HOLY ANGELS SCHOOL (KATWA)

ICSE CLASS X - SEMESTER I EXAMINATION, 2021 - 2022

MOCK TEST

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.

SECTION - I (15 Marks)

Question 1

Name the following by choosing the correct option: **[5]**

(a) The reaction in which water molecules are broken down in presence of light.

1. Phosphorylation 2. Photolysis 3. Photophosphorylation 4. Polymerisation

(b) Spindle fibres disappear in this phase.

1. Telophase 2. Prophase 3. Metaphase 4. Anaphase

(c) Drooping of leaves in *Mimosa pudica* is an example of this.

1. Turgor pressure 2. Turgor movement 3. Wall pressure 4. Flaccid movement

(d) A condition in which similar alleles are present for a particular character.

1. Homologous 2. Homogenous 3. Homozygous 4. Homogamic

(e) Unit of heredity.

1. Gene 2. Chromosome 3. DNA 4. Nucleosome

Question 2

Complete the following statements by choosing the appropriate option for each blank: **[5]**

(a) The substance from which oxygen is evolved during photosynthesis is _____.

1. Carbon dioxide 2. Glucose 3. Water 4. Both 1. and 3.

(b) The number of pairs of sex chromosomes in the zygote of a human being is _____.

1. 2 2. 3 3. 1 4. 4

(c) _____ is responsible for rupturing coats of germinating seeds.

1. Osmosis 2. Diffusion 3. Assimilation 4. Imbibition

(d) Cutting a ring to remove only cambium and phloem is known as _____.

1. Bleeding 2. Girdling 3. Layering 4. Grafting

(e) Chlorophyll reflects _____ light.

1. Blue 2. Red 3. Green 4. Yellow

Question 3

Choose the correct answer from each of the four options given below : **[5]**

(a) Which of the following pairs is incorrect?

1. A – T 2. U – A 3. G – T 4. G – C

(b) How many chromosomes will the cell have at G1, after S and after M (Mitotic) Phase respectively, if it has 14 chromosomes in interphase?

1. 14, 14, 7 2. 14, 14, 14 3. 7, 7, 7 4. 7, 14, 14

(c) Mutation occurs due to sudden change in the

1. Structure of gene
2. Structure of chromosomes
3. Number of chromosomes
4. All of the given options

(d) When a sugar cube is kept in a beaker containing water, it slowly dissolves and spreads in the liquid. Which of the following processes is taking place?

1. Melting
2. Osmosis
3. Diffusion
4. Plasmolysis

(e) Which of the following shows the correct sequence of the terms?

1. Upper epidermis, spongy mesophyll, cuticle, lower epidermis, palisade mesophyll
2. Cuticle, upper epidermis, palisade mesophyll, spongy mesophyll, lower epidermis
3. Upper epidermis, palisade mesophyll, cuticle, spongy mesophyll, lower epidermis
4. Cuticle, upper epidermis, spongy mesophyll, palisade mesophyll, lower epidermis

SECTION - II (15 Marks)

Question 4

Explain the following terms : **[5]**

(a) Nucleosome

1. Complex of pentose sugar and nitrogenous base.
2. Complex of pentose sugar, nitrogenous base and phosphate group.
3. Complex of deoxyribonucleic acid and histone octamer.
4. Complex of chromatin, deoxyribonucleic acid and histone octamer.

(b) Crossing over

1. Exchange of genetic material between sister chromatids of homozygous chromosomes.
2. Exchange of genetic material between non-sister chromatids of homologous chromosomes.
3. Exchange of genetic material between sister chromatids of homologous chromosomes.
4. Exchange of genetic material between non-sister chromatids of homozygous chromosomes.

(c) Trait

1. The alternative forms of a character.
2. The alternative forms of a gene.
3. The alternative forms of a chromosome.
4. The alternative forms of a population.

(d) Tonicity

1. Relative concentration of the solvents that determine the direction and extent of diffusion.
2. Relative concentration of the solutions that determine the direction and extent of diffusion.
3. Relative concentration of the solutions that determine the direction and extent of imbibition.
4. Relative concentration of the solvents that determine the direction and extent of imbibition.

(e) Destarching

1. Removing starch from the whole plant by keeping in shade for 24 – 48 hours.
2. Removing starch from the whole plant by keeping in darkness for 24-48 hours.
3. Removing starch from the leaves of the plant by keeping in darkness for 24-48 hours.
4. Removing starch from the leaves of the plant by keeping in shade for 24 – 48 hours.

Question 5

State the exact location of the following : **[5]**

(a) Chromosome

1. Seen near the nucleus of dividing cells.
2. Seen near the nucleus of dividing cells and non-dividing cells.
3. Seen in the nucleus of dividing cells and non-dividing cells.
4. Seen in the nucleus of dividing cells.

(b) Pulvinus

1. Base of leaflets in *Mimosa pudica*.
2. Base of petiole in *Mimosa pudica*.
3. Base of leaves in *Mimosa pudica*.
4. None of the above.

(c) Epidermis

1. Outermost layer of root before cortex.
2. Layer between cortex and pericycle.
3. Layer between pericycle and xylem.
4. Innermost layer of root after pericycle.

(d) Hydathodes

1. On the surface of all leaves.
2. On the surface of only dicot leaves.
3. On the margin of leaves.
4. On the lower epidermis of leaves.

(e) Chlorophyll

1. On the walls of chloroplast.
2. In the thylakoid membrane.
3. In the stroma of chloroplast.
4. In the inner membrane of chloroplast.

Question 6

State the function / significance of the following : **[5]**

(a) Cohesion

1. Helps in the process of ascent of sap.
2. Helps in keeping the water molecules joined.
3. Helps to maintain continuity of water column in xylem.
4. All of the above.

(b) Active transport

1. Uptake of water by roots.
2. Uptake of minerals by roots.
3. Transport of solvent.
4. Both 1. and 2.

(c) Capillary tube of potometer

1. To hold the twig.
2. To restart the experiment.
3. Introduction of air bubble.
4. Maintains the position of air bubble in spite changes in outside temperature.

(d) Lenticels

1. Transpiration
2. Diffusing in of oxygen.
3. Diffusing out of carbon dioxide.
4. All of the above.

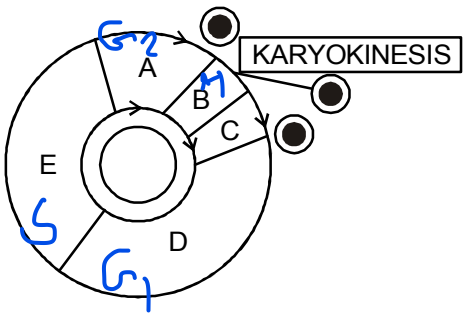
(e) Methylated spirit

1. Kills the cells of the leaf during starch test.
2. Removes chlorophyll from the leaf during starch test.
3. Makes the leaf soft before adding iodine solution.
4. Removes starch from the leaf before adding iodine solution.

SECTION - III (10 Marks)

Question 7

Study the diagram given and answer the questions that follow : **[5]**



(a) Identify the phase A.

1. G_1 phase
2. Cytokinesis
3. G_2 phase
4. S phase

(b) What happens during E?

1. Synthesis of protein.
2. Synthesis of DNA.
3. Synthesis of RNA.
4. Synthesis of cytoplasm

(c) What is the longest phase of cell cycle?

1. S phase 2. G_1 phase 3. G_2 phase 4. None of the above.

(d) In which of the phases given in the diagram chromosomes align along the equatorial plane?

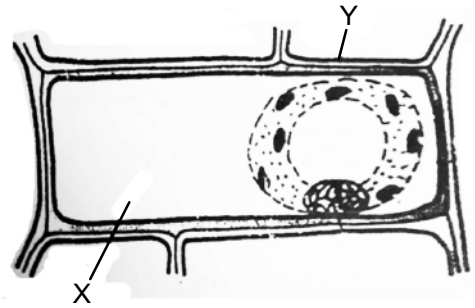
1. A 2. B 3. C 4. D

(e) What is the collective term for A, D, E together?

1. Mitosis 2. Cell cycle 3. Interphase 4. Meiosis

Question 8

Given below is a diagram of a certain state of a cell. Study the diagram and answer the questions that follow : **[5]**



(a) Name the process that leads to the above condition.

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

(b) Mention one practical utility of this process.

1. Gargling with salt water. 2. Salting of meat.
3. Killing weeds with salt. 4. All of the above.

(c) Label the part X.

1. Water 2. Hypertonic solution 3. Hypotonic solution 4. Sap

(d) In which type of solution was the cell placed to obtain this state?

1. Hypertonic solution 2. Hypotonic solution 3. Isotonic solution 4. Pure water

(e) What is the nature of part Y?

1. Dead 2. Semi permeable 3. Permeable 4. Both 1 and 3.