CBSE CLASS X

Science (086)

QUESTION PAPER

AI-generated question paper

Code: NJ7KOV **Questions: 14** **Maximum Marks: 28** **Generated: 2026-06-25 17:33**

SELECTIONS USED

Subject	Science
Lessons	8 Heredity
Level of understanding	Initial understanding
Question selection	Curated chapter coverage (~3 questions per section)
Model	claude-sonnet-4-6

Composition — Difficulty: 4 straightforward · 9 medium · 1 deep | Types: 10 Short · 4 Very short

Q1. medium · initial-understanding · § Introduction **[2]**

Give one reason why offspring produced by sexual reproduction show more variation than those produced by asexual reproduction.

◆ **Heredity**

Q2. medium · initial-understanding · § 8.1 ACCUMULATION OF VARIATION DURING REPRODUCTION **[3]**

Which type of reproduction — asexual or sexual — produces greater variation among offspring, and why?

◆ **Heredity**

Q3. medium · initial-understanding · § 8.1 ACCUMULATION OF VARIATION DURING REPRODUCTION **[2]**

What determines which variations in a population are preserved over generations, and how does this process affect a species over time?

◆ **Heredity**

Q4. medium · initial-understanding · § 8.2 HEREDITY **[3]**

In Mendel's cross between tall and short pea plants, all F1 plants were tall, but short plants reappeared in the F2 generation. What does this reappearance tell us about the fate of the 'shortness' trait in the F1 generation? Name the terms used for the two traits involved.

◆ **Heredity**

Q5. straightforward · initial-understanding · § 8.2.1 Inherited Traits **[1]**

A child has the same type of earlobe (free or attached) as one of their parents. What is the term used for the passing of such traits from parents to their offspring?

◆ **Heredity**

Q6. straightforward · initial-understanding · § 8.2.2 Rules for the Inheritance of Traits – Mendel's Contributions **[1]**

When Mendel crossed tall and short pea plants, only tall plants appeared in the F1 generation. What does this observation tell us about how the two parental traits interact?

◆ **Heredity**

Q7. medium | initial-understanding | § 8.2.2 Rules for the Inheritance of Traits – Mendel's Contributions **[2]**

In Mendel's experiment, when F1 tall plants were self-pollinated, one quarter of the F2 offspring were short. What does the reappearance of the short trait in F2 prove about the F1 tall plants?

◆ **Heredity**

Q8. medium | initial-understanding | § 8.2.2 Rules for the Inheritance of Traits – Mendel's Contributions **[2]**

When Mendel's F1 tall round-seeded pea plants were self-pollinated, some F2 offspring showed combinations of traits not seen in either parent plant. What principle of inheritance does this demonstrate?

◆ **Heredity**

Q9. deep | initial-understanding | § 8.2.2 Rules for the Inheritance of Traits – Mendel's Contributions **[3]**

(a) Every sexually reproducing organism carries two copies of the gene for each trait. Why must each germ cell carry only one copy of each gene?
(b) A pea plant with genotype Tt is tall, even though it also carries the allele for shortness. How do you explain this?

◆ **Heredity**

Q10. straightforward | initial-understanding | § 8.2.3 How do these Traits get Expressed? **[1]**

What is a gene?

◆ **Heredity**

Q11. medium | initial-understanding | § 8.2.3 How do these Traits get Expressed? **[3]**

Using the example of plant height, explain how a gene controls a physical characteristic.

◆ **Heredity**

Q12. medium | initial-understanding | § 8.2.3 How do these Traits get Expressed? **[2]**

Why does each germ cell carry only one copy of each gene? What would happen if germ cells had the same number of gene copies as ordinary body cells?

◆ **Heredity**

Q13. straightforward | initial-understanding | § 8.2.4 Sex Determination **[1]**

How many pairs of chromosomes are present in a typical human cell? How many of these pairs are sex chromosomes?

◆ **Heredity**

Q14. medium | initial-understanding | § 8.2.4 Sex Determination **[2]**

A couple is expecting a baby. The mother contributes an X chromosome to the child. Explain how the father's contribution determines whether the child will be a boy or a girl.

◆ **Heredity**

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