BIOLOGY 2

1. GENERAL COMMENTS

The standard of the paper compared favourably with that of previous years. The general performance of candidates was slightly better than last year.

2. SUMMARY OF CANDIDATES' STRENGTHS

(1) Most candidates displayed some improvement in expressing themselves well in the English Language.

(2) Candidates exhibited satisfactory knowledge in the following topics:

(a) animal nutrition in regarding deficiency diseases, their remedies and food tests as in questions 2(a & b); preservation and storage of foods and examples of food types that can be preserved in silos and refrigerators as in question 3 (b);

(b) ecology of population especially factors that affect population size as in question 3 (c); classification of vertebrates in their evolutionary trend with examples as in question 4 (b);

(c) transport in plants/guttation and biological principles underlying guttation as in question 5(a);

(d) organelles involved in protein synthesis and source of amino acids used in synthesizing proteins in cells as in question 5(c);

(e) life processes performed by living organisms as in question 5 (e) and

(f) Biology as a source of life as in question 5 (f).

(3) Candidates complied with the Paper instructions which required that they should answer two questions only from Section A and all the questions in Section B.

3. SUMMARY OF CANDIDATES' WEAKNESSES

(1) Candidates could not list supporting tissues in plants and state the characteristic feature each that adapts each of the supporting tissues listed as in question 1 (a).

(2) Candidates failed to go by the rubrics regarding biological drawings as in question 1(b) with respect to making diagram of the transverse section of monocotyledonous stem. For example:

(a) clarity of lines which involves lines of drawing should not be wooly or broken at some points;

(b) neatness of labels e.g., guidelines must be ruled using ruler, labels must be written horizontally, guidelines must not cross each other etc. shading of drawings must be avoided etc. all were not complied with.

(3) Technical terms were wrongly spelt as such as names of supporting tissues as in question 1(a),

(a) spelling of labels of diagram of transverse section of monocotyledonous stem as in (b), names of nutrient deficiency diseases as in 2 (b) (ii),

(b) examples of food types that can be preserved in the storage facilities as in 3(b),

(c) factors that affect population size of living organisms as in 3 (c),
(d) classes of vertebrates in their evolutionary trends and example of each class of vertebrates as in 4 (b),
(e) list of organelles involved in protein synthesis as in 5 (b) (i) and naming the branch of Biology concerned with the study of tissues,
(f) plants, DNA and the environment as in 5 (f).

4. SUGGESTED REMEDIES

(1) Candidates should read all instructions to the paper and follow them to the letter.
(2) Tutors should take their students through spelling drills with respect to technical terms.
(3) Tutors should encourage their students to work sufficient tutorials and assignments on how to provide concise and accurate answers.
(4) Tutors should ensure that candidates know and understand the rubrics of the subject.

5. DETAILED COMMENTS

QUESTION 1

(a) (i) List four supporting tissues in plants.
(ii) State one characteristic feature each that adapts each of the supporting tissues listed in 1(a)(i) to its function.
(b) Make a diagram, 6 cm to 8 cm long of the transverse section of the stem of a monocotyledonous plant and label fully.

Few candidates attempted this question. However, their performance was fairly satisfactory.

(a) (i) Candidates should note that the four supporting tissues in plants are:
- Parenchyma;
- Collenchyma;
- Sclerenchyma;
- Xylem.

(ii) Characteristic feature that adapts each of the supporting tissues to its function are:
- Parenchyma cells become turgid; they give strength/support to herbaceous plants;
- The walls of collenchyma cells are thickened at the corners; hence the plants have some degree of flexibility/ this enables the plants to withstand strains / bend but recover;

- In sclerenchyma the cells are dead/thickened/elongated/lignified/ pericycle and other head parts of the plants; this gives the plant parts mechanical support
- Walls of xylem tissues are thickened/lignified; thereby providing mechanical strength.

(b) Most of the candidates failed to go by the rubrics regarding biological drawings. Candidates should therefore take note of the following guidelines regarding biological drawings:

Title (TL) *Diagram of transverse section of monocotyledonous stem*
Quality (Q)
Clarity of Lines (CL)
Size (Sz) (6cm to 8cm)
Neatness of Labels (NL)
Details (D)
Scattered vascular bundles shown (SV)
Prominent ground tissues shown
Closed vascular bundles shown/ no cambium (CV)
Labels (L)
Epidermis, ground tissue/parenchyma, vascular bundle/xylem, phloem, sclerenchyma

QUESTION 2

(a) (i) What is deficiency disease?
(ii) Name five nutrient deficiency diseases in humans.
(iii) State one remedy each for the diseases named in 2(a)(ii).
(b) Outline a chemical test for:
(i) glucose in orange fruit;
(iii) starch in a tuber of yam.

Most candidates answered this question satisfactorily. Candidates must note the following responses to the questions as presented below:

(a) (i) Candidates were expected to define Deficiency disease as a disease caused by lack of/ insufficient/inadequate supply of nutrients/ food substances.

(ii) Names of nutrient deficiency diseases and their remedies are outlined below:

Name of Nutrient deficiency disease	(iii) Remedy for disease named
Goitre/Goiter	Consumption of iodized salt/seafood
Rickets	Consumption of a diet rich in calcium/phosphorus/vitamin D
Anaemia/Anemia	Eating a diet rich in iron
Kwashiorkor	Diet of infants should contain protein
Scurvy	Consumption of foods/fruits rich in vitamin C
Pellagra	Addition of Niacin/vitamin K to diet
Night blindness	Consumption of foods rich in vitamin A
Beriberi	Consumption of foods rich in vitamin B
Stunted growth	Consumption of foods rich in iodine
Marasmus	Consumption of protein and carbohydrate

However, most of the candidates lost valuable marks due to wrong spellings of names of diseases.

(b) Most of the candidates exhibited good knowledge in performance of food test. The expected chemical tests were outlined below:

(i) <u>Glucose in orange fruit</u>

- Orange fruit is cut, and its juice is extracted into a beaker/test tube;
- Few drops of Benedict's solution/ Fehling's solutions A and B / 1 and 2;
- Is added to equal volume of orange juice;
- And heated gently;
- A red/orange/brick-red precipitate;
- Shows presence of glucose;
- For Benedict's solution when heated;
- Shows red/yellow precipitate;
- Confirming presence of glucose.

Note: Fehling's solution A = Copper sulphate in water
Fehling's solution B = Sodium hydroxide in water
Benedict's solution = Copper sulphate, sodium citrate/ sodium carbonate

(ii) <u>Starch in a tuber of yam</u>

- The tuber of yam is peeled;
- Sliced/ground;
- A few drops of iodine solution;
- Is added to the yam;

- Blue-black color formed;
- Indicates presence of starch.

QUESTION 3

(a) Explain briefly food preservation in the following facilities:
(i) silo;
(ii) refrigerator.

(b) List four examples each of food types that can be preserved in the facilities in 3(a)(i) and 3(a)(ii).

(c) List six factors that affect population size of living organisms.

Candidates provided satisfactory answers to this question. It is worth noting that

(a) Candidates were expected to explain briefly the preservation of food in the following facilities as follows:

(i) Silo
- Is used to store properly dried loose grains;
- It is made of aluminium/steel/ other suitable materials;
- To protect grains against storage pests/ weevils/ rodents/ birds;
- Both grains and silos are fumigated;
- To kill/prevent the growth of microorganisms/weevils/egg/larva of insects/pests;
- Silo is air- tight to prevent growth of microorganisms/pests/for suitable storage conditions such as temperature, relative humidity etc.
- Silo can store large quantities of grain for many years.

(ii) Refrigerator
- Involves storing food under very low temperature;
- And removes heat from food substances;
- To slow down activities of enzymes;
- That cause spoilage;
- Reduce the growth rate of microbes;
- (Perishable) Food is kept fresh for a long period of time.

(b) Examples of food type that can be preserved in (i) the Silo facility include:
- Wheat;
- Rice;
- Maize;
- Grains;
- Millet;
- Sorghum.

Examples of food type that can be preserved in (ii) the Refrigerator facility include:

- (Leafy) vegetables;
- Eggs;
- Tomatoes;
- Fruits;
- Bread;
- (dry) fish/ meat.

Some candidates lost marks due to wrong spellings of type of foods preserved.

(c) Factors that affect population size of living organisms include the following:

- Mortality/death rate;
- Natality/birth rate;
- Immigration;
- Emigration;
- Natural disaster;
- Availability of food;
- Famine;
- Man-made disasters/war;
- Space/spacing;
- Predation.

Few candidates lost marks due to wrong spellings of technical words.

QUESTION 4

(a) Explain briefly the reason why blood groups A and B in humans can exist both in the heterozygous and homozygous forms while blood group O can only exist in homozygous form.

(b) (i) Name the Classes of vertebrates in order of their evolutionary trend.

(ii) Give one example each of the Classes of vertebrates named in 4(b)(i).

(c) Explain briefly independent assortment of genes.

Generally, performance in this question by candidates who attempted it was only average.

(a) Candidates were required to explain the reason why blood groups A and B in humans can exist both in the heterozygous and homozygous forms while blood group O can only exist in homozygous form.

The expected responses to this question is presented as follows:

- Blood grouping in humans is determined by three alternative genes or alleles: - A, B and O;
- A person can only possess two alleles of the genes on a pair of homologous chromosomes;

- Gene O is recessive to both genes A and B; which are dominant or co-dominant or possess antigens A and B in the red blood cells;
- Hence, it is possible to have blood group A as AA (homozygous) or AO (heterozygous);
- And blood group B as BB or BO;
- Blood group O can only exist genotypically as OO or does not possess antigen A or B in the red blood cells;
- In the homozygous recessive state.

(b) Most of the candidates correctly listed classes of vertebrates and their corresponding examples.
Name of Classes of vertebrates in their evolutionary trend with examples are given below:

(i) Class of vertebrates	*(ii) One example*
Pisces/ Osteichthyes/ Chondrichthyes	Tilapia; Tuna; Salmon; Herring; Perch/Catfish; Shark; Dogfish; Skate; Ray
Amphibia	Frog; Toad; Salamander; Newt
Reptilia	Snake; crocodile; tortoise; turtle; lizard; wall gecko
Aves	Dove; pigeon; parrot; weaver bird; hawk; eagle; domestic fowl; vulture; ostrich; guinea fowl
Mammalia	Human; monkey; rat; rabbit; guinea pig; whale; dog; goat; bat

(c) Candidates were expected to explain briefly independent assortment of genes as presented below:
- It is the random selection of genes;
- During meiosis;
- To produce gametes;
- Where the genes are separate or segregate;
- So that only one pair is found in any one gamete;
- In the dihybrid inheritance in heterozygote;
- The pairs of alleles are found on different pairs of chromosomes;
- Only four types of gametes are produced in approximately equal numbers.

OR

- In dihybrid inheritance;
- The pairs of alleles or genes are found on different pairs of chromosomes;
- These alleles or genes segregate or separate from one another;
- And combine/recombine randomly;
- During meiosis;
- So that only one of the pair of genes is found in any one gamete.

QUESTION 5

(a) (i) What is guttation?

(ii) Explain briefly the biological principles underlying the process of guttation.

(b) (i) List three organelles in the cell that are involved in protein synthesis.

(ii) Name one source of amino acids used in protein synthesis in cells.

(c) Outline the steps taken to change from viewing an object placed under a low power magnification to a high-power magnification when using an optical microscope.

(d) Describe briefly the process of dissecting a rabbit to expose its alimentary canal.

(e) Name six life processes which living organisms are capable of performing.

(f) Name the branch of Biology which is concerned with the study of:

(i) tissues;

(ii) plants;

(iii) DNA;

(iv) the environment.

The performance of candidates on this question was quite good.

(a) (i) Candidates were required to define Guttation as follows:

- It is the release or secretion of water as droplets;
- Through special structures/hydathodes;
- At the tips/margins of leaves at high humid conditions.

(ii) The biological principle underlying guttation is as follows:

- Guttation occurs in a plant growing in a warm/moist soil with humid atmosphere;
- It is a phenomenon which is caused by root pressure at the early hours of the morning/night;
- When there is low rate/no transpiration;
- The high root pressure favours the absorption of water;
- The rate of water absorption soon exceeds the rate of transpiration;
- And the excess water must be removed;
- As liquid droplets through the hydathodes.

(b) (i) The organelles in the cells that are involved in protein synthesis are

- Rough endoplasmic reticulum;
- Ribosomes;
- Golgi apparatus;
- Nucleus.

(ii) The sources of amino acids used in synthesizing protein in cells are; digested proteinous foods such as meat, fish, beans, eggs, milk which are ingested and digested into amino acids or free amino acids in the cytoplasm of cells such as valine, alanine, glutamine, leucine, serine, methionine, phenylalanine, isoleucine, arginine, lysine, cysteine, proline, serine, etc.

(c) Performance of candidates on this sub-question was generally poor. Candidates are to note steps taken to change from viewing an object placed under a low power magnification to a higher magnification when using an optical microscope. The steps are as follows:

- The revolving nose piece is turned;
- And this moves the low power objective piece away from the center of the stage;
- And brings the high-power objective piece to the center of the stage;
- Then the fine adjustment knob is turned slowly while looking into the eye piece;
- To obtain sharp image;
- Till the detail of the specimen is focused/ seen on the slide;
- Coarse focusing knob should not be used.

(d) Candidates were expected to describe briefly the process of dissecting a rabbit to expose its alimentary canal. The correct process is outlined below:

- The freshly killed/ chloroformed rabbit is laid on its back;
- The limbs are stretched out and pinned on the dissecting board;
- The skin is pinched over the abdomen with forceps and lifted up away from the body wall;
- A small incision is made on the skin;
- The cut is extended longitudinally upward to the ribcage and downward to the anal opening;
- The skin is pulled apart with the forceps;
- The skin is gently separated from the body wall and pinned to the dissecting board;
- The abdominal wall is lifted with the forceps;
- The cut is continued up to the neck;
- Pulling the abdominal wall away from the gut with the aid of the forceps;
- The alimentary canal is spread out gently the liver is pushed upwards, the stomach to the right, the duodenum downwards and ileum to the left;
- The various organs can now be studied.

(e) Candidates exhibited adequate knowledge of life processes performed by living organisms.

Life processes which living organisms are capable of performing are

- Nutrition feeding;

- Reproduction;
- Respiration;
- Movement/locomotion;
- Irritability/ sensitivity;
- Growth;
- Excretion.

(f) Most of the candidates were able to state correctly branch of Biology which is concerned with the study involved in as indicated below:

(i) Tissues is Histology

(ii) Plants is Botany

(iii) DNA is Genetics/ Molecular Biology

(iv) The environment is Ecology

BIOLOGY 3

1. GENERAL COMMENTS

The standard of the paper was appropriate and compared favourably with that of previous years.

Candidates' performance was generally satisfactorily and better than last year.

2. SUMMARY OF CANDIDATES' STRENGTHS

(1) Candidates showed marked improvement in relating structural features of organisms to their functions as well as to their habitats.

(2) Candidates presented differences between organisms in the tabular format as required.

(3) Candidates gave precise economic importance of cockroach and moss plant.

3. SUMMARY OF CANDIDATES' WEAKNESSES

(1) Technical terms and scientific words were wrongly spelt.

(2) Many candidates failed to adhere to the guidelines regarding biological drawings.

(3) Candidates exhibited little knowledge in tools used for collecting specimens.

4. SUGGESTED REMEDIES

(1) Teachers should take their students through drills and assignments with respect to technical terms and their descriptions.

(2) Students should master the art of relating observed features of organisms to their functions.

(3) Teachers should draw the attention of students to the importance of observing the rules of binomial nomenclature.

(4) Teachers should organize regular practical lesson to assist students to develop keen observation skills and be guided to adhere to the guidelines of biological drawing.

5. DETAILED COMMENTS

QUESTION 1

(a) (i) Name the class to which specimen B belongs.

(ii) State two reasons for the answer in 1(a)(i).

(b) (i) Name the habitat of specimen A.

(ii) State one structural feature that adapts specimen A to its habitat.

(c) (i) In a tabular form, state two observable structural differences between specimens A and B.

(ii) State two observable structural similarities between specimens A and B.

(d) (i) What is the symmetry of specimen B?

(ii) Name one tool each which could be used to collect samples of specimens A and B for scientific studies.

(iii) Name two structures in specimen B that could be affected by oil spillage in its habitat.

(e) Make a drawing, 6 cm to 8 cm long of the ventral view of specimen A and label fully.

Performance of candidates on this question was generally good.

(a) (i) Majority of the candidates answered this sub-question very well.

However, a few candidates wrongly spelt the class Osteichthyes.

(ii) Most of the candidates gave correct reasons to support the class given in a(i) their correct answers included:

- fins strengthened by bony rays;
- overlapping, backwardly pointing scales;
- presence of bony skeleton.

(b) (i) This sub-question requested for the habitat of tadpole. Many candidates correctly stated the pond or stream as the habitat. However, some candidates lost marks for stating aquatic habitat which is rather a type of habitat.

(ii) This question asked for one structural feature of tadpole that adapts tadpole to its habitat. A good number of candidates correctly identified the tail for swimming or gills for exchange of gases or streamlined body for smooth swimming.

(c) (i) Majority of the candidates did not have much difficulty in tabulating observable structural differences between Tilapia and tadpole as indicated below:

Specimen A / Tadpole	**Specimen B / Tilapia**
- Fins absent	- Fins presence
- Tail fin without bony rays	- Tail fin with bony rays
- Scales absent	- Scales present

(ii) Candidates correctly identified the two observable structural similarities between

Tilapia and tadpole. Their correct answers include the following:

- operculum;
- streamlined bodies;
- bilaterally symmetrical;
- eyes;
- tail.

(d) (i) This question, tasked candidates to state the symmetry of Tilapia. Majority of the candidates correctly stated bilateral symmetry as the answer. However, few candidates lost marks for wrong spelling of bilateral.

(ii) This question was poorly answered by majority of candidates. Majority of them could not state correctly tools used for collecting organism from their habitats.

The expected answers include:

Dip net, scoop net, long handled net used for collecting tadpole, tow net, drag net, wicker, fish strap, cast net, fishing net, dip net basket used for collecting Tilapia.

(iii) Candidates were required to name two structures of Tilapia that could be affected by oil spillage in its habitat. Majority of the candidates correctly identified gills, fins, mouth, eyes, nostrils.

(e) This sub-question tasked candidates to draw the ventral view of tadpole. Many of the candidates failed to adhere to the guidelines regarding biological drawings. Performance was consequently poor. Candidates should therefore take not of the guidelines for biological drawings as indicated below.

Title: Diagram / drawing of ventral view of specimen A / tadpole.

- Quality of drawing which include clarity of lines, size (6 cm to 8 cm), neatness of labels, magnification;
- details of drawing which include showing of the following features; operculum, muscular tail and coiled intestine;
- labels such as head, eye, mouth, operculum, tail fin, coiled intestine / alimentary canal should be indicated.

QUESTION 2

Study specimens D, G and H and answer questions 2(a) to 2(e).

(a) (i) Place two drops of specimen D on a white tile and add two drops of iodine solution.

Copy and complete the table below, stating the test, observation and inference.

Test	*Observation*	*Inference*

(ii) Put 5 ml of specimen D into a test tube and add 2 ml of sodium hydroxide solution followed by three drops of copper (II) tetraoxosulphate (VI) and shake.

Copy and complete the table below, stating the test, observation and inference.

Test	*Observation*	*Inference*

(iii) Give the name of each of the tests in 2(a)(i) and 2(a)(ii).

(b) State two ways by which specimen G is of economic importance.

(c) (i) Name the kingdom to which specimen G belongs.

(ii) State two reasons for the answer in 2(c)(i).

(iii) Name four other organisms that belong to the same kingdom as specimen G.

(d) (i) Name the Phylum to which specimen H belongs.

(ii) State three reasons for the answer in 2(d)(i).

(e) (i) Explain briefly the role of specimen G in nutrient recycling.

(ii) What is the mode of nutrition of specimen G?

Majority of the candidates exhibited a fairly good familiarity and ideas about the performance of food test.

(a) (i) This question, asked candidates to use iodine solution to perform a test on sample D and record observation and inference.

Majority of candidates correctly recorded the test observation and appropriate inference

(ii) Candidates were given sodium hydroxide solution and copper (II) tetraoxosulphate (VI) solution to perform food test on the sample. Majority of the candidates correctly recorded the test observation and inference.

(iii) This question asked candidates to give the name of each of the test in (a)(i) and (ii). Most of the candidates correctly named iodine test or Test for starch and Biuret test or

Test for protein respectively for a(i) and a(ii). However, a few candidates lost marks due to wrong spelling of Biuret.

(b) Candidates were asked to state ways by which mushroom is of economic importance. Most of the candidates were able to identify mushroom as a source of food, source of income or employment, for medicinal purposes and as an agent of decay of organic matter.

(c) (i) Generally, candidates did not find much difficulties in stating the kingdom of mushrooms as Fungi. However, a few candidates lost marks because they did not write the technical term of the Kingdom Fungi properly by starting with a capital 'F'.

(ii) Candidates readily stated the characteristics of Kingdom Fungi. Their correct responses include: presence of mycelium / hypha; cell wall made of chitin; lack of chlorophyll.

(iii) Again, candidates were able to give the names of other organisms which belong to the same kingdom as mushroom. Their correct answers include Yeast, Rhizopus, Mucor, Aspergillus, Toadstool, Puff Ball, Rust, Smut, Bracket Fungus and Penicillium. However, some candidates lost marks due to wrong spelling of examples of organisms under Kingdom Fungi.

(d) (i) This question, asked candidates to name the phylum of giant snail. Candidates correctly provided Mollusca as the answer. Again, some candidates wrongly used small letter to begin the name.

(ii) Majority of the candidates correctly provided reasons to support their answer to 2d(i) /Mollusca.

Most of the expected answers include:

- has shell;
- has tentacles;
- body divided into head, viscera hump and muscular foot;
- has muscular foot;
- has mantle.

(e) (i) This sub-question tasked candidates to explain the role of mushroom in nutrient recycling. Only a few candidates answered the question satisfactorily.

Candidates should therefore note that, mushroom is a decomposer. It decays dead organic matter to return gaseous products to the atmosphere, mineral elements to the soil and humus

to the soil. Plants subsequently absorb the nutrients from the soil to manufacture organic matter. Herbivores feed on plants and some organic matter is transferred to animals. Plants and animals die to leave dead bodies in the soil.

(ii) Most of the candidates correctly stated the mode of nutrition of mushroom as saprophytic nutrition. However, a few candidates could not distinguish the correct answer from saprophytism which is a type of a biological association.

QUESTION 3

Study specimens J, K, L and M and answer questions 3(a) to 3(g).

(a) Classify specimen J into its:
- **(i) Phylum;**
- **(ii) Class.**

(b) State two reasons each of the answers in 3(a) (i) and (ii).

(c) Use arrows to indicate the relationship among specimens J, K and L in a cycle.

(d)
- **(i) State two observable characteristic features that adapt specimen L to its habitat.**
- **(ii) State two observable structures that adapt specimen M to its habitat.**

(e) In a tabular form, state two observable structural differences between specimens J and M.

(f)
- **(i) Name one habitat each of specimen J and M.**
- **(ii) State three ways each by which specimens J and M are of economic importance.**

(g) Classify specimen M into:
- **(i) Division;**
- **(ii) Class.**

(a) This question tasked candidates to classify adult cockroach into its phylum and class.

Majority of the candidates were able to correctly identify the phylum as Arthropoda and class as Insecta. A few candidates lost marks due to wrong spelling of the taxa.

(b) This question requested candidates to provide reasons for the classification in (a). A great number of candidates gave the correct reasons which they related to their respective taxa. However, a few candidates wrongly included reasons meant for Arthropoda only for class Insecta. This mix-up is an indication of clear appreciation of different characteristics for different taxa.

The expected correct answers include:
Phylum: Arthropoda

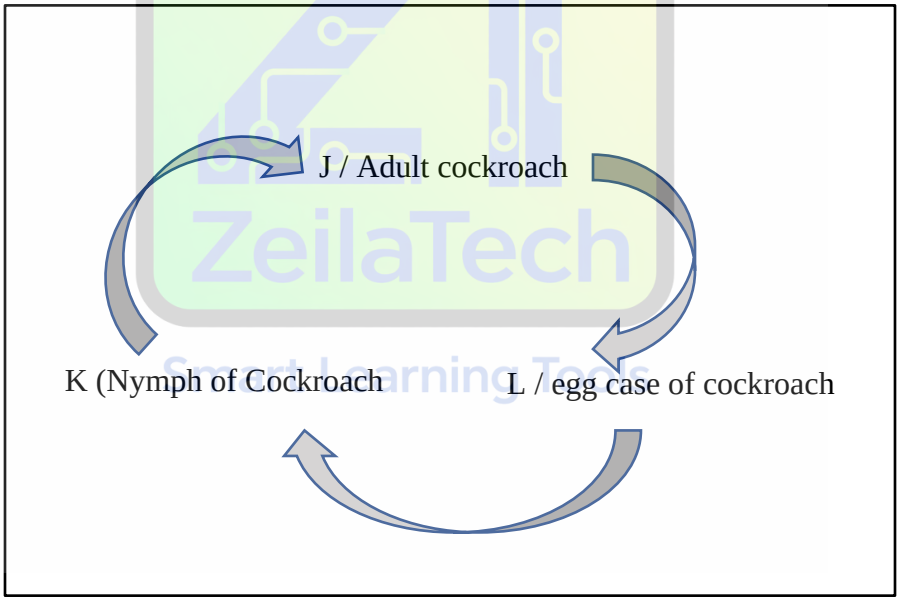
- exoskeleton made of chitin;
- jointed appendages;
- metameric body segmentation;
- bilateral symmetry.

Class: Insecta

- three pairs of legs;
- a pair of antennae;
- a pair of compound eyes;
- three body divisions / head, thorax and abdomen;
- a pair of wings.

(c) Candidates were asked to use arrows to show the relationship among adult cockroach, nymph of cockroach and egg case of cockroach.

Majority of the candidates answered it well as illustrated below:



However, some candidates either omitted arrows or drew it in the wrong direction, therefore, lost marks.

(d) (i) Candidates were asked to state observable characteristic features that adapt the egg case to its habitat.

A good number of candidates correctly identified the brown colour for escaping predation by eggs, chitinous covering for prevention of dehydration.

(ii) This sub-question asked candidates to state observable structures that adapt a moss plant to its habitat correctly. A good number of candidates correctly identified the following features:

- green leaves for photosynthesis;
- rhizoids for anchorage;
- capsule on long stalk for dispersal of spores.

(e) Candidates were asked to state observable structural differences between adult cockroach and moss plants in a tabular form. This question appears to be the most popular with majority of the candidate scoring full marks.

(f) (i) Candidates were required to state the habitat of each of cockroach and moss plant. Most of the candidates readily gave the correct habitats for the cockroach as septic tank, toilets, cupboard, cabinets, wooden boxes crevices. However, for a moss plant, only a few candidates correctly identified moist surfaces, moist walls, trunk of trees and forest floors as habitats.

(iii) Candidates were tasked to provide ways by which cockroach and moss plant are of economic importance. Again, candidates did not have much difficulties in stating economic importance of cockroaches such as destruction of clothes / paper / food / valuable materials; transmission of diseases / leprosy / dysentery, source of food.

With respect to moss plants, only a few candidates noted that they are pioneer colonizers of new habitats, producer in the ecosystem, releases oxygen into the atmosphere, stains walls and absorption of carbon dioxide to reduce global warming.

(g) Candidates were asked to classify the moss plant into Division and class.

Majority of the candidates, correctly classified moss plant into Division and Class as Bryophyta and Musci respectively. However, some candidates lost marks due to wrong spelling of Bryophyta and Musci.