VISION INTERNATIONAL SCHOOL
ICSE 1ST TERM EXAMINATION (2021-22)
BIOLOGY
SCIENCE Paper – 3

Maximum Marks: 40
Time allowed: One hour (inclusive of reading time)
ALL QUESTIONS ARE COMPULSORY
The marks intended for questions are given in brackets [ ].

Select the correct option for each of the following questions.

Instructions :

1. Answer script must bear the **Name of the Student, Class, Section and subject of Examination** at the **top of the first Page**.
2. All the pages should be numbered properly (clearly visible) and PDF file should be created in the order of the page number.
3. The answer script should be converted and uploaded as a single PDF file only, using any PDF converter.
4. Delay in submission of answer script may lead to cancellation of the paper for that student.

SECTION - I (15 Marks)

Question 1

Choose the correct answer from each of the options given below :- (5)

(a) An organism with two unlike genes for a trait is called
   1. Homozygous
   2. Heterozygous
   3. Dominant variety
   4. Recessive variety

(b) Gametes contain
   1. Diploid set of chromosomes
   2. Sex chromosomes
   3. Haploid set of chromosomes
   4. Autosomes only

(c) Root pressure is maximum when
   1. Transpiration is high, absorption is low
   2. Transpiration is low, absorption is high
   3. Both are very high
   4. Both are very low

(d) A plant with sunken stomata is
   1. Nerium
   2. Nasturium
   3. Coleus
   4. Cactus

(e) The number of water molecules required to produce one molecule of glucose in photosynthesis is

1. six
2. twenty four
3. eighteen
4. twelve

Question 2

Name the following by choosing the correct option:- (5)

(a) A complete formed by histone octomer and DNA strands.

1. Nucleotide
2. Nucleosome
3. Nucleoside
4. Nucleolus

(b) One of the internal factors that affect the rate of stomatal transpiration is –

1. Humidity in air
2. Wind velocity
3. Thick cuticle
4. Turgidity of guard cell

(c) The process by which a cell placed in a hypotonic solution absorbs water.

1. Endosmosis
2. Exosmosis
3. Plasmolysis
4. Deplasmolysis

(d) The principal cells in a leaf that traps solar energy.

1. Spongy cells
2. Epidermal cells
3. Palisade cells
4. Guard cells

(e) The phase of the cell cycle during which chromosomes are duplicated

1. G1 phase
2. S phase
3. G2 phase
4. Karyokinesis

Question 3

Complete the following statements by choosing the appropriate option for each blank. (5)

(a) In flowering plants, meiosis occurs in _____

1. ovary
2. ovules
3. stigma
4. bud

(b) In an experiment to demonstrate osmosis a cellophane paper can be replaced by a _____.

1. rubber sheet
2. muslin cloth

3. visking bag
4. none of the above

(c) The process in photosynthesis, that releases oxygen is _____
1. Photophophorylation
2. Polymerisation
3. Chlorophyll activation
4. Photolysis

(d) During prophase spindle fibres appear between daughter _____
1. centrioles
2. centrosomes
3. centromeres
4. chromatids

(e) Transpiration helps in the ascent of sap by producing a _____
1. cohesive force
2. adhesive force
3. concentration gradient
4. suction force

SECTION II (15 MARKS)

Question 4

State the function of the following (4)

(a) Thylakoid
1. Site of photolysis of photosynthesis
2. Site of light independent phase of photosynthesis
3. Site of biosynthetic phase of photosynthesis
4. Site of dark reactions of photosynthesis

(b) Root pressure
1. Helps to increase the rate of passive transport within the root cells.
2. Helps to drive fluids upward into the water conducting vessels.
3. Helps to drive fluids downward into the water conducting vessels
4. Helps to increase the transpiration pull.

(c) DNA
1. Site for various chemical reaction
2. Control all the activities of cell
3. The carriers of heredity
4. Site of protein production

(d) Semi permeable membrane
1. Allows some selective substance to pass through it depending on their size
2. Allows some solute to pass through it.
3. Allows all substances to flow freely across the membrane
4. It ensures the survival of the cell.

Question 5

Explain why (3)

(a) In most experiments on photosynthesis, a destarched plant is used.

1. Because we need to kill the plant by destarching it.
2. Because the rate of experiment will increase faster.
3. Because the amount of starch formed during the experiment should be validated.
4. Because presence of starch will stop the procedure of the experiment.

(b) A young boy thought of painting his body with chlorophyll extracted from certain leaves and sitting in open sunlight . He drank enough water but the need of that boy"s carbohydrate requirement did not fulfil.

1. Because we are unable to absorb carbon dioxide from the atmosphere to form glucose
2. Chlorophyll pigment will work only when it is in the thylakoid of grana
3. Water is absorbed directly in the blood of our body. It is not reacting with the chlorophyll.
4. Carbon dioxide , chlorophyll and water will unable to co ordinate with each otherin an animal cell because chloroplasts are absent in our body.

(c) Some plant show wilting of their leaves during mid day even when the soil is well watered.

1. Because of excessive transpiration.
2. Due to hot weather, excessive transpiration causes wilting of plant
3. Because of excessive temperature
4. Because of excessive ascent of sap

Question 6

State the exact location of the following (3)

(a) Centrioles of prophase

1. At the centre of the cell
2. Between chromatid and centromere
3. Two opposite poles of the cell
4. Between two chromosomes

(b) Guard cells

1. More on the upper surface of dorsi ventral leaves
2. More on the lower surface of the dorsi ventral leaves
3. Both upper and lower surface of the dorsi ventral leaves
4. Only on the lower surface of the dorsi ventral leaves

(c) Grana

1. Within the stroma of the chloroplast
2. Within the wall of a chloroplast
3. Within a thylakoid on the stroma
4. Within a chloroplast on the stroma

Question 7

Explain the following terms :- (5)

(a) Plasmolysis

1. Shrinkage of the cell wall of a cell from its cell content when placed in a hypotonic solution
2. Shrinkage of the cytoplasm of a cell from its cell wall when placed in a hypotonic solution
3. Shrinkage of the cell content of a cell from its cell wall when placed in a hypertonic solution
4. Shrinkage of the cell wall of a cell from its cytoplasm when placed in a hypertonic solution.

(b) Calvin cycle

1. A process that plants and algae use to turn carbon dioxide into sugar simultaneously with photolysis within stroma.
2. A process that plants and algae use to turn carbon dioxide into sugar simultaneously with light reaction within grana.
3. A process that plants and algae use to turn carbon dioxide into sugar simultaneously with dark reaction within stroma.
4. A process that plants and algae use to turn carbon dioxide into sugar simultaneously with light reaction within stroma.

(c) Law of independent assortment

1. Each gamete receives one allele from each allelic pair and the assortment of alleles of different characteristics during gamete formation is independent of their parental combinations.
2. Each gene receives one allele from each gamete and the assortment of alleles of different characteristics during gamete formation is independent of their parental combinations.
3. When a pair of allele is brought together in a hybrid, the members of the allelic pair remain together without mixing and separate or segregate from each other independently when the hybrid forms gametes.
4. When a pair of allele is brought together in a pure variety, the members of the allelic pair remain together without mixing and separate or segregate from each other independently when the hybrid forms gametes.

(d) Crossing over

1. The nonsister chromatids of a tetrad break open and rejoin each other.
2. Exchange of some genes or portions of chromatids takes place between parental and maternal chromatids of a pair of homologous chromosomes
3. The swapping of genetic material that occurs in the germ line.
4. All of these

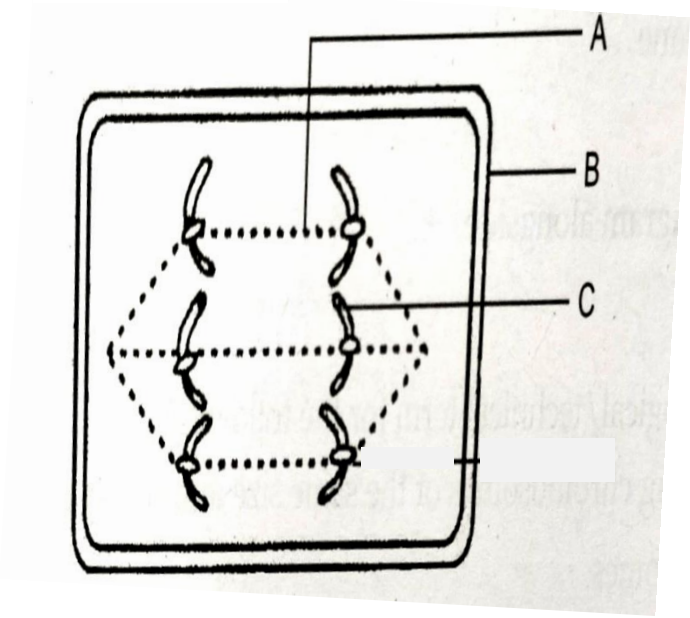
(e) Passive transport

1. Passage of ions from its higher to lower concentration with a cell membrane without any expenditure of energy.
2. Passage of liquid and gas from its higher to lower concentration with or without a cell membrane without any expenditure of energy.
3. Passage of liquid and gas from its lower to higher concentration with a cell membrane without any expenditure of energy.
4. Passage of ions from its lower to higher concentrations through a cell membrane using energy from the cell.

SECTION - III (10 Marks)

Question 8

Given below is the schematic diagram of a certain stage of mitotic type of cell division (5)



(a) Identify the stage

1. Early telophase
2. Early anaphase
3. Late anaphase
4. Late metaphase

(b) Label the parts marked A, B and C

A 1. Spindle fibre 2. Aster ray 3. Spindle ray 4. Aster fibre

B. 1. Cell membrane 2. Semipermeable membrane 3. Cell wall 4. Outer wall

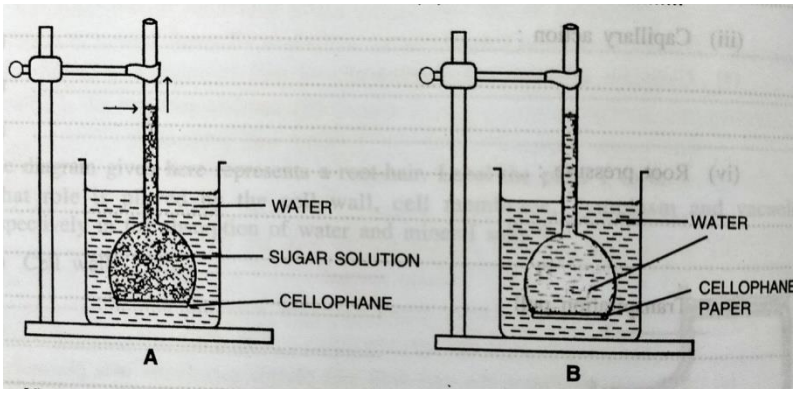
C. 1. Chromosome 2. Chromatids 3. Chromatin 4. All of these

D. Which of the following part of a cell initiates cell division

1. Chromosome
2. Chromatin
3. Centrosome
4. DNA

Question 9

In an experiment two sets of apparatus A and B were set , As shown in the figure below. In A there is a concentrated sugar solution inside the thistle funnel and water outside the funnel, as labeled. In B there is plain water both inside the thistle funnel as well as out side it as labeled . The experiment was kept for about two hours. (5)



(a) What is the purpose of setting up the second set up B.

1. To compare in order to verify the conclusion of an experiment.
2. To practice the experiment once more.
3. To compare in order to verify the procedure of an experiment.
4. To use the extra apparatus of biology laboratory.

(b) What is the cellophone paper supposed to represent ?

1. Freely permeable membrane
2. Permeable membrane
3. Selectively permeable membrane
4. All of these

(c) What will be the taste of water in the beaker A after about six hours?

1. No taste will be found
2. Sweet
3. Salty
4. Slightly sweet

(d) What will happen to the level of fluids in A and B?

1. In A water will increase, in B water level will decrease
2. In A water level will decrease, in B water will increase
3. In A water level of beaker will decrease, in B no change of water level will be observed.
4. In A no change will occur, in B water level will increase

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