

PENANG SANGAM HIGH SCHOOL
YEAR 11 BIOLOGY
SUPPLEMENTARY RESOURCES

Week 6

Read the notes on genetics to answer question 1-4)

1. The visible characteristics caused by an organism's gene are called
 - A. genotypes.
 - B. phenotypes.
 - C. homozygous traits.
 - D. heterozygous traits.

2. When homologues pair up during Meiosis I, some alleles may switch places. This is a case of
 - A. gene mutation.
 - B. random fertilisation.
 - C. gene recombination.
 - D. independent segregation.

3. The cross between two plants, pure red roses and pure white which produced all pink flowers is an example of
 - A. co-dominance.
 - B. complete dominance.
 - C. incomplete dominance
 - D. sex linked

4. Which of the following human blood groups shows the recessive phenotype?
 - A. 'A'
 - B. 'B'
 - C. 'AB'
 - D. O

Study the notes on 'sex-linked traits' and punnet square and answer questions 5 and 6 given below.

5. Amy who is a carrier of colour-blindness gene marries Sheldon who has normal vision. The genotypes of Amy and Sheldon are:

$\text{Amy} = \text{X}^{\text{N}}\text{X}^{\text{n}} \qquad \text{Sheldon} = \text{X}^{\text{N}}\text{Y} \qquad \text{where; N = normal vision and n = colour-blindness}$

- (i) Draw the punnet square in the to show the genotypes of the F1 generation that would be produced by Amy and Sheldon.

- (ii) Calculate the percentage of each male child being colour-blind.

- (iii) If Amy was completely colour-blind (X^nX^n), what would be the probable phenotypes of Amy and Sheldon's children? _____

6. When a red-haired bull (**RR**) is crossed with a white-haired cow (**rr**), the resulting calf is roan (maroon) in colour.

- (i) Write the genotype of the calf. _____

- (ii) State the type of inheritance demonstrated by the calf.

7. Genetics is the **study of inheritance of traits and allelic variation**. (Hint: read notes on the topic highlighted above)

- i) Define the term genes.

- ii) Explain one difference between dominant and recessive traits.

8. Genetic engineering is a widely used technique that involves direct manipulation of genes. **(Read the notes on genetic engineering and answer the questions given below)**

- i. Define genetic engineering.

- ii. State one advantage and one disadvantage of genetic engineering using examples.
