CHAPTER 08 HEREDITY

SUBJECT: SCIENCE **MAX. MARKS : 40**

CLASS : X **DURATION : 1½ hrs**

General Instructions:

(i). **All** questions are compulsory.

(ii). This question paper contains 2**0** questions divided into five Sections A, B, C, D and E.

(iii). **Section A** comprises of **10 MCQs** of **1 mark** each. **Section B** comprises of 4 questions of **2 marks** each. **Section C** comprises of 3 questions of **3 marks** each. **Section D** comprises of 1 question of **5 marks** each and **Section E** comprises of 2 Case Study Based Questions of **4 marks** each.

(iv). There is no overall choice.

(v). Use of Calculators is not permitted

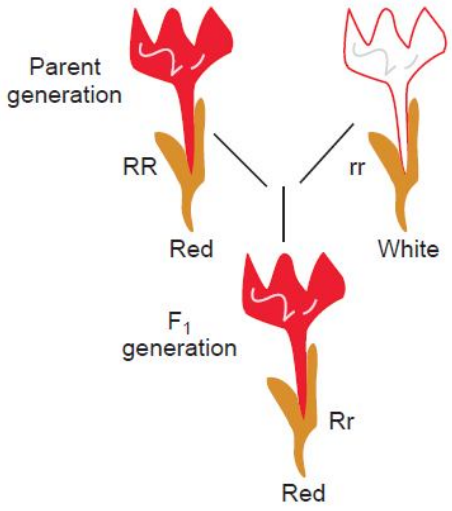
SECTION – A

Questions 1 to 10 carry 1 mark each.

1. In peas, a pure tall plant (TT) is crossed with a pure short plant (tt). The ratio of pure tall plants to pure short plants in F_2 generation will be:

(a) 1 : 3 (b) 3 : 1 (c) 1 : 1 (d) 2 : 1

2. The inheritance of colour trait in flower is shown below:



R and r denote two different genes for colour.

Which law of Mendel can be explained using the image?

(a) Only law of segregation

(b) Only Law of independent assortment

(c) Law of segregation and Law of dominance

(d) Law of segregation and Law of independent assortment

3. If a round, green-seeded pea plant (RRyy) is crossed with wrinkled, yellow–seeded pea plant (rrYY), the seeds produced in F_1 generation are:

(a) round and yellow (b) round and green

(c) wrinkled and green (d) wrinkled and yellow.

4. In human beings, the sex of the offspring in the zygote after fertilisation of the male and female gametes is determined by the sex chromosomes. A zygote which has an X chromosome inherited from the father will develop into a:

(a) boy (b) girl

(c) X chromosome does not determine the sex of a child (d) either boy or girl.

5. The statement that correctly describes the characteristic(s) of a gene is:
(a) In individuals of a given species, a specific gene is located on a particular chromosome.
(b) A gene is not the information source for making proteins in the cell.
(c) Each chromosome has only one gene located all along its length.
(d) All the inherited traits in human beings are not controlled by genes.

6. Consider the following statements:
(i) The sex of a child is determined by what it inherits from the mother.
(ii) The sex of a child is determined by what it inherits from the father.
(iii) The probability of having a male child is more than that of a female child.
(iv) The sex of a child is determined at the time of fertilisation when male and female gametes fuse to form a zygote.
The correct statements are:
(a) (i) and (iii) (b) (ii) and (iv) (c) (iii) and (iv) (d) (i), (iii) and (iv)

7. Which of the following cannot be an outcome of Mendel's experiment on crossing a tall pea plant with a short pea plant?
(a) 3 tall and 1 short plant (b) 4 tall plants and 1 medium height plant.
(c) 24 tall and 8 short plants (d) 9 tall and 3 short plants

8. A homozygous dominant guinea pig with black fur is crossed with a homozygous guinea pig with white fur. The F_1 generation is crossed with itself.
What percentage of F_2 generation is expected to show white fur coat?
(a) 25% (b) 50% (c) 75% (d) 100%

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.

9. **Assertion (A):** The sex of a child in human beings will be determined by the type of chromosome he/she inherits from the father.
Reason (R): A child who inherits the 'X' chromosome from his father would be a girl (XX), while a child who inherits a 'Y' chromosome from the father would be a boy (XY).

10. **Assertion (A):** Variations always provide a survival advantage to an organism.
Reason (R): Variations can be caused due to incorrect DNA copying.

SECTION – B

Questions 11 to 14 carry 2 marks each.

11. If a pure tall pea plant is crossed with a pure dwarf pea plant, then in F1 generation only tall plants appear. What happens to the traits of the dwarf plant?

12. In a pea plant, the trait of flowers bearing violet colour (PP) is dominant over white colour (pp). Explain the inheritance pattern of F_1 and F_2 generations with the help of a cross following the rules of inheritance of traits. State the visible characters of F_1 and F_2 progenies.

13. What is DNA? Where is DNA found in a cell?

14. In an asexually reproducing species, if a trait X exists in 5% of a population and trait Y exists in 70% of the same population, which of the two trait is likely to have arisen earlier? Give reason.

OR

Mustard was growing in two fields- A and B. While Field A produced brown coloured seeds, field B produced yellow coloured seeds.
It was observed that in field A, the offsprings showed only the parental trait for consecutive generations, whereas in field B, majority of the offsprings showed a variation in the progeny. What are the probable reasons for these ?

SECTION – C

Questions 15 to 17 carry 3 marks each.

15. In humans, there is a 50% probability of the birth of a boy and 50 % probability that a girl will be born. Justify the statement on the basis of the mechanism of sex-determination in human beings.

16. What are chromosomes? Explain how in sexually reproducing organisms the number of chromosomes in the progeny is maintained.

17. What is the probability of a girl or a boy being born in a family? Justify your answer.

OR

How is the sex of the child determined in human beings?

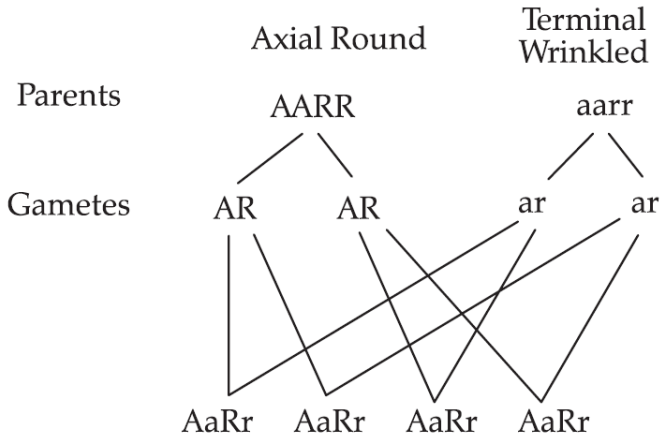
SECTION – D

Questions 18 carry 5 marks.

18. (a) Why did Mendel choose garden pea for his experiments? Write two reasons.
(b) List two contrasting visible characters of garden pea, Mendel used for his experiment.
(c) Explain in brief how Mendel interpreted his results to show that the traits may be dominant or recessive.

OR

Given below is a schematic diagram showing Mendel's experiment on sweet pea plants having axial flowers with round seeds (AARR) and terminal flowers with wrinkled seeds (aarr). Study the same and answer the questions that follows:



(i) Give the phenotype of F_1 progeny.
(ii) Give the phenotype of F_2 progeny produced upon by the self-pollination of F_1 progeny.
(iii) Give the phenotypic ratio of F_2 progeny.
(iv) Name and explain the law introduced by Mendel on the basis of the above observation.

SECTION – E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. Mendel worked out the rules of heredity by working on garden pea using a number of visible contrasting characters. He conducted several experiments by making a cross with one or two pairs of contrasting characters of pea plant. On the basis of his observations, he gave some interpretations which helped to study the mechanism of inheritance.

Read the above passage carefully and give the answer of the following questions:

(a) When Mendel crossed pea plants with pure tall and pure short characteristics to produce F_1 progeny, which two observations were made by him in F1 plants?

(b) Write one difference between dominant and recessive trait.

(c) (i) In a cross with two pairs of contrasting characters.

RRYY × rryy

(Round Yellow) (Wrinkled Green)

Mendel observed 4 types of combinations in F2 generation. By which method did he obtain F_2 generation? Write the ratio of the parental combinations obtained and what conclusions were drawn from this experiment.

OR

(ii) Justify the statement: ‘‘It is possible that a trait is inherited but may not be expressed.’’

20. Sahil performed an experiment to study the inheritance pattern of genes. He crossed tall pea plants (T T) with short pea plants (tt) and obtained all tall plants in F_1 generation.

Read the above passage carefully and give the answer of the following questions:

(a) What will be set of genes present in the F_1 generation?

(b) Give reason why only tall plants are observed in F1 progeny.

(c) When F_1 plants were self-pollinated, a total of 800 plants were produced. How many of these would be tall, medium height or short plant? Give the genotype of F_2 generation.

OR

When F_1 plants were cross-pollinated with plants having tt genes, a total of 800 plants were produced. How many of these would be tall, medium height or short plants? Give the genotype of F_2 generation.

DEVELOPMENT

SHORT ANSWER TYPE QUESTIONS [3 MARKS]

1. **What is meant by economic development? What are the two bases of measuring economic development of a country?**
   Answer:
2. **What may be the development for one may be the destruction for the other." Explain the statement with appropriate examples.**

3. **State the three factors other than human income, that are important in life.**
4. **Explain the importance of sustainable development with reference to groundwater by giving example.**

5. **"People have conflicting development goals". Support the statement with suitable example**
6. **Describe any three possible development goals of landless rural labourers.**
7. **Differentiate between Human Development Report and World Development**

8. **"Money cannot buy all the goods and services that one needs to live well" Do you agree with this statement? Justify your answer with any three suitable arguments.**
9. **Why does Kerala have a better Human Development Index ranking in comparison to Punjab? Explain with three reasons.**

10. **What is the main norm used by the World Bank in classifying different countries as rich and poor countries? What are the restrictions of such norms?**
11. **Besides income, what are the six other things people may look for growth and development?**

LONG ANSWER TYPE QUESTIONS [5 MARKS]

12. **"Though the level of income is important, it is an inadequate measure of the level of development." Justify the statement.**

13. **What is Human Development Index? Which organization measures the HDI? Explain the three major indicators of the HDI.**

14. **What is sustainable development? Suggest any two ways in which resources can be used judiciously.**

KENDRIYA VIDYALAYA GUNUPUR
Summer Break Holiday Homework
Class:-X
Session:-2025-2026

SECTION:-A (OBJECTIVE TYPE QUESTION)

1	The concept of media platforms. is used to apply face filters on various social (a) NLP (b) Computer Vision (c) Data Science (d) Block chain Technology	1 Mark
2	The 4 W's Problem Canvas helps in identifying the key elements related to the given problem. Which of the following is NOT one of the blocks of the Problem Canvas? (a) When (b) Where (c) What (d) Why	1 Mark
3	The most important software in any computer is the This is the software that starts working as soon as we switch on a computer. (a) Web Browsers (b) Operating System (c) Office Software (d) Designing Software	1 Mark
4	GUI stands for: (a) Graphical User Interaction (b) Graphical User Interface (c) Graphical Upper Interface (d) None of these	1 Mark
5	Email filters, spam filters, smart assistants are the examples of: (a) Pocket Assistants (b) CV (c) NLP (d) Evaluation	1 Mark
6	Deleted files and folders are stored in _____ (a) Recycle bin (b) My Computer (c) Control Panel (d) None of the above	1 Mark
7	What is the shortcut key to delete a file or folder in windows? (a) Del (b) Ctrl + D (c) Alt + D (d) Ctrl + Del	1 Mark
8	To copy a file/folder, right-click and select _____option from the Shortcut menu. (a) Copy (b) Duplicate (c) Move (d) Cut	1 Mark
9	What is the shortcut keys to Hyperlink? (a) Ctrl + X (b) Ctrl + K (c) Ctrl + Z	1 Mark

	(d) Ctrl + V	
10	**What is the shortcut keys for Indent position?** **(a) Ctrl + X** **(b) Ctrl + C** **(c) Ctrl + M** **(d) Ctrl + V**	**1 Mark**

SECTION:-B (VERY SHORT ANSWER TYPE QUESTION)

1	**Differentiate between Machine Learning (ML) and Deep Learning (DL).**	**2 Mark**
2	**Define Chatbot. What are its types ?**	**2 Mark**
3	**Face lock feature of a smartphone is an example of computer vision. Briefly discuss this feature.**	**2 Mark**
4	**How food is one of the major problems related to sustainable development ,Discuss briefly.**	**2 Mark**

SECTION:-C (SHORT ANSWER TYPE QUESTION)

1	**What is the significance of AI project cycle? Also explain in detail about how Data Acquisition is different from data exploration.**	**3 Mark**
2	**How has AI changed the gaming world?**	**3 Mark**
3	**Pick the odd one out and justify your answer:** **a. Snap Chat Filter b. Face Lock in Phone c. Chatbot d. Image search Option**	**3 Mark**
4	**Difference between Hardware and Software?**	**3 Mark**
5	**What are the different types of keys in Keyboard?**	**3 Mark**

SECTION:-D (LONG ANSWER TYPE QUESTION)

1	**Will it be valid to say that not all the devices which are termed as "smart" are AI-enabled? Justify this statement. Explain any two examples from the daily life which are commonly misunderstood as AI.**	**4 Mark**
2	**What is Intelligence? Explain in brief any three types of intelligence that are mainly perceived by human beings?**	**4 Mark**
3	**How to maintain a computer system? How to increase Computer performance?**	**4 Mark**
4	**What are the threats? How can we protect our data?**	**4 Mark**

❖PORTFOLIO:- ROLE OF AI DOMAINS IN CYBER SECURITY

KENDRIYA VIDYALAYA GUNUPUR

SUBJECT: ENGLISH

CLASS-X **SUMMER HOLIDAY HOMEWORK**

1. Reading Project

Read any ONE of the following books:

- *The Diary of a Young Girl* – Anne Frank
- *Night* – Elie Wiesel
- *To Kill a Mockingbird* – Harper Lee
- *Wings of Fire* – A.P.J. Abdul Kalam

Tasks:

- Write a **book review** (200–250 words) including:
  - Title, author, and genre
  - Main characters and central theme
  - Key learnings and your personal opinion
- Pick **10 new words** from the book:
  - Write their meanings
  - Use each in your own sentence

2. Writing Skills Practice

Complete the following writing tasks:

A. Formal Letter Writing (120–150 words)

- Write a letter to the Editor of a national daily expressing your concern about increasing pollution and suggesting measures.

B. Analytical Paragraph Writing (100–120 words)

- Based on the following data: *A bar graph showing the rise in cyberbullying cases among teenagers from 2020 to 2024.*

C. Story Writing (150–200 words)

- Begin your story with: *"The strange package arrived with no name, no return address, only a ticking sound inside..."*

3. Grammar Revision

Practice the following grammar topics (as per CBSE syllabus):

- **Reported Speech:** Rewrite 5 dialogues into indirect speech.
- **Subject–Verb Agreement:** Write 10 sentences showing correct usage.
- **Editing Task:** Choose a paragraph with errors and correct it.
- **Gap Filling (Cloze Test):** Create your own 5-sentence gap-fill with answers.

4.Speaking & Listening Skills (Optional but Recommended)

- **Listening Task:** Watch any short speech or TED Talk (5–10 mins) and write a **100-word reflection**:
  - What was the main idea?
  - What did you learn or find interesting?
- **Speaking Task:** Prepare and record a **1-minute speech** on one of the following topics:
  - *"My Dream for India"*
  - *"The Role of Youth in Nation Building"*
  - *"Books vs. Screens: What's Better for Learning?"*

5.Creative Expression

Choose any ONE:

- Design a **poster** on *"Say No to Plastic"* or *"Literacy for All"* using relevant slogans and visuals.
- Write an **original poem (10–12 lines)** on any theme: *Freedom, Change, Hope, or the Environment.*
- Create a **character diary entry** from any Class X textbook story (e.g., write a diary entry by the convict in *The Bishop's Candlesticks* or by Wanda in *The Hundred Dresses*).

Submission Guidelines

- All written work should be done in a **separate holiday homework notebook or file**.
- Art/poster/poetry activities to be done on **A4 or chart paper**.
- Ensure neat presentation, proper formatting, and correct grammar.
- Submit the complete homework on the **first day after the summer break**.

केंद्रीय विद्यालय गुनुपुर

ग्रीष्मकालीन अवकाश गृहकार्य

कक्षा - दसवीं

विषय-हिंदी

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1. सूरदास के प्रथम दो पदों की अपने शब्दों में व्याख्या कीजिए ।

2. संज्ञा,सर्वनाम, विशेषण, कारक, क्रिया, कर्म, लिंग, वचन का अध्ययन कर वर्णन कीजिए।

3. आपका मित्र दादाजी का देहांत होने के कारण शोक संतृप्त है, उसे सांत्वना देते हुए पत्र लिखिए |

4. आप सरस्वती विद्या मंदिर के विद्यार्थी राधा / मोहन है। आगामी बोर्ड परीक्षाओं की तैयारी हेतु अपने प्राचार्य महोदय को हिंदी विषय की अतिरिक्त कक्षाएं लगवाने हेतु प्रार्थना पत्र लिखिए।

5. ग्रीष्म अवकाश के दौरान आपके द्वारा सहपरिवार की गई किसी यात्रा का वृतांत लिखिए।

Note. यह गृहकार्य A4 साइज पेपर पर कीजिए ।

KENDRIYA VIDYALAYA GUNUPUR

SUBJECT: MATHEMATICS CLASS: X

SUMMER HOLIDAY HOME WORK SESSION: 2025-26

"Do the home work in your home work copy only"

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1) Prove that 2-√3 is an irrational number given that √3 is an irrational number. (2)
2) If LCM (p, q) =123, find HCM(p, q). (2)
3) Show that 8^n can not end with the digit zero fir any natural number n. (3)
4) Prove that 8√5 is an irrational number given that √5 is an irrational number. (2)
5) Give examples to show that the product of two irrational numbers is an irrational number and again it is a rational number. (2)
6) If α and $\frac{1}{\alpha}$ are the zeroes of the quadratic polynomial $2x^2 - x + 8k$ .Solve and find the value of k . (2)
7) If the sum of zeroes of the quadratic polynomial $3x^2 - kx + 6$ is 3, then find the value of k. (2)
8) Form a quadratic polynomial whose zeroes are 3 + √2 and 3 – √2. (2)
9) Find the quadratic polynomial whose zeroes are -2 and -5. Verify the relationship between zeroes and coefficients of the polynomial. (4)
10) Find the zeroes of $p(x) = 2x^2 - x - 6$ and verify the relationship between zeroes and co-efficients. (3)
11) The lines representing the given pair of linear equations are nonintersecting. Which of the following statements is true? (1)

(A) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (C) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} = \frac{c_1}{c_2}$

(B) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ (D) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

12) Find the value of C for which the pair of equations $Cx - y = 2$ and $6x - 2y = 3$ will have infinitely many solutions. (2)
13) Solve: 2x+3y=7 and 5x-9y=18 by substitution. (3)
14) Find the greatest number which divides 70 and 95 leaving remainders 5 and 4 respectively. (3)
15) If A and B are zeros of $p(x) = x^2 + 2x - 8$, then find a polynomial whose zeros are 4A and 4B. (3)
16) Solve: 7x-9y= 18 and 2x+5y=11 by elimination. (3)
17) If the HCF of 408 and 1032 is expressible in the form of 1032 × 2 + 408 × p, then find the value of p. (3)
18) Floor of a room is to be fitted with square marble tiles of the largest possible size. The size of the room is 10 m ×7 m. What should be the size of tiles that are required to cut and how many such tiles are required? (4)
19) If p and q are the zeroes of the polynomial $x^2 - x - 4$, then find the value of $\frac{p}{q} + \frac{q}{p}$. (3)
20) If a and b are the zeroes of the polynomial $x^2 - px + q$, prove that

$$\frac{a^2}{b^2} + \frac{b^2}{a^2} = \frac{p^4}{q^2} - \frac{4p^2}{q} + 2.$$ (4)

21) Solve: $\frac{x}{7} + \frac{y}{3} = 5$ and $\frac{x}{2} - \frac{y}{9} = 6$. (3)
22) Explain why $7 \times 17 \times 19 + 17$ and $5 \times 11 \times 7 \times 23 + 23$ are composite numbers. (4)
23) A circular field has a circumference of 360 km. Three cyclists start together and can cycle 48, 60 and 72 km a day, round the field. When will they meet again? (3)
24) The sum of the ages of father and his son is 65 years. After 5 years, the father's age will be twice the age of his son. Express this age as a pair of linear equations in two variables and hence find the present ages of the father and his son. (4)
25) A lending library has a fixed charge for the first three days and an additional charge for each day thereafter. Akash paid Rs 27 for a book kept for seven days, while Sumit paid Rs 21 for the book he kept for five days. Find the fixed charge and the charge for each extra day. (4)

KENDRIYA VIDYALAYA GUNUPUR

SESSION: 2025-26 SUMMER HOLIDAY HOMEWORK

CLASS – X SUBJECT - SANSKRIT

Complete CW/HW note book

निम्नलिखित बिन्दुओं कों संस्कृत गृहकार्य (HW) खाते में लिखीए और याद रखें ।

०. समय परिचय (सार्ध,सपाद,पादोन,उन,अधिक,) को संस्कृत में लिखीए।

१. पढ़े गए विषयों कें अभ्यास कार्य को करें ?

२. १ से १०० तक संख्या को संस्कृत अक्षर में लिखीए?

३. स्वरसन्धि: ,व्यञ्जनसन्धि: के) व्याकरण पुस्तक में स्थित अभ्यास कार्य करें ।

५. निम्नलिखित शब्दरूप को संस्कृत में लिखीए?

(बालक , बालिका , कवि, भानु, नदी, फल, किम् ,एतत् , सर्व तत्,अस्मद् ,युष्मद्)?

६. निम्नलिखित धातु रुप कों संस्कृत में लिखीए?

(पठ् , भू , गम् ,अस् ,कृ,ज्ञा,सेव्,)