ICSE SEMESTER 1 EXAMINATION
SPECIMEN QUESTION PAPER
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

[5]

Name the following by choosing the correct option:

(a) A pair of corresponding chromosomes of the same shape and size but one from each parent.

1. Autosomes
2. Sex chromosomes
3. Homologous chromosomes
4. Analogous chromosomes

(b) The factor that does not affect the rate of transpiration.

1. Intensity of light
2. Velocity of wind
3. Carbon dioxide
4. Oxygen

(c) Movement of molecules of a substance from their higher concentration to lower concentration when they are in direct contact.

1. Diffusion
2. Endosmosis
3. Imbibition
4. Active transport

(d) The complex molecule consisting of a DNA strand and a core of histones.

1. Centrosome
2. Nucleotide
3. Nucleosome
4. Chromosome

(e) The solvent used to dissolve the chlorophyll pigment while testing a leaf for starch.

1. Soda lime
2. Carbolic acid
3. Methylated spirit
4. Water

Question 2

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

(a) During Meiosis _____ daughter cells are formed.

1. 4
2. 2
3. 8
4. 6

(b) Wooden doors swell up during the rainy season due to _____.

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

(c) The semi permeable membrane in a plant cell is the _____.

1. Cell wall
2. Cell membrane
3. Tonoplast
4. None of the above

(d) Guttation takes place through_____.

1. Stomata
2. Lenticels
3. Cuticle
4. Hydathodes

(e) A plant with variegated leaves is _____.

1. Coleus
2. Lotus
3. Peepal
4. Mango

Question 3

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

(a) The pressure exerted by the cell contents on the cell wall:

1. Turgor pressure
2. Partial pressure
3. Wall pressure
4. Osmotic pressure

(b) The cell component visible only during cell division:

1. Chromosome
2. Chromoplast
3. Chromatin
4. Centriole

(c) Marine fish when placed under tap water bursts, because of:

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

(d) The sites of dark reaction of photosynthesis:

1. Grana
2. Fret
3. Stroma

4. Stoma

(e) The alternative forms of the same gene occupying the same position on homologous chromosomes:

1. Chromatids
2. Alleles
3. Autosomes
4. Centromere

SECTION II (15Marks)

Question 4

Explain the following terms: [5]

(a) Osmosis

1. Movement of water from their lower concentration to their higher concentration through a semi permeable membrane.
2. Movement of solutes from their lower concentration to their higher concentration through a semi permeable membrane.
3. Movement of water from their higher concentration to their lower concentration through a semi permeable membrane.
4. Movement of water from their higher concentration to their lower concentration through a freely permeable membrane.

(b) Photolysis

1. Splitting of water molecules into hydrogen ions and oxygen in the presence of light in grana.
2. Splitting of water molecules into hydrogen ions and oxygen in the presence of light in the stroma.
3. Splitting of water molecules into hydrogen ions and oxygen in the absence of light in grana.
4. Splitting of water molecules into hydrogen ions and oxygen in the absent of light in stoma.

(c) Law of segregation

1. The two members of a pair of factors join during the formation of gametes.
2. The two members of a pair of factors separate during the formation of gametes.
3. The two chromosomes of a pair of factors separate during the formation of gametes.
4. The two members of a pair of factors separate during the process of germination.

(d) Guttation

1. The loss of water in the form of water droplets from the surface of the leaf.
2. The loss of water in the form of water droplets through the stomata.
3. The loss of water in the form of water vapour along the leaf margin.
4. The loos of water in the form of water droplets along the leaf margin.

(e) Active transport

1. Passage of water from its lower to higher concentration through a cell membrane without any expenditure of energy.
2. Passage of ions from its lower to higher concentration through a cell membrane without any expenditure of energy.
3. Passage of water from its lower to higher concentration through a cell membrane using energy from the cell.
4. Passage of ions from its lower to higher concentration through a cell membrane using energy from the cell.

Question 5

State the exact location of the following: [5]

(a) Spindle fibres

1. Between the two centrioles
2. Between the two centrosomes
3. Between chromatid and centromere
4. Between two centromeres

(b) Root hair

1. Extension of the cortex
2. Extension of epithelium
3. Extension of epidermis
4. Extension of endodermis

(c) Stomata

1. More 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. None of the above.

(d) Thylakoids

1. In the inner membrane of the chloroplast
2. Wall of the chloroplast
3. In the chlorophyll
4. In the stroma of the chloroplast

(e) Palisade parenchyma

1. Between the upper and lower epidermis of dicot leaves.
2. Between the upper epidermis and spongy parenchyma of dicot leaves.
3. Between the lower epidermis and spongy parenchyma of dicot leaves.
4. Between the upper and lower epidermis of monocot leaves.

Question 6

State the function of the following: [5]

(a) Stroma

1. Site of photolysis of photosynthesis
2. Site of photochemical phase of photosynthesis
3. Site of light dependent phase of photosynthesis
4. Site of light independent phase of photosynthesis

(b) Guard cells

1. Regulate the closing of stomata
2. Regulate the opening and closing of stomata
3. Regulate the opening of stomata
4. Regulate the process of photosynthesis

(c) Xylem

1. Translocation of food from the leaves to the other parts of the plant.
2. Conduction of food.
3. Conduction of water and food.
4. Conduction of water and minerals from the root to the other parts of the plant.

(d) Chromosomes

1. The carriers of heredity
2. The controlling centre of the cell
3. The site for various chemical reactions
4. Intracellular digestion.

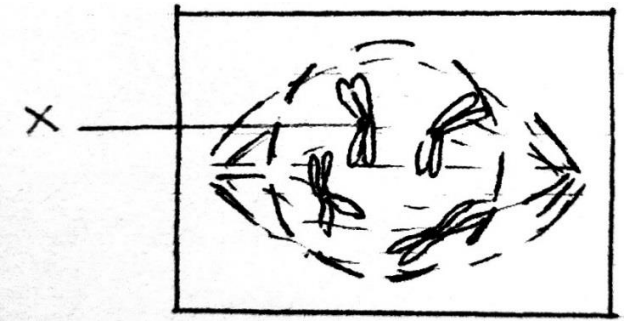
(e) Hydathode

1. Helps in transpiration
2. Helps in guttation
3. Helps in imbibition
4. Helps in transportation of water

SECTION III (10 Marks)

Question 7

Given below is a diagram representing a stage during mitotic cell division. Answer the questions that follow. [5]



(a) Identify the stage

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

(b) Label part marked **'X'**

1. Centriole
2. Centrosome
3. Centromere
4. Chromatid

(c) Name the stage that follows the one shown here

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

(d) What is the diploid number of chromosomes shown in the diagram?

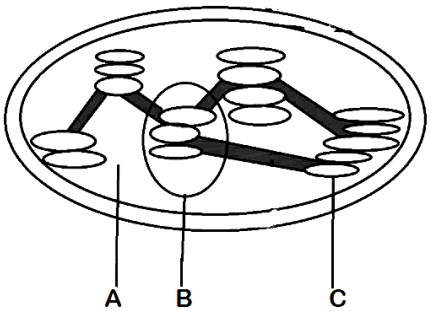
1. 6
2. 2
3. 4
4. 8

(e) Mention one important feature of this stage

1. Nucleolus reappears
2. Nuclear membrane reappears
3. Nuclear membrane disappears
4. Chromosomes align on the equator

Question 8

Observe the diagram given below and answer the questions [5]



(a) Identify the cell organelle

1. Mitochondria
2. Lysosome

3. Ribosome
4. Chloroplast

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

A. 1. Granum 2. Stroma 3. Fret 4. Thylakoid

B. 1. Granum 2. Stroma 3. Fret 4. Thylakoid

C. 1. Granum 2. Stroma 3. Fret 4. Thylakoid

(c) The unit of light absorbed by chlorophyll is_____

1. Proton
2. Photon
3. Electron
4. Neutron