

# PRINCIPAL EXAMINER'S REPORT



BOTSWANA  
EXAMINATIONS  
COUNCIL

**BGCSE BIOLOGY**

**2023**



## Paper 1: Written Paper

### Section 1: General Comments

As in past, candidates who entered for syllabus found the component to be more accessible than the other two components in the syllabus. The report will detail an in-depth item by item analysis of how candidates fared throughout the component. The report will also detail how candidates interacted with each key and its distractors and give guide on distractors which were attractive to candidates as that might represent some sort of scientific misconception or misunderstanding or both.

### Section 2: Comments on Individual Items

**Item 1:** Candidates did well in this item as about 98 percent correctly identified, option (B) as the stage that represents implantation in the diagram that shows different stages of development of an embryo. All the options were dismissed by the majority candidates as plausible answers.

**Item 2:** Most candidates, 85 percent were able to correctly match option (C) the cell structures with their functions as shown in plant cell diagram.

**Item 3:** Candidates did relatively well in this item as 74 percent were able choose a pair of terms that describes the enzymes phosphorylase as option (B) anabolic and intracellular. The other option that candidates found to be attractive was option (A); anabolic and extracellular at 14 percent while the other options were attracted less than 10 percent.

**Item 4:** Candidates found the item to be difficult as only 58 percent chose the right answer option (A) i.e. formation of amylase cells as the activity that uses energy from respiration. Formation of glucose in palisade mesophyll option (B) cells also attracted a sizeable number of candidates, 29 percent. There was an element of guessing because options C and D were also found to attractive to candidates as they attracted 5 and 9 percent respectively.

**Item 5:** A significant majority of the candidates (95%) were able to identify the statement that is correct about biological washing powders option (B) i.e. that they use enzymes to remove stains. The other 3 options were not attractive as the three attracted about 5 percent of the candidates.

**Item 6:** Most candidates (94 percent) were able identify option (A) as part is the right atrium in the diagram that shows a section through the human heart. The influence of other options is ignorable.

**Item 7:** Most candidates (84 percent) were able to identify option (B) the left ventricle as the part of the heart pumps blood with the highest pressure.

**Item 8:** Most candidates (85 percent) were able to identify option (B) i.e. as the process that forms urea. Detoxification option (B) and excretion option (D) both had some effect as there were chosen by 0.09 and 0.05 percent of the candidates respectively.

**Item 9:** Candidates did extremely well in this item as about 97 percent were able predict that blue colour option (A) would the colour that will be observed from biuret test to indicate the presence of proteins.



**Item 10:** Candidates did relatively well in this item as 78 percent of them were able to identify (A) i.e. that the hepatic portal vein does not carry the blood to the vena cava. Option B: that carries blood with concentration of amino acids was found to be attractive to candidates as 13 percent chose this option.

**Item 11:** Candidates did extremely well in this item as about 96 percent of candidates were able to choose liver and colon (B) as parts that are responsible for production of bile and the absorption of most water in diagram of human canal and associated organs.

**Item 12:** About 99 percent of candidates were able identify the correct order of the sequence of testing a green leaf for starch i.e. boil the leaf in water, boil the leaf in ethanol, put the leaf in warm water, spread the leaf on white tile, and finally add few drops of iodine solution.

**Item 13:** Candidates did well in this item as 82 percent correctly suggested that (B) carbon, hydrogen and oxygen are elements present in a molecule of fat. The other elements were also attractive to candidates.

**Item 14:** Candidates did well in this item as 95 percent chose (C) wilting leaves as the resultant of excessive transpiration.

**Item 15:** It seems that the concept of organisms has cells with nuclei, chloroplasts and can reproduce asexually through spores highly confusing as only 17 percent chose (A) algae and plant as the answer while 83 percent went for option (B) algae and fungi. There is an element of misunderstanding of this concept more so that the candidates who take this syllabus are not expected choose a distract at this magnitude.

**Item 16:** About 95 percent of candidates did well in this item. Candidates were able to identify an organ and a factor it controls as option (A) that pancreas is the organ that controls glucose concentration.

**Item 17:** Candidates did well in this item as 93 percent were able to pick option (D) as the structure that secretes sweat.

**Item 18:** About 83 percent of candidates were able identify part D as the urethra in the urinary system. A significant number 17 percent thought option C is the urethra, centre need to investigate why candidate were attracted to this option.

**Item 19:** A significant majority of candidates 91 were able to identify option (C) as the structure that contains urine as shown in a mammalian kidney and its associate structure.

**Item 20:** About 96 percent of candidates were able to identify the effect that is not associated with consumption of alcohol as option (B) as increased self-control.

**Item 21:** About 88 percent of candidates were able to identify the phenotype ratio option (A) 1:1 will be obtained under the described prevailing conditions from crossing a white cat with a heterozygous cat. The other options also seemed attractive to a handful candidates.

**Item 22:** Candidates found this item to be more demanding as only 48 percent were able to identify a stage of division in the shown cell option (B) i.e. anaphase and meiosis. There was an element of guessing in this item because candidates were spread all over the options as shown below:



A 0.23

C 0.12

D 0.18

It will be worthwhile for centres to investigate why candidates would make those choices in this pattern.

**Item 23:** About 92 percent of the candidates were able to identify structures (option B) in the pollinated flower that produces cells with a haploid number of chromosomes.

**Item 24:** About 94 percent of candidates were able to identify option (C) changes that will occur in an animal cheek cell placed in concentrated salt solution for 30 minutes. 5 percent of the candidates went for the busted cell in option (D).

**Item 25:** Candidates did relatively well in this item as 70 percent chose option (D) as the part that responds by growing away from the light source. Candidates found option (A) very attractive as 25 percent went for it and the recommendation is that centres investigate why this could be the case.

**Item 26:** This item appeared too easy to candidates as 94 percent identified option (D) temperature of 28 percent and low light intensity as conditions that would cause the highest rate of photosynthesis.

**Item 27:** This item proved difficult to candidates as candidates found it challenging to identify option (D) urea as the substance that would move in the direction shown by the arrows showing capillary bed and some tissue cells surrounding it in the liver. Other options were also attractive as shown below.

A 0.08

B 0.14

C 0.22

D 0.57

**Item 28:** Candidates found the item to be easy as 90 percent of the candidature were able to identify the plumule option (A) in bean seed. The rest 10 percent of the candidates went for option B.

**Item 29:** Candidates did very well in this item as 94 percent of the candidates were able to identify option (B) antibiotics as the substance that can be used to treat gonorrhoea.

**Item 30:** Candidates did well in this item as 70 percent of the whole candidature were able to identify changes that causes the narrowing of the pupil option (B) i.e. muscle K contracts, and muscle L relaxes. It is worthwhile to note option (C) was able to attract as it was chosen by 24 percent of the candidates, and this could represent a misconception.

**Item 31:** The item was accessible to most candidates as 82 percent of them were able to identify the hypothalamus option (D) in the human brain.



**Item 32:** A large majority of candidates, 89% opted for option (B) carbon dioxide as the substance that will be at higher concentration at part X than part Y in the diagram that represents the placenta and the umbilical cord.

**Item 33:** Candidates chose option (D) at 82% that the blood that flows through the pulmonary vein is oxygenated and it is flowing towards the heart.

**Item 34:** The item proved difficult to most candidates as only (57%) opted for option (D) that their red blood cells contain antigen A and antigen B. Option (A) that plasma contains both antigen A and antigen B was chosen by 28 percent of the candidature.

**Item 35:** This is one of the items that the candidates did well as 78 percent were able to identify the scapula and humerus option (D) as the two bones that meet to form a ball and socket joint.

**Item 36:** About 94 percent of the candidature were able to correctly order the knee jerk reaction events that results hitting a table accidentally with a knee as follows; stimulation of receptors, impulses passes along sensory neurone, impulses passes along motor neurone, and finally contraction of the upper thigh muscles.

**Item 37:** Candidates did extremely well in this item as about 97 percent were able to identify option (C) as the cell that surrounds and destroys disease causing organisms.

**Item 38:** About 66 percent of the candidature chose option (A) as regions that represent tissues on the leaf and root that transport water. It must be noted that 22 percent of the candidates opted of option C suggests that centres ought to investigate why this could be the case.

**Item 39:** Candidates found this item to be to very difficult as only 17 percent chose option (D) sugar and water as substance that might have collected at the swollen section stem caused a piece of wire tied around it. There seems to be higher element of guessing and certainty as suggested by options below:

**A 0.33**

**B 0.14**

**C 0.36**

**D 0.17.**

**Item 40:** Candidates found the item too easy to access as 88 percent were able identify bar graph option (A) that represents the stomach from other different parts of the gut as shown by the activity of the enzyme amylase. The other options attracted candidates equally.



**Marking Key**

1	D	21	A
2	C	22	B
3	B	23	D
4	A	24	C
5	B	25	D
6	A	26	C
7	B	27	D
8	A	28	A
9	C	29	B
10	A	30	B
11	B	31	D
12	D	32	B
13	B	33	D
14	C	34	C
15	A	35	D
16	C	36	D
17	D	37	C
18	D	38	A
19	C	39	D
20	B	40	A



## Paper 3: Theory

### Section 1: General Comments

The performance of candidates was generally satisfactory. Candidates should qualify and quantify where necessary. For instance, when comparing identical twins to non-identical twins, it is suggested that identical twins may share an amniotic sac whereas non-identical twins have separate amniotic sacs. The sharing must be qualified, as there is a view that it does not happen all the time.

Some candidates still refer to energy release as production of energy which resulted in loss of marks. Candidates should maintain consistency in dealing with scientific concepts, across Biology, Chemistry and Physics.

### Section 2: Comments on Individual Questions

1 (a) (i) This part question required candidates to identify structures labelled F and G in Fig. 1.1. Most candidates answered this part question well by correctly identifying structures labelled F and G as *sap vacuole and cytoplasm* respectively.

(ii) This part question required candidates to state the function of the nucleus. The question was well answered by many candidates, who stated that *it controls all activities of the cell*. Some candidates' responses fell short of the expected answer. They merely stated one specific function of the nucleus instead of its general function.

(b) This part question required candidates to describe how a root hair cell is adapted for its function. This question was poorly answered by many candidates who described the function either as water absorption or mineral ions absorption instead of absorption of both water and mineral ions. Candidates lost one mark because of their omission of one of the substances. Candidates were required to describe adaptation for the general function and not the specific function of the root hair cell.

Some candidates lost one more mark because they linked the hair like projections to adaptation for deep penetration into the soil, *instead of increased surface area for absorption*. This resulted in candidates failing to obtain the full mark.

(c) This part question required candidates to state two differences between a root hair cell and a typical animal cell.

This question was well done by most candidates. Almost all candidates stated two main features of a root hair cell which distinguish from a typical animal cell as *presence of a cell wall and large permanent vacuole*.

2 (a) (i) This part question was well answered by most candidates who correctly identified structures U and V in Fig. 2.1 as *iris and cornea* respectively.

(ii) This part was also well answered by most candidates who correctly suggested that the function of the optic nerve in the eye is *carrying electrical nerve impulses between the eye and the brain*.



- (b) This part was poorly answered by most candidates. Candidates failed to refer to action of suspensory ligaments and changes in the lens. In an attempt to explain the effect of ciliary spasm on accommodation, candidates merely presented negative statements, which are considered inadequate responses. This resulted in loss of marks.
- 3 (a) (i) This part was well answered by most candidates who named the group of animals that the organism in Fig. 3.1 belongs to as arthropods. Some however incorrectly named the group of animals as *insects*. This answer was ignored and did not attract credit, as the name *insect* is already in the stem of the question.
- (ii) This part was also poorly done by most candidates. Candidates were not able to state two structural characteristics that identify the organism in Fig. 3.1 as an arthropod. Most candidates incorrectly suggested general characteristics of insects, instead of characteristics of arthropods such as a segmented body and jointed appendages or limbs.
- (b) (i) This part question was generally well answered by most candidates. The candidates were able to correctly identify the parasite that causes malaria as plasmodium and state that the organism shown in Fig. 3.1 obtains it from a bloodmeal. For candidates to score the full marks, they were required to state that the organism shown in Fig. 3.1 gets the parasite by biting and sucking human blood from an infected person. Most candidates omitted *biting* and *sucking* and therefore could not score the full marks.
- (ii) This part question required candidates to suggest **three** different ways of controlling malaria transmission. Many candidates correctly suggested three different ways as required. This question provided three lines numbered 1, 2 and 3, one for each of the three responses that are required. For questions that are structured like this, candidates should be advised to ensure that they write only one response on each of the lines provided. Additional responses on each line are ignored and do not attract any marks.
- 4 (a) (i) This part question required candidates to state the highest percentage of carbon dioxide in exhaled air by the athlete in Fig. 4.1. Most candidates were able to correctly read off the graph and state the highest percentage of carbon dioxide as 8.0 %, which earned them a mark.
- (ii) This part question was poorly done by most candidates. The candidates were required to suggest an explanation *for the change* in percentage of carbon dioxide in exhaled air by the athlete, between 2 and 4 minutes in Fig. 4.1; The first mark was awarded for stating the change. Candidates were expected to suggest that the change observed between 2 and 4 minutes is an increase in percentage of carbon dioxide in exhaled air by the athlete. Two marks were awarded to candidates who suggested that during this period (2 to 4 minutes) the athlete was doing physical exercise, which means there was an increase in their muscle contraction; which means their muscle cells needed more energy to do that; which means that the rate of respiration increased in muscle cells, to provide the energy that was required. Candidates were credited for concluding that the process of respiration was the cause of the





increase in percentage of carbon dioxide. Candidates who were unable to draw these links could not score the full marks.

(b) Most candidates did not perform very well on this part question. To obtain the full marks, candidates were expected to explain that, during exercise by the athlete, lactic acid was produced by the process of anaerobic respiration taking place in the muscle cells of the athlete and that it accumulated in muscles of the athlete; that breathing remains high for some time or takes time to return to normal, to allow time for more oxygen to be taken in; that the oxygen is needed for oxidising lactic acid, thus paying the oxygen debt. Most candidates failed to answer this question well because they did not realise that the statement in the question, “*breathing rate of an athlete takes time to return to normal*” means breathing rate of the athlete remained high for some time after the exercise. However, many candidates were able to make correct reference to anaerobic respiration, which earned them a mark. Some candidates incorrectly described energy release through anaerobic respiration as production of energy. This resulted in loss of some marks.

5 (a) This part question required candidates to explain how floods may contribute to famine. This part question was well done by most candidates. Almost all candidates were able to list correct effects of the floods, although many failed to explain how such effected the yield. Omission of the explanation by candidates resulted in the loss of some marks.

(b) This part question required candidates to state three other problems that may contribute to famine. Most candidates performed well on this part. Candidates stated problems such as drought, unequal distribution of food, population increase, outbreak of pests and diseases, extreme climate conditions, wars including trade wars and economic sanctions. This question, like question 3 (b) (ii), provided three lines numbered 1, 2 and 3, one for each of the three responses that are required. Once again for questions that are structured like this, candidates should be advised to ensure that they write only one response on each of the lines provided. Additional responses on each line are ignored and do not attract any marks.

6 (a) (i) This part question required candidates to explain how vaccination causes the development of immunity. This part question was well answered by most candidates, who correctly referred to the administration of attenuated pathogens or their antigens to individuals who are being immunised. Candidates explained that the antigens trigger increased production of lymphocytes, which in turn produced antibodies. Candidates further explained that some lymphocytes turned into memory cells and remained with some antibodies in human blood, conferring immunity. Candidates referred to the fact that similar future infection is rapidly dealt with before it develops into a disease. Some candidates made wrong reference to the origin of memory cells. Some suggested that vaccines contain antibiotics or antibodies instead of antigens. This resulted in loss of some marks.

(ii) This part question was poorly done by most candidates. Candidates incorrectly suggested possible *mutation of diseases* instead of *mutation of pathogens*. Some of the suggestions which attracted credit include: some pathogens like HIV destroy lymphocytes, administration of



immuno-suppressive drugs, infection by pathogens whose protein is not recognised as foreign by the immune system, some pathogens mimic normal human body cells, some immune deficiencies are hereditary.

(b) Many candidates performed well on this part question. Candidates were able to describe the causes, signs and symptoms and treatment of leukaemia. Candidates suggested possible causes such as various forms of radiation, mutagenic and carcinogenic chemicals, and some viruses. Some of the signs and symptoms suggested by candidates include many abnormal lymphocytes, reduced immunity, low red blood count, anaemia, enlarged spleen, liver, and lymph nodes. Candidates suggested some treatment like chemotherapy, radiotherapy, gene therapy and bone marrow transplant. Some confused causes with signs and symptoms. Maximum marks were only awarded to candidates whose answers covered all the areas i.e., causes, signs and symptoms and treatment.

- 7 (a) (i) This question was generally poorly answered by most candidates. Candidates failed to distinguish identical twins from non-identical twins. Candidates had a challenge with the use of comparative words such as similar and same. For instance, instead of stating that identical twins are genetically similar whereas non-identical twins are genetically dissimilar, candidates stated that identical twins have the same genotype. Most candidates however were able to state that identical twins are of the same sex while non-identical twin may be of different sexes. A common mistake made by many candidates is that identical twins are formed from one ovum fertilised by a different sperm cell, instead of one ovum fertilised by one sperm cell. Several candidates made comparison in terms of physical appearances, which did not attract any marks. Another common mistake is that candidates restricted themselves to comparing forms of reproduction only in plants, whereas the question was more general. This also resulted in loss of marks.
- (ii) This part question was fairly done. However, most candidates' responses were incomplete. For instance, under asexual reproduction, they described the offspring as being similar to their parents without clarifying whether they were genetically similar or phenotypically similar. This resulted in loss of marks.
- (b) (i) This part question was poorly done. Candidates answered this question by merely defining complete dominance and failing to link it to Mendelian experiments as required by the question. This did not attract any marks. Some of the candidates presented incorrect definitions of complete dominance. To score the full marks, candidates were required to use correct examples of Mendelian crosses.
- (ii) This part question was poorly done. Most candidates failed to explain why observed ratios differ from expected ratios. A few candidates who scored a mark, suggested that observed ratios are different from the expected ratios because the number of offspring dealt with are too small and do not provide a good sample size, mating patterns, random fertilisation, mutations, and environmental factors could also contribute to the disparity from the expected.



- (c) This part question was poorly done. Most candidates failed to state that it is a pesticide resistance gene that enables the pest to develop pesticide resistance. Many candidates made reference to survival of the fittest pests but fell short of linking that to change in the pest's genotype over time, as the ones which have less resistance to pesticides die off, resulting in a growing population that is moreresistant to pesticides.



## Paper 4: Practical Test

### Section 1: General Comments

Generally, candidates performed fairly well on the paper. There was a noticeable improvement on the presentation of biological drawings. Also, a noticeable improvement on calculation as well as correct expression of magnification was noted across all Centres. There was a significant improvement on drawing of line graphs by most candidates with correct labelling of axis. Most candidates have shown an improvement on following instructions and conducting experiments. However, some candidates had challenges with producing a correct and consistent scale for the graphs and neatness of drawings is still a concern that was picked across all Centres.

### Section 2: Comments on Individual Questions

- 1 (a) (i) This part question was well-done by most candidates. Most candidates were able to record the texture of the potato cylinder correctly.
- (ii) This question was well answered, most candidates were able to correctly record the length of potato cylinders in the table. However, some candidates recorded the length of potato cylinders in decimal, even though the units in the heading were given in “mm” and this attracted a penalty. Centres are advised to emphasize on training candidates on the acceptable scientific way of recording data in a table.
- (iii) Most candidates answered this part question correctly by stating that after 25 minutes the texture changed to “rough / hard / rigid”.
- (iv) This question was poorly done by most candidates. Most of them only stated that the difference in the initial and final texture of the potato cylinders was due to movement of water into the potato but failed to state that this movement led to cells becoming turgid.
- (b) (i) This part question was fairly done by most candidates. Most candidates were able to label the axis, produce a large scale for the graph and drew line graphs using correct notation as required. However, some candidates lost marks due to inconsistent scale for the graph.
- (ii) This question was poorly done by most candidates. The frequent response observed was “the graph was constant” instead of stating that the length of the potato remained constant. Centres are encouraged to emphasize the use of the variables when describing the shape of the graph.
- (iii) This part question was also poorly done. Most candidates were not able to explain why the length of the potato cylinders remained constant between 15 and 25 minutes. The expected response was that “the potato cells were fully turgid, hence no net movement of water molecules”
- (c) (i) This question was well done. Most candidates suggested “**parallax error & human reaction time error**” in their responses.



(ii) This question was fairly done by most candidates. The most common responses were: **“repeating the experiment and calculating the averages”** as demanded by the question.

- 2 (a) Generally most candidates did well on presenting a large drawing of the expected specimen to the required size. Also, it was observed that most students were able to label their drawings as required by the question. However, cleanliness of drawings and labelling of drawings still remains a concern which should be addressed by all Centres. Some candidates lost marks due to presenting unlabelled work though this part question clearly demanded so.
- (b) (i) This question was done well by most candidates. Only a few candidates were unable to show where measurement was taken, and this attracted a penalty for failure to follow instructions. Centres are advised to emphasize on training candidates to measure the dimension required by the question and indicate where the measurement was obtained e.g. ‘Longest side of the drawing’
- (ii) Calculation of magnification was done satisfactorily by most candidates. Magnification was expressed to one (1) decimal place by most candidates as expected. The use of small letter “X” was minimal. Centres are advised to emphasise the use of multiplication sign “X” instead of small letter “X” to express magnification.
- (c) Most candidates did well on this question as they were able to come up with observable similarities and differences between specimens F and G
- (d) Most candidates did not perform satisfactorily on this question. This part question required candidates to explain a feature of specimen F that may make it lose more water. Many candidates did not include the explanation of the feature stated. This resulted in loss of one possible mark. It was expected that candidates state that the specimen F had a large surface which therefore led to more exposure to sunlight.
- (e) This part question was fairly done by most candidates. Only a few candidates failed to state that “heating” using a water bath was a required step in testing for reducing sugar. Candidates who stated that “warm” water is used were penalised.



## Paper 5: Alternative to Practical

### Section 1: General Comments

Generally, candidates did not perform satisfactory on this component. For instance, most candidates were unable to produce a consistent scale for the question on graphs. Although the presentation of the biological drawings has improved, candidates still had challenges of drawing clean diagrams. In addition, most candidates did not attempt question 3 and this led to loss of possible marks.

### Section 2: Comments on Individual Questions

- 1 (a) (i) This part question was generally fairly done by most candidates, that is, candidates were able to label the axis correctly using the variables given in the table, but the scale was inconsistent, and this contributed to loss of marks.
- (ii) This question was poorly done by most candidates. The frequent response observed was “the graph was constant” instead of stating that the length of the potato remained constant. Centres are encouraged to emphasize the use of the variables when describing the shape of the graph.
- (iii) This part question was also poorly done. Most candidates were not able to explain why the length of the potato cylinders remained constant between 15 and 25 minutes. The expected response was that “the potato cells were fully turgid, hence no net movement of water molecules”.
- (b) This question was poorly done by most candidates. Majority of them only stated that the difference in the initial and final texture of the potato cylinders was due to movement of water into the potato but failed to state that this movement led to cells becoming turgid.
- (c) This question was well done. Most candidates suggested “**parallax error or human reactiontime error**” in their responses.
- 2 (a) This part question was generally well done by most candidates, that is, candidates were able to make a large drawing with the necessary details. However, most candidates were not able to present **clean** and **labelled** drawings.
- (b) (i) Most candidates showed correct skills on measuring and recording the measurements as expected. There were some minor errors encountered on this part question, such as failure to indicate where the measurement was taken.
- (ii) An improvement on calculation and expression of magnification was observed on this part question. Centres advised to emphasize on correct expression of magnification where a value expressed to a maximum of **one** decimal place should be preceded by “X” a multiplication sign.
- (c) Most candidates did well on this question as they were able to come up with observable similarities and differences between Fig 2.1a and Fig 2.1b. Also, there was a noticeable improvement on writing responses on designated spaces.



- (d) Most candidates did not perform satisfactorily on this question. This part question required candidates to explain a feature that may make the leaf in Fig 2.1a lose more water. Many candidates did not include the explanation of the feature stated. This resulted in loss of one possible mark. It was expected that candidates state that the leaf in Fig 2.1a had a large surface area which therefore led to more exposure to sunlight.
- 3 The part question was not performed satisfactorily by most candidates. Most candidates could not provide a workable set up for germinating seeds; some did not state the control set up and how the treatment was varied on the experimental set up. Also, most candidates did not state the variables or conditions which needed to be kept constant, e.g. same type / variety / number of seeds and water as was required by the question. The question required candidates to describe how to do an investigation to show that aerobic respiration releases more energy than anaerobic respiration in bean seeds. Most candidates lost marks because they were unable to show how their experiments would be timed. Many candidates were also unable to suggest expected results on the experiments described, (that is, stating that more heat in set with oxygen and less heat in set-up without oxygen).

**Conclusions:**

Centres are encouraged to emphasize and insist on biological correctness, so that there is consistency among the sciences.