

BIOLOGY

SUBJECT 5008

PAPER 2

GENERAL COMMENTS

SECTION A

QUESTION 1

Most of the candidates generally performed fairly well on this question.

- 1a) Poor performance as a result of inability to correctly read the scale on the grid was highly evident in the candidates' answers. Both points and the curve were thus poorly plotted. Resultantly extrapolation became a problem and most of the responses quite far from the expected answers.
- 1b) All candidates were familiar with the developmental changes associated with growth at female puberty stage. Poor candidates however fell short of appropriate biological terms and hence messed up their answers. Quite often a few poor candidates gave developmental changes occurring in males (wet dreams).

QUESTION 2

Few candidates had problems with the manipulation of figures which they should have used as follows:

- A: 1200 Units – 1120 Units (lost to environment + herbivores)
- C: 10 000 Units – 6200 Units (lost to environment + herbivores)
- (ii) Examiners expected type of organism and not particular names of organisms as suggested by some candidates.
- (iii) A number of candidates missed on sunlight as the source of energy for the food chain.
- (iv) Concepts were moderately known. Vague answers like metabolic processes were not rewarded. Specific processes leading to energy losses like respiration, excretion, ingestion etc were expected.

- b) Most centres struggled to bring out the expected answers. The important difference between plants and animals of mobility leading to more energy loss in the latter was not recognised. In the same vein, loss of energy through egestion or temperature maintenance, which is typical of animals could have earned candidates some marks.

QUESTION 3

- (i) Most candidates struggled to identify the vessels to and from the kidney as well as their roles. Loss of marks to this part of the question was quite common.
- (ii) The right atrium was wrongly identified by a large number of candidates.
- (iii) Interpretation of the tabulated data was quite poor and hence candidates failed to identify the excretory roles of the kidney. The fact that the kidney re – absorbs useful substances was even more challenging.
- (iv) Most candidates realised that meat is a good source of protein but the attempt to link it to the given tabulated information was quite poor. Poor candidates suggested the presence of both proteins and urea in the “ureter” in high proportion after a meal of meat. This again suggests a poor knowledge of the fate of excess amino acids in the process of de-amination.
- (v) Candidates again showed very little knowledge on the role of insulin in stimulating conversion of glucose to glycogen by liver cells.

QUESTION 4

The reproductive structures of a carpel were not well known by candidates.

- (a) (i) The identification of the labelled parts was generally quite poor,
- (ii) The position of the female gamete in the ovule/embryo sac was not easily identified.
- (iii) A number of poor candidates still think that the pollen tube carries the entire pollen grain rather than the male gamete/nucleus only.
- (iv) The “insect” as agent of pollination for this flower was poorly done.

- (v) Very few candidates realised that certain pollen grains will not germinate if deposited on unripe stigmas or they were of different species.

QUESTION 5

All candidates generally managed to appreciate and recognise the differences in the percentages of CO_2 and O_2 in the soil and above the ground. Problems surfaced where an attempt was made to link the variations with physiological processes occurring within plants.

- (a) Most of the answers fell short of the expected detailed explanations accounting for the differences in O_2 and CO_2 percentages as a result of respiration releasing CO_2 in the soil or photosynthesis by plants releasing O_2 . Poor candidates would commonly suggest "plants produce CO_2 during photosynthesis"
- (b) Both weak and average candidates wrongly identified carbohydrates/sugars as chemical products of nitrate metabolism in plants. The metabolic products of photosynthesis other than carbohydrates/starch appeared unfamiliar to candidates.
- (c) Weak candidates struggled to carefully outline the stages involved in the release of nitrates/ synthesis of proteins by leguminous plants after absorbing atmospheric nitrogen. Details of the role of symbiotic nitrogen fixing bacteria and the subsequent synthesis of nitrates/proteins lacked in candidates responses.

SECTION B

QUESTION 6

The question was very popular among both weak and good centres. The scores were also fairly high especially in part 6(a) of the question.

- (a) (i) Most candidates did not draw a table to compare palisade and muscle cell losing the marks of this question.

- (a)(ii) Candidates were very familiar with the structural features of the palisade cell as representative of a typical plant cell. Candidates quickly thought of drawing diagrams but failed to utilise them through meaningful annotations. The expected detailed comparisons were very superficial with most candidates failing to go beyond the obvious features of the cell wall/vacuole.
- (b)(i) Candidates did well on this question. Required reference to stomata in leaves, larger number of stomata in lower surface hence more transpiration from that surface, the closing and opening of guard cells was common in most answers.

QUESTION 7

- (a) Fairly done by candidates who answered it. Most candidates mentioned differences in no of cotyledons, leaf venation, food storage and root structure. Very few mentioned the other differences.
A number of candidates did not present differences in tabular form.
- (b) Very poorly done; few candidates mentioned role of leaf in food production, with some mentioning root as source of food. Roles of xylem and phloem often interchanged. Few gave specific destinations of translocated food; the majority often stating either roots or stem. Loading and unloading of phloem by active transport was rarely mentioned.
- (c) Done fairly well by candidates who answered it, though a number misinterpreted question, giving the nutrients that provide for healthy growth of plants. Most nutrients found in growth of plants such as carbohydrates, vitamins and minerals were mentioned. However, most functions or deficiency diseases were not linked to particular nutrients, resulting in loss of marks.

QUESTION 8

- (a) Answered fairly well. Most natural barriers to infection mentioned, such as the skin, tears, platelets and blood clotting. Some candidates had problems with immunity with a number of candidates bunching WBCs together as being phagocytic and source of antibodies. Others mentioned antibodies as being phagocytic.

QUESTION 9

- (a) Most candidates could describe correctly the direction of flow of blood to and from the heart. However the majority could not relate structure to function as required by the question resulting in loss of marks.
A few candidates exhibited the following misconceptions.
- (i) Reference to left ventricle being thicker than the right. It is "walls" of the left ventricle which are thicker or more muscular.
- (ii) Reference to left ventricle pumping more blood; the left ventricle generates higher pressure than the right. Stroke volume should be the same for both the right and left ventricles.
- (b) This part of the question was well attempted although the causes and effects were either mismatched or vaguely explained. e.g. high intake of salts causing atherosclerosis.

QUESTION 10

- (a) This was poorly attempted. Most candidates exhibited lack of knowledge of this part of the syllabus.
- (b) This part of the question was poorly done candidates lacked knowledge of characteristics of both bacteria and fungi and hence could not make comparisons.
- (c) This part was well attempted except that some poor candidates thought the question required habits that increase chances of getting cholera. The expected answer was the name of the bacterium which causes cholera.