

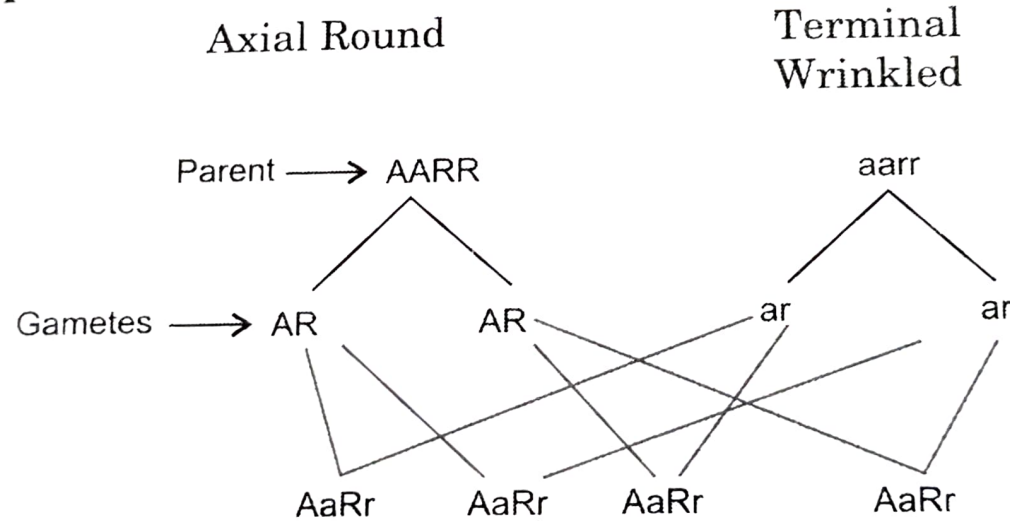
**PRACTICE QUESTIONS
FOR
SELF EVALUATION
FROM
CHAPTER - I & II**

A homozygous tall plant (T) bearing red coloured (R) flowers is crossed with a homozygous dwarf (t) plant bearing white (r) flowers:

- (i) Give the genotype and phenotype of the plants of F_1 generation.**
- (ii) Mention the possible combinations of the gametes that can be obtained from the F_1 hybrid plant.**
- (iii) State the Mendel's law of Independent Assortment.**
- (iv) Mention the phenotypes of the offsprings obtained in F_2 generation.**
- (v) What is the phenotypic ratio obtained in F_2 generation?**

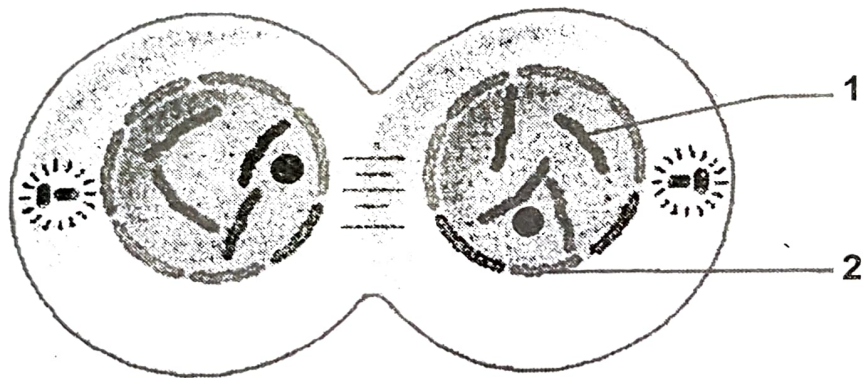
[2016]

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 follow:



- (i) Give the phenotype of F_1 progeny.
- (ii) Give the phenotypes 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 induced by Mendel on the basis of the above observation.

1. Study the diagram given below which represents a stage during the mitotic cell division and answer the questions that follow: [2017]



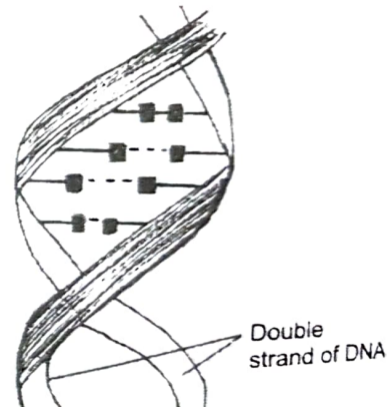
- (i) Identify the stage giving suitable reasons.
- (ii) Name the parts numbered 1 and 2.
- (iii) What is the technical term for the division of nucleus?
- (iv) Mention the stage that comes before the stage shown in the diagram. Draw a neat labelled diagram of the stage mentioned.
- (v) Which is the cell division that results in half the number of chromosomes in daughter cells?

(i) Telophase

There is a diagram of a double helical structure of DNA:

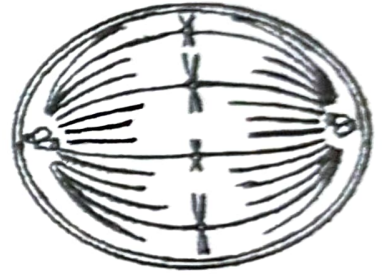
[2010]

- (i) Name the four nitrogenous bases that form a DNA molecule.**
- (ii) Give the full form of DNA.**
- (iii) Name the unit of heredity.**
- (iv) Mention two points of difference between Mitosis and Meiosis.**



...ine, thymine and cytosine.

The diagram given alongside represents a stage during cell division. Study the same and answer the questions that follow:



- (i) Identify whether it is a plant cell or an animal cell.
Give a reason in support of your answer.*
- (ii) Name the stage depicted in the diagram. What is the unique feature observed in this stage?*
- (iii) Name the type of cell division that occurs during:
(1) Replacement of old leaves by new ones.
(2) Formation of gametes.*
- (iv) What is the stage that comes before the stage shown in the diagram?*
- (v) Draw a neat, labelled diagram of the stage mentioned in (iv) above keeping the chromosome number constant.*

Level 1

1. Name the following:

- (i) The process of exchange of genetic materials between non-sister chromatids.
- (ii) Division of cytoplasm.
- (iii) The stage of mitosis where chromosomes are seen upon the equator.
- (iv) The stage of mitosis where chromatin materials condense to form chromosomes.
- (v) The type of cell division in which two divisions occur.

2. Choose the correct alternative and complete the following:

- (i) _____ is the cell division in which sperms are formed.
(a) Mitosis (b) Meiosis
- (ii) Meiosis is called _____ division.
(a) equational (b) reduction
- (iii) _____ is the stage of mitosis in which nuclear membrane reappears.
(a) Metaphase (b) Telophase
- (iv) _____ cell division is a means of reproduction in unicellular organisms.
(a) Mitosis (b) Meiosis
- (v) During cytokinesis, _____ is formed in a plant cell to separate the two daughter nuclei.
(a) cell plate (b) constriction

3. State whether the following statements are *True* or *False*:

- (i) During interphase cell decreases in size.
- (ii) Karyokinesis is nuclear division.
- (iii) The number of chromosomes in human sperm is 23 pairs.
- (iv) Crossing over occurs in mitosis.
- (v) During anaphase of mitosis, homologous chromosomes separate.

Level 2

4. Match the columns:

- | A | B |
|------------------------------------|--------------------------|
| (i) Hereditary unit | (a) Mitosis |
| (ii) Initiates cell division | (b) DNA |
| (iii) Chromosome number is reduced | (c) Centrosome |
| (iv) Identical daughter cells | (d) Centromere |
| (v) Gametogenesis | (e) Meiosis |
| | (f) Formation of gametes |

5. Give Reasons:

- (i) Mitosis is called as equational division.
- (ii) Cell division is a must for all living organisms.

6. State the difference between:

- (i) Autosome and sex chromosome
- (ii) Chromatin and chromatid
- (iii) Gene and DNA.

Level 3

7. (i) In how many phases is the cell cycle divided into?
(ii) What are the phases of interphase? Explain briefly.

8. Define:

- (i) Interkinesis
- (ii) Generation time

9. Why is there a difference in the rate of cell division in children and adults?

Level 1

1. Fill in the blanks:

- (i) The plant Mendel used for his experiments is _____.
- (ii) _____ is the dihybrid ratio.

2. State whether the following are *True* or *False*:

- (i) DNA are the segments of genes.
- (ii) Night blindness is a genetic disease.
- (iii) Homozygous alleles are identical.

3. Match the following:

A

- (i) Dominant gene
- (ii) Genetics
- (iii) Sex chromosomes
- (iv) Mutation
- (v) Homologous chromosomes

B

- (a) Similar chromosomes of the same shape and size.
- (b) Sudden change in a gene.
- (c) The expressed gene of an allele.
- (d) The study of inheritance of characters.
- (e) Determine the sex of a child.

Level 2

4. Distinguish between:

- (i) Dominant allele and recessive allele.
- (ii) Monohybrid and dihybrid cross.

5. (i) The smallest number of chromosome among the following:

- (a) Housefly
- (b) Mouse
- (c) Frog
- (d) Ant

(ii) Name two animals that have nineteen pairs of chromosome.