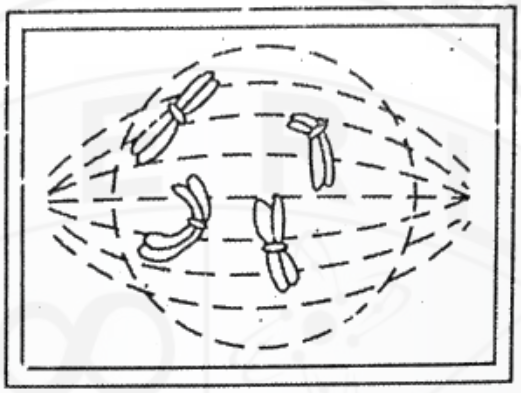
REVISION PRACTICE PAPER

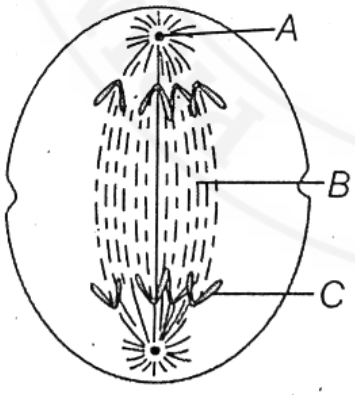
CELL CYCLE, CELL DIVISION AND STRUCTURE OF CHROMOSOME

1. Choose the odd one out from the given term and name the category to which the others belong.
   Example: Nose, tongue, arm, eye
   Answer Odd term-Arm, Category- Sense organs
   Centrosome, cell wall, cell membrane, large vacuoles
2. Synthesis phase in the cell cycle is called so, because of the synthesis of more
   a. RNA
   b. RNA and proteins
   c. DNA
   d. Glucose
3. Given below are groups of terms. In each group the first pair indicates the relationship between the two terms. Rewrite and complete the second pair on a similar basis.
   Example: Oxygen : Inspiration : : Carbon dioxide : Expiration
   Cytoplasm : Cytokinesis : : Nucleus : ……..
4. Name the exchange of chromatid parts between the maternal and the paternal chromatids of a pair of homologous chromosomes during meiosis.
5. Chromosomes get aligned at the center of the cell during:
   a. Metaphase
   b. Anaphase
   c. Prophase
   d. Telophase
6. Given below is the group of five terms, arrange and rewrite the terms in the correct order, so as to be in a logical sequence
   Metaphase, telophase, prophase, anaphase , cytokinesis.
7. Briefly explain the term cytokinesis in plant cells.
8. Given below ate the sets of five terms, rewrite the terms in a logical sequence as directed at the end of the statement .
   Karyo kinesis, S-phase, Cytokinesis, G_1 –phase, G_2 – phase (cell cycle).
9. Name the type of cell division which occurs in the cells of reproductive organs.
10. State whether the following statement is true or false. If false, rewrite the correct form of the statement by changing the first and last word only. Mitosis is the type of cell division occurring in the cells of injured parts of the body.
11. State whether the following statement is true or false. If false, write the correct form of the statement by changing the first or last word only. The resting stage of mitosis is called interphase.
12. Give the specific function of the centrosome found in the body of animals.
13. Name a membrane that disappears during late prophase.
14. Give one point of difference between the following on the basis of what is given in the bracket?
    Karyokinesis and cytokinesis (explain the term)

15. Name the organelle which initiates the cell division in animal cell.
16. State whether the following statement is true of false, correct and rewrite the false statement by changing either the first or the last word. Cytokinesis is a division of cytoplasm.
17. Given alongside is a diagram representing a stage during mitotic cell division? Study it carefully and answer the questions that follow.
    a. Is it a plant cell or an animal cell? Give a reason to support your answer.
    b. Identify the stage shown,
    c. Name the stage that follows the one shown here. How is that stage identified?
    d. How will you differentiate between mitosis and meiosis on the basis of the chromosome number in the daughter cells?



18. The diagram represents a stage during cell division. Study the same and then answer the questions that follow
    a. Name the parts labeled A, B and C.
    b. Identify the above stage and give a reason to support your answer.
    c. Mention where in the body this type of cell division occurs.
    d. Name the stage prior to this stage and draw a diagram to represent the same.



19. Correct the statement by changing the underlined word. Nitrogen bonds are present between the complementary nitrogenous bases of DNA.
20. Give appropriate biological or technical term for 'The complex consisting of a DNA strand and a core of histones.'

21. Given below are groups of terms. In each group the first pair indicates the relationship between the two terms. Rewrite and complete the second pair on a similar basis.
    Example: Oxygen : Inspiration:: Carbon dioxide : Expiration
    Adenine : Thymine : : Cytosine :
22. Give appropriate biological/technical terms for -
    'A pair of corresponding chromosomes of the same size and shape, one from each parent'.
23. In each set of terms given below, there is an odd one and cannot be grouped in the same category to which the other three belong. Identify the odd term in each set and name the category to which the remaining three belong.
24. **Example** Ovary, Fallopian tube, Ureter, Uterus
    Answer Odd term-Ureter.
    Category-Part of female reproductive system
    Thymine, Cytosine, Adenine, Pepsin
25. State the exact location of centromere.
26. Give the biological/technical term for
    'The repeating components of each DNA strand lengthwise.'
    Or
27. Give technical terms for the repeated units of DNA molecule.
28. Expand the biological abbreviation of DNA.
29. Give example of a nitrogenous base in DNA.
30. The cell component visible only during cell division
    Mitochondria (b) Chloroplast (c) Chromosome (d) Chromatin
31. Write the names of four nitrogenous bases in a DNA molecule.

GENETICS

1. Differentiate between the pair on the basis of what is mentioned within bracket Human skin cell and human ovum (Number of chromosomes)
2. Give the biological/technical term for
   'An alteration in the genetic material that can be inherited.'
   Or
   Give the technical term for the sudden heritable change in the gene.
3. Give scientific reasons of colour blindness is more common in men than in women.
4. Name the cross between two parents having one pair of contrasting characters.
5. Rewrite and complete the sentence by inserting the correct word in the space indicated…… is the scientific name of garden pea, which Mendel used for his experiments.
6. State Mendel's law of dominance. :
7. Name the type of gene, which in the presence of a contrasting allele is not expressed
8. Explain the term monohybrid cross.
9. State Mendel's law of segregation.
10. After mitotic cell division, a female human cell will have
    a. 44 + XX-chromosome
    b. 44 + XY-chromosome
    c. 22 + X-chromosome
    d. 22 + Y-chromosome
11. Name the physical expression of genes in an individual.
12. The recessive gene is one that expresses itself in
    a. heterozygous condition
    b. homozygous condition
    c. F2-generation
    d. Y-linked inheritance
13. Briefly explain the term gene.
14. Briefly explain the term allele.
15. Given below is set with four terms. In the set, a term is an odd one that cannot be grouped in the same category to which the other three belong. Identify the odd one in the set and name the category to which the remaining three belong.
    Haemophilia, colour blindness, albinism, night blindness.
16. Rewrite and complete the following sentence by inserting the correct word in the space indicated
    Phenotype is the observable characteristic which is ……..controlled.
17. Write down the difference between the following pair as indicated within the bracket Monohybrid and dihybrid cross (phenotypic ratio).
18. State whether the following statement is true or false. If false, rewrite the correct form of statement by changing the first or last word only.
    Chromosomes other than the pair of sex-chromosome are called alleles.
19. Give one point of difference between the following on the basis of what is given in the bracket?
    Genotype and phenotype (definition).
20. Identify and name the term from the statement given below
    A pair of chromosomes carrying dissimilar alleles for a particular character.
21. Name the two sex-linked diseases in males.
22. In a homozygous pea plant, axial flowers (A) are dominant over terminal flowers(a).

a. What us tge ogebitype and genotype of the F_1 –generation if a plant bearing pure axizl flowers is crossed with a plant bearing pure terminal flowers?
b. Draw a punnett square board to show the gametes and offsprings when both the parent plants are heterozygous for axial flowers.
c. What is the phenotypic ratio and genotypic ratio of the above cross shown in (ii)?
d. State Mendel's law of dominance.
e. Name two genetic disorders commonly seen in human males.

23. A homozygous plant having round (R) and yellow (Y) seed is crossed with homozygous plant having wrinkled (r) and green (y) seeds.
a. Give the scientific name of the plant on which Mendel conducted his hybridization experiments.
b. Give the genotype of the F_1 -generation.
c. Give the dihybrid phenotypic ratio and the phenotype of the offspring of the F_2-generation when two plants of the F_1 -generation are crossed.
d. Name and state the law which explains the dihybrid ratio.
e. Give the possible combinations of gametes that can be obtained from F_1-hybrid.

ABSORPTION BY ROOTS

1. Differentiate between the given pair on the basis of what is mentioned in bracket.
Active transport and diffusion [Significance in plants]
2. A plant cell may burst when
(a) turgor pressure equalises wall pressure
(b) turgor pressure exceeds wall pressure
(c) wall pressure exceeds turgor pressure
(d) None of the above
3. Give the biological/technical term for
'The process of uptake of mineral ions against the concentration gradient using energy from the cell.'

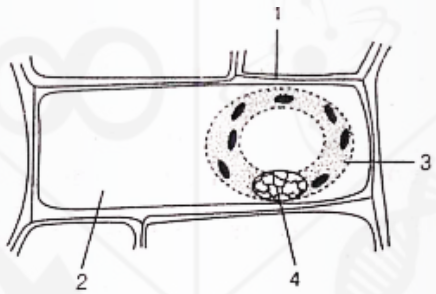
Or

Name the process of uptake of mineral ions against the concentration gradient using energy from cell.
4. Differentiate between the given pair on the basis of what is mentioned within brackets.
'Diffusion and osmosis (Definition)
5. Explain the term turgor pressure.
6. Differentiate between the following pair on the basis of what is mentioned within bracket.
Turgor pressure and wall pressure (Explain).
7. Give biological reason why wooden frames of doors get jammed during the monsoon season.
8. Name the phenomenon by which living or dead plant cells absorb water by surface attraction.
9. Give the biological term for a membrane which allows the passage of molecules selectively.
Briefly explain the term osmosis.
10. Give reason why potato cubes when placed in water become firm and increase in size.
Explain the term turgidity.

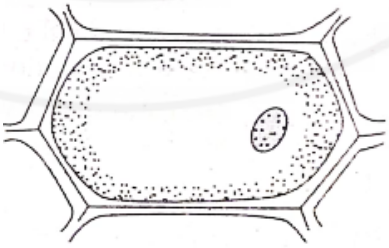
11. Explain the term diffusion.
12. Rewrite the completed explanation by inserting the key word in the space indicated by 'Λ'.
    Osmosis is the movement of water molecules from a region of their higher concentration to a region of their lower concentration through a 'Λ' membrane.
13. Give the biological term of the process of mixing of two different substances/molecules.
14. Name a solution whose concentration is greater than that of cell sap.

Diagram Based Questions

15. The diagram given below represents a plant cell after being placed in a strong sugar solution. Study the diagram and answer the question that follows
    i. What is the state of the cell shown in the diagram?
    ii. Name the structure that acts as a selectively permeable membrane.
    iii. Label the parts numbered 1 to 4 in the diagram.
    iv. How can the above cell be brought back to its original condition? Mention the scientific term for the recovery of the cell.
    v. State any two features of the above plant cell which is not present in animal cells.



16. The figure given alongside shows the epidermal cells of an onion bulb. This cell was then transferred to a drop of sugar solution.
    i. Draw a well-labeled diagram of the epidermal cell as it would appear after immersion in a strong sugar solution.
    ii. What scientific term is used for the changes as shown in (i) above?
    iii. What should be done to restore the cell back to its original condition?
    iv. Give the scientific term for the recovery of the cell as a result of the step taken in (iii) above.
    v. Define the term osmosis.



17. Given alongside is the diagram of a cell as seen under the microscope after been placed in a solution.
    i. What is the technical term used for the slate/condition of the cell given?

ii. Give the technical term for the solution in which the cell was placed.
iii. Name the parts numbered A to D.
iv. Is the cell given plant cell or an animal cell? Give two reasons in support of your answer as evident from the diagram.
v. What would you do to bring this cell back to its original condition?