and water is _____
   A. Aluminium oxide
   B. Magnesium oxide
   C. Sodium Oxide
   D. Copper Oxide

Q12. Metal sulphides are converted into metal oxides by heating strongly in
      the presence of excess air, This process is known as _____
   A. Enrichment
   B. Roasting
   C. Calcination
   D. Concentration

13. Method which is suitable for preventing rusting of an iron frying
    pan is _____
   A. Applying grease
   B. Applying paint
   C. Applying coating of Zinc
   D. All of the given

Q14. The gap between two neurons is called a _____ .
   A. Dendrite
   B. Axon
   C. Synapse
   D. Impulse

Q15. The part of the brain that maintains the posture and balance of the
      body is _____.
A. Cerebrum
B. Cerebellum
C. Medulla
D. Spinal cord

Q16. The plant hormone that promotes cell division is _____.
A. Cytokinins
B. Auxins
C. Gibberellins
D. Abscisic acid

Q17. The growth of pollen grain towards ovules is an example of _____.
A. Geotropism
B. Phototropism
C. Chemotropism
D. Hydrotropism

Q18. The hormone that regulates carbohydrates, Proteins and fats metabolism
in the body is _____.
A. Insulin
B. Oestrogen
C.Growth
D. Thyroxine

Q19. Ramesh is extremely short as compared to his friend of his age the gland
that is responsible for his imbalance is _____.
A. Adernal gland
B. Pituitary gland
C. Thyroid gland
D. Pineal gland

Q20. The Anther contains _____

A.Sepals
B. Ovules
C. Pollen Grain
D. Carpel

Q21. Fertilization in humans occurs in _____

A. Uterus
B. Fallopian Tube
C. Vagina
D. Urethra

Q22. In Amoeba reproduction takes place by the Fission of a mother Amoeba into two new daughter Amoebae, this mode of reproduction is _____

    A. Sexual reproduction

    B. Asexual Reproduction

    C. Regeneration

    D. Budding

Q23.The function of testes at puberty is _____

    (i) Formation of germ cells

    (ii) Secretion of testosterone

    (iii) Development of placenta

    (iv) Secretion of estrogen

    A. (i) and(ii)

    B. (ii) and(iii)

    C. (iii) and(iv)

    D. (i) and(iv)

Q24.Which of the following method of contraception protects from acquiring sexually transmitted diseases?

    A. Surgery
    B. Condoms
    C. Copper-T
    D. Oral-pills

Q25.The image shows the structure of a flower.
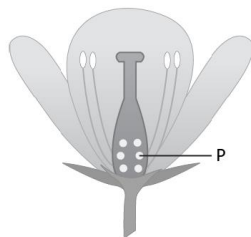
Which process will likely be disturbed or not occur, if the labelled part is removed from the flower?

A. Formation of fruit

B. Transport of pollen

C. Formation of pollen

D. Formation of male germ cells

Q26. Which of the following statements on the reproduction of humans is correct?

I.   All eggs are fertilized externally

II.   One female egg can be fertilized by many sperms

III.   After fertilization the embryo will develop into a young baby

IV.   Males produce sperms and females produce eggs.

A. I and II

B. I and III

C. II, III, and IV

D. III and IV

Q27.Coulomb is the SI unit of _____
    A. Current
    B. Potential difference
    C. Resistance
    D. Charge

Q28. A device that helps to maintain a potential difference across a conductor is _____
    A. Voltmeter
    B. Ammeter
    C. Battery
    D. Switch

Q29. Two special characteristics of a heater coil in an electric iron are _____

A. High Resistivity and Low Melting point

B. High Resistivity and High Melting point

C. Low Resistivity and Low Melting point

D. Low Resistivity and High Melting point

Q30. A Car headlight bulb working on a 12 Volt Car Battery draws a current of 0.5 Ampere. Therefore, the power of the bulb is _____
A. 6 watt
B. 8 watt
C. 9 watt
D. 3 watt

Q31. Two Resistances are connected in series gives an equivalent resistance of 10 Ohm. When connected in parallel gives 2.1 Ohm. Then, the individual resistance are _____
A. 6 Ohm and 4 Ohm
B. 8 Ohm and 2 Ohm
C. 7 Ohm and 3 Ohm
D. 5 Ohm and 5 Ohm

Q32. The current flowing through the 20 Ohm resistor in the following circuit is _____
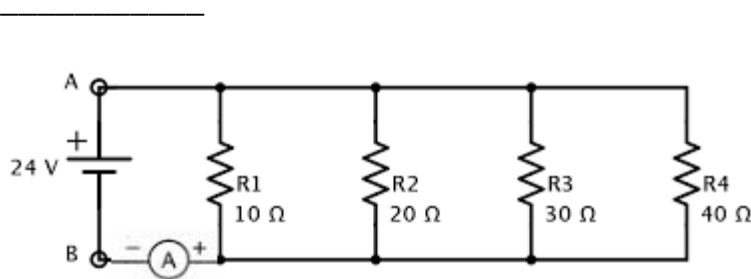
A. 0.2 A
B. 1.2 A
C. 2.0 A
D. 2.4 A

Q33. A rectangular coil of copper wire is rotated in a magnetic field. The direction of induced current changes once in each _____
A. two revolutions
B. one revolution
C. half revolution
D. one fourth revolution

Q34. At the time of short circuit, the current in the circuit _____
A. reduces substantially
B. does not change
C. increases heavily
D. varies continuously

Q35.To convert an AC generator into a DC generator _____
    A. a split-ring type commutator must be used
    B. slip rings and brushes must be changed
    C. a stronger magnetic field has to be used
    D. a rectangular wire loop has to be used.

Q36. The most important safety method used for protecting home appliances
    from short circuit and overloading is _____
    A. earthing
    B. use of fuse
    C. use of stabilizers
    D. use of electric meter

Q37. In Flemings right hand rule, the middle finger will show the direction
    of _____
    A. force
    B. motion
    C. magnetic field
    D. induced current

Q38.A wind mill to function the minimum wind velocity required is _____

    A. Less than 15 Km/hr
    B. Minimum 13 Km/hr
    C. More than 5 Km/hr
    D. More than 15 Km/hr

Q39. A student constructed a box type solar cooker. He noticed that the
    Green-house effect produced by it is very effective . The part of the
    solar cooker responsible for green house effect is _____
    A. Mirror
    B. Outer cover of the solar cooker
    C. Black colour coating outside the box
    D. Glass sheet

Q40. In nuclear electricity generation, the process used currently involves the
    fission of _____
    A. Uranium-325 nuclei bombarding with electrons
    B. Uranium-325 nuclei bombarding with protons
    C. Uranium-325 nuclei bombarding with neutrons
    D. Uranium-325 nuclei bombarding with ions

Answer Key - MCQ's

Q1. $Ca(OH)_2$

Q2. Nitrogen dioxide

Q3. Oxidised

Q4. X=4, y=2

Q5. Na_2CO3

Q6. Vanilla

Q7. Hydrogen

Q8. very alkalinie

Q9. Is highly exothermic one.

Q10. malleabilily

Q11. Aluminium oxide

Q12. Roasting

Q13. Applying coating of Zinc

Q14. Synapse

Q15. Cerebellum

Q16. Cytokinins

Q17. Chemotropism

Q18. Thyroxine

Q19. Pituitary gland

Q20.Pollen Grain

Q21.Fallopian Tubes

Q22.Asexual Reproduction

Q23.(i) and (ii)

Q24.Condoms

Q25. Formation of fruit

Q26. III and IV

Q27. Charge

Q28. Battery

Q29. High Resistivity and High Melting point

Q30. 6 watt

Q31. 7 Ohm and 3 Ohm

Q32. 1.2 A

Q33. half revolution

Q34. increases heavily

Q35. split-ring type commutator

Q36. use of fuse

Q37. Induced current

Q38. More than 15 Km/hr

Q39. Glass sheet

Q40. Uranium-25 nuclei bombarding with neutrons

SECOND TERM EXAM

SAMPLE PAPER

STD – X   Subject Code : S - 1031   Sub : Science (E)

Max. Marks : 30   Time:75 min

**Instructions: (i) The question paper comprises of questions of 10
marks each.
(ii) All questions are compulsory.
(iii) There is no overall choice. However internal choice
has been provided in one question of 3 marks and
one question of 4 marks category. You have to
attempt only one option in such questions.
(ii) Begin each new question on a fresh page.
(iv) Figures to the right indicates full marks.**

Q1. A   Select the most correct alternative given below each statement and
write the completed statement: 1

   i) Complex carbohydrate is converted into _____in our small intestine.
      a) Lactose
      b) Maltose
      c) Glucose
      d) Sucrose

   ii)   Food materials are broken down outside the body and absorbed in
          organisms like _____

          a) Amoeba, Paramoecium, Lice
          b) Amoeba, Mushrooms, Green Plants
          c) Cuscuta, Leeches, Tapeworm
          d) Mushrooms, Yeast, bread Moulds

**B. i) Name the following**:   2
      a) The scientist who classified the elements on the basis of their atomic
         numbers.
      b) The element that was discovered later and had properties similar to
         Eka-boron.
   ii) What is biological magnification ?

C. Answer the following: **3**

   i) How is the valency of an element determined?

   ii) Why does the atomic size increase down a group?

   iii) The atomic number of an element is 15. State its electronic
      configuration and the period to which it belongs.

D. Attempt the following   **4**

  i)The heart has different chambers to prevent the oxygen rich blood
   from mixing with the blood containing carbon dioxide.
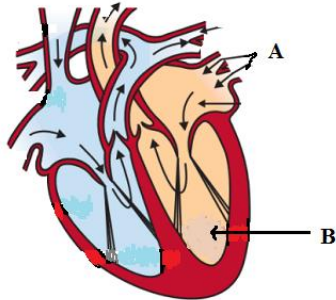
    a) Name the parts labeled 'A' and 'B'.

    b) Why is blood circulation in the human heart termed as Double
      circulation?

    c)What is the purpose of sending blood to the kidney for filtration?

 ii) State two functions of bile juice in the digestion of food .

Q2 A. Match the examples of what happens in the nature from column
     'A'with the phenomena of light from column 'B'   **1**

Column 'A'	Column 'B'
i) Twinkling of stars	- dispersion of light
ii) Rainbow formation	- scattering of light
	- refraction of light

B.i) **Name the following:**   **1**

    a) The trees for which Amrita Devi Bishnoi and others sacrificed
      their lives.

    b) Ancient water harvesting structures found in Himachal Pradesh.

  ii) Why should we conserve forests and wildlife?   **1**

C. **A student sitting at the back bench in a classroom has difficulty in**
   Reading from the blackboard.   **3**

i) What could be his defect of vision?

ii) State two possible causes of this defect.

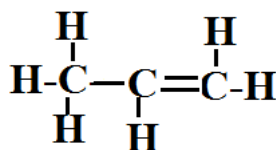iii) Explain the method of correcting this defect with the help of ray diagram.

OR

C. 25 years old Raja is unable to see distinctly the words printed on a newspaper.

i) Name the defect of vision he is suffering from.

ii) List its two possible causes.

iii) Explain the method of correcting this defect with the help of ray diagram.

D. Attempt the following 4

i) What is Catenation?

ii) State one point of difference between Ethane and Ethyne with reference to its bonding between the carbon atoms.

iii) Why are Vegetable oils considered a healthier option than animal fats for cooking?

iv) Observe the structural formula given below and answer the following question.

$$H-\overset{\overset{\displaystyle H}{|}}{\underset{\underset{\displaystyle H}{|}}{C}}-\overset{\overset{\displaystyle }{}}{\underset{\underset{\displaystyle H}{|}}{C}}=\overset{\overset{\displaystyle H}{|}}{C}\text{-}H$$

Is it a saturated or unsaturated hydrocarbon. Justify your answer.

Q3 A. Observe the correlation in the first pair and complete the second pair. 1

i) Carboxylic acid : COOH :: Alcohol : _____

ii) C_nH_{2n+2} : alkane :: C_nH_{2n-2} : _____

B. Answer the following: 2

  i) **A ray of light while travelling from water to air medium, the direction of propagation of light in the air medium changes.**

   a) State the term used to express the ratio of speed of light in one medium to that in another medium.

   b) Why does a ray of light changes its direction when it travels from one medium to another? Give one reason.

  ii) **Arrange the following so as to make a three step food chain.**

   a) Tiger, Grass, Deer.

   b) Name the secondary consumer.

C. Answer the following: **3**

i) How is acquired trait different from inherited trait? Mention any one point of difference.

ii) The wing of a bat and wing of a bird is considered as analogous characteristic and not a homologous characteristic: Justify.

iii) If we cross breed tall (dominant) pea plant with pure -bred dwarf (recessive)pea plant, we will get plants of F_1 generation. If we now self - cross the pea plants of F_1 generation ,we obtain pea plants of F_2 generation.

    i) what do the plants of F_1 generation look like?

    ii) state the ratio of tall plants to dwarf plants in F_2 generation.

D. Do as directed.   **4**

i)Draw a neat diagram to show the formation of image in a concave mirror when an object is placed between pole and the focus of the mirror.

ii) State the size and nature of the image

iii) A concave mirror of focal length 15 cm forms an image of a candle light kept at a distance of 10 cm from the mirror. Find the position of the candle.

<div align="center">OR</div>

D. Do as directed   **4**

i)Draw a neat diagram to show the formation of image in a convex lens when an object is placed beyond $2F_1$.

ii) State the size and nature of the image.

iii) A lighted candle is placed at 0.05 m from a convex lens of focal length 10 cm. Find the position of the image formed by the lighted candle.

_____

ANSWER KEY- Subjective paper

STD – X   Subject Code : S - 1031   Sub : Science

_____

Q1A i)Glucose ----- (½ mk)
     ii)Mushrooms, Yeast, bread Moulds----- (½ mk)

Q1B i) a) Henry Moseley-----½ mk
        b) Scandium------------½ mk

     ii)The phenomenon that involves progressive increase in concentration
        of harmful non-biodegradable chemicals at different trophic levels
        in a food chain is called biological magnification. ---- 1mk
Q1C. i) The valency of an element is determined by the number of valence
        electrons present in the outermost Shell of its atom.   --- (1 mk)
     ii) New Shells are being added as we go down a group. ----- (½ mk)
        This increases the distance between the outermost electrons
        and the nucleus ----------------------------------(½mk)
        So, The atomic size increases.

    iii)15 = 2,8,5 -------- (½ mk)   Period is 3 ------ (½ mk)

Q1D i) a)A- Pulmonary veins----- (½mk)   B- Left ventricles-----(½mk)
        b)Mammals have a double circulatory system. This means that during
          a single cycle, the blood goes twice in the heart. ----1 mk
        c)For removal of nitrogenous wastes, excess salts and some
          toxins. --1mk
    ii)Bile performs two functions: (½mk) + (½mk)
     Makes the acidic food coming from the stomach alkaline so that
      pancreatic enzymes can act on it.
     Bile salts break the fats present in the food into small globules making it
     easy for the enzymes to act and digest them.

Q2A. i) Refraction of light -------   (½mk)
     ii) dispersion of light -----------(½mk)

B. i) a) Khejri trees   -----------(½mk)
      b) Kulhs   ------------------(½mk)

   ii). To prevent loss of ecological stability   ---½mk
     - to obtain medicine, wood, fruits, etc.------ ½mk
     - to promote economic social growth

C. i. myopia ----------1mk
   ii. excessive curvature of the eye lens, elongation of eye ball. --1mk
   iii. diagram as on page No, 204 , 11.2 (c) ------1mk
                        OR

C. i. Hypermetropia or long sightedness -----------1mk
    ii. focal length of the eye lens is too long, the eye ball has become
       too small. ------1mk
   iii. diagram as on page no. 205 11.3(c) ------- 1mk

Q.2.D
   i) The unique ability to form bonds with other atoms of carbon, giving
      rise to large molecules. This property is called catenation. ------- 1mk

   ii)------1mk

Ethane	Ethyne
Single bond between Carbon atoms	Triple bond between Carbon atoms

   iii)Vegetable oils contain unsaturated fatty acids while animal fats contains
       saturated fatty acids which are harmful for health. ------- 1mk
   iv) It is an unsaturated hydrocarbon since it has a double bond between the
       Carbon atoms. ------- 1mk

Q3A.
   i)-OH ---- ½mk
   ii) alkyne ---- ½mk

Q3B. i) a)Refractive index --------- ½ mk
         b)Due to change of the speed of light as it enters from one medium
            to another. ------- ½ mk

   ii) a) Grass ----→ Deer -------→ Tiger ------- ½ mk
       b) Tiger is the secondary consumer ------- ½ mk

Q3C. i) (accept any 1 correct distinguishing point) ------ (1 mk)

Acquired traits	Inherited traits
i) Obtained from experiences gained during lifetime of an individual.	i) Obtained since birth of an individual.

ii) changes taking place in non - reproductive tissues	ii) changes taking place in non - reproductive tissues
iii) changes are not passed on to the next generation	iii) changes are passed on to the next generation

ii) It is because they have a common use for flying, but their origins are not common.

iii) a) Tall   ---½ mk
   b) 3:1   ---½ mk

Q3D. i) Fig 10. (f)   pg. 179
       -- Ray diagram showing object and image correctly ----(1 ½ mk)

       -- Arrows ------------ ½ mk
  ii) Enlarged + Virtual and erect   ----   (½ + ½)
  iii) Given: F = -20 cm,   u = -15 cm   v = _____?

$$\frac{1}{f} == \frac{1}{v} + \frac{1}{u}$$

$$\frac{1}{-20} = \frac{1}{v} + \frac{1}{-15} - - - - \frac{1}{2}mk$$

$$\frac{1}{v} = \frac{1}{-20} + \frac{1}{15}$$

$$\frac{1}{v} == \frac{-3+4}{60}$$

$$\frac{1}{v} = + \frac{1}{60}$$

$$v = 60cm - - - - \frac{1}{2}mk$$

The image is formed at a distance of 60 cm.
          OR
i) Fig 10.16 (b)   pg. 195
  -- Ray diagram showing object and image correctly ----(1 ½ mk)
  -- Arrows ------------ ½ mk
ii) Diminished   +   Real and inverted ,   ----   (½ + ½)
iii) Given: F = 10 cm,   u = -0.05 m = -5cm   v = _____?

$$\frac{1}{f} == \frac{1}{v} - \frac{1}{u}$$

$$\frac{1}{10} = \frac{1}{v} - \frac{1}{-5} ----\frac{1}{2}mk$$

$$\frac{1}{v} = \frac{1}{-20} + \frac{1}{15}$$

$$\frac{1}{v} == \frac{1-2}{10}$$

$$\frac{1}{v} = -\frac{1}{10}$$

$$v = -10cm ----\frac{1}{2}mk$$

(-ve sign shows that image is virtual ,being on the same side of the lens.)
The image is formed at a distance of 10 cm.

_____