



# Education

KwaZulu-Natal Department of Education  
REPUBLIC OF SOUTH AFRICA

LIFE SCIENCES

COMMON TEST

MARCH 2017

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 11**

MARKS: 60

TIME: 1 hour

N.B. This question paper consists of 9 pages.

**INSTRUCTIONS AND INFORMATION**

Read the following instructions carefully before answering the questions.

1. Answer ALL the questions.
2. Write ALL the answers in the ANSWER BOOK.
3. Start the answers to EACH question at the top of a NEW page.
4. Number the answers correctly according to the numbering system used in this question paper.
5. Present your answers according to the instructions of each question.
6. Make ALL drawings in pencil and label them in blue or black ink.
7. Draw diagrams, flow charts or tables only when asked to do so.
8. The diagrams in this question paper are NOT necessarily drawn to scale.
9. Do NOT use graph paper.
10. You must use a non-programmable calculator, protractor and compass, where necessary.
11. Write neatly and legibly.

**SECTION A****QUESTION 1**

1.1 Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A to D) next to the question number (1.1.1 to 1.1.5) in the ANSWER BOOK, for example 1.1.6 D.

1.1.1 The sea anemone is radially symmetrical because ...

- A it can be cut in mirror images in one plane only.
- B it can be cut in mirror images in two planes only.
- C it can be cut in mirror images in any vertical plane through its central axis.
- D it has an anterior and posterior end.

1.1.2 Study the list of characteristics below.

- (i) Small and green
- (ii) Large, red and yellow petals
- (iii) Produce nectar
- (iv) Have a scent
- (v) Small, light, smooth and dry pollen

Which ONE of the following is characteristic of wind pollinated flowers?

- A (i), (ii) and (iv) only
- B (iii) and (v) only
- C (i) and (v) only
- D (v) only

1.1.3 Which ONE of the following plant groups has the gametophyte generation as the dominant phase?

- A Angiosperms
- B Bryophytes
- C Gymnosperms
- D Pteridophytes

1.1.4 Transfer of pollen grains from anther to stigma is known as ...

- A seed dispersal.
- B pollination.
- C fertilisation.
- D germination.

1.1.5 Which ONE of the following characteristics makes the spermatophytes more successful over other plant groups?

- A Roots for anchorage
- B Seeds with testa
- C Leaves for photosynthesis
- D Dominant sporophyte

(5 x 2) (10)

**TOTAL SECTION A: 10**

**SECTION B****QUESTION 2**

2.1 Read the extract below and then answer the questions that follow.

**VIRUS AS MEDICINE****Genetically engineered virus can cure cancer**

A study has revealed that a genetically modified form of the virus that causes the disease herpes is an effective remedy against skin cancer. The use of this virus to treat cancer (virotherapy) raises the average life expectancy of patients by 41 months as compared to other forms of therapy which increased the average life expectancy of patients by 21,5 months.

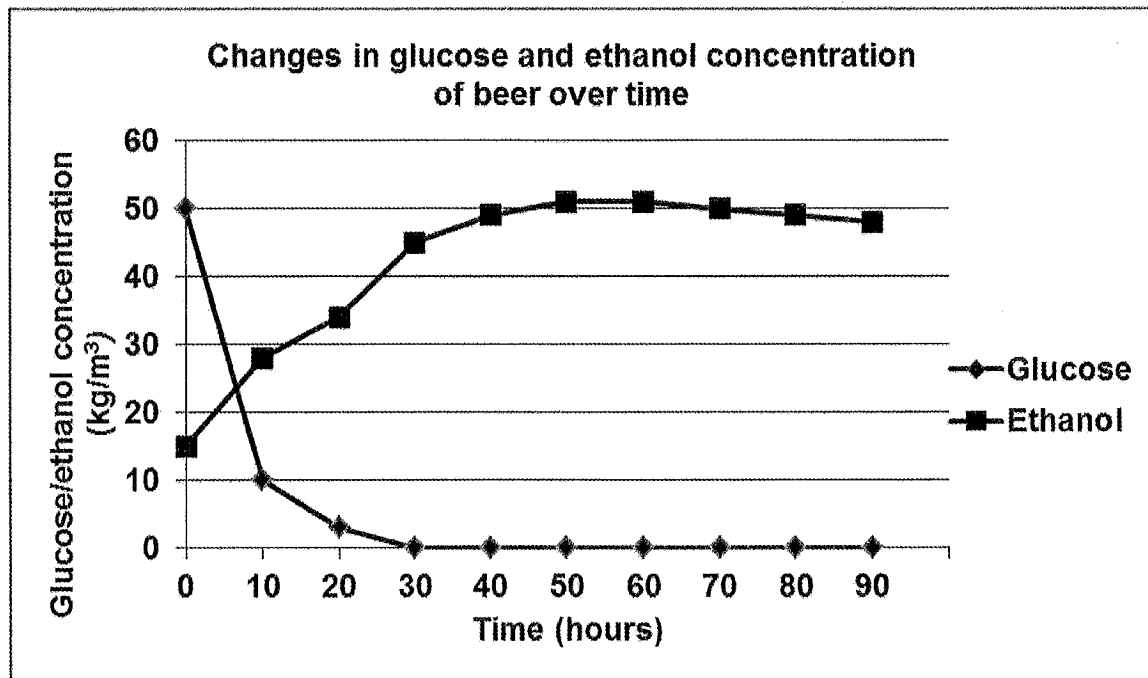
The modified herpes virus multiplies inside cancer cells until they burst open. After virotherapy, the immune system becomes capable of detecting and attacking the cancer throughout the body.

Adapted from <http://rt.com/news>

- 2.1.1 On average, how much longer (in months) did patients survive when on virotherapy as compared with other forms of therapy? (1)
- 2.1.2 Describe how the modified herpes virus kills the cancer cells. (2)
- 2.1.3 State the consequence of using UNMODIFIED herpes viruses for virotherapy. (1)
- 2.1.4 After virotherapy the immune system is able to detect the cancer cells.  
Explain how the immune system responds to attack the cancer cells. (2)  
(6)

- 2.2 A group of Grade 11 learners investigated the changes in the composition of ethanol and glucose in a liquid mixture (containing yeast cells) during the brewing of traditional beer.

The results of the investigation are represented in the graph below.

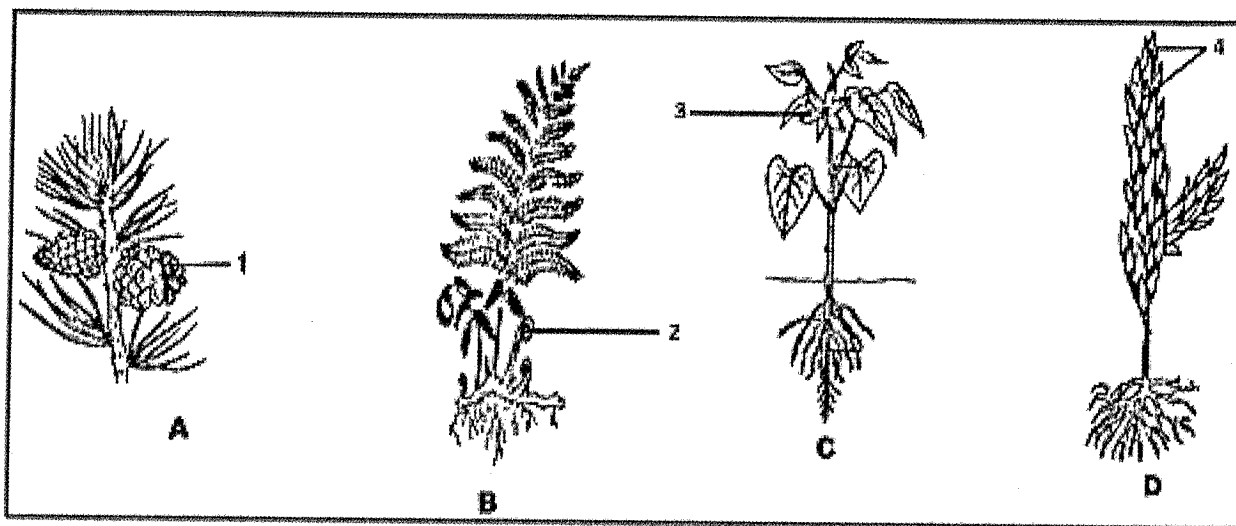


- 2.2.1 Identify the independent variable in this investigation (1)
- 2.2.2 Describe the relationship between changes in the concentration of glucose and ethanol over time. (2)
- 2.2.3 State ONE way in which the investigator can ensure that the investigation is reliable. (1)
- 2.2.4 During which period of time was glucose used the quickest? (2)
- 2.2.5 Explain why the ethanol concentration remained constant between 50 to 60 hours. (2)
- 2.2.6 Suggest why the ethanol concentration decreased after 60 hours. (1)

(9)  
[15]

**QUESTION 3**

3.1 The diagrams below represent four plant groups that you have studied.



3.1.1 State the LETTER only the plant group that:

- (a) Contain sori
- (b) Bears fruit
- (c) Have naked ovules

(3)

3.1.2 Write down the number(s) only of the part(s) that represent reproductive structures.

(2)

3.1.3 Explain ONE way in which the dependency on water for reproduction is reduced in **Plant C**.

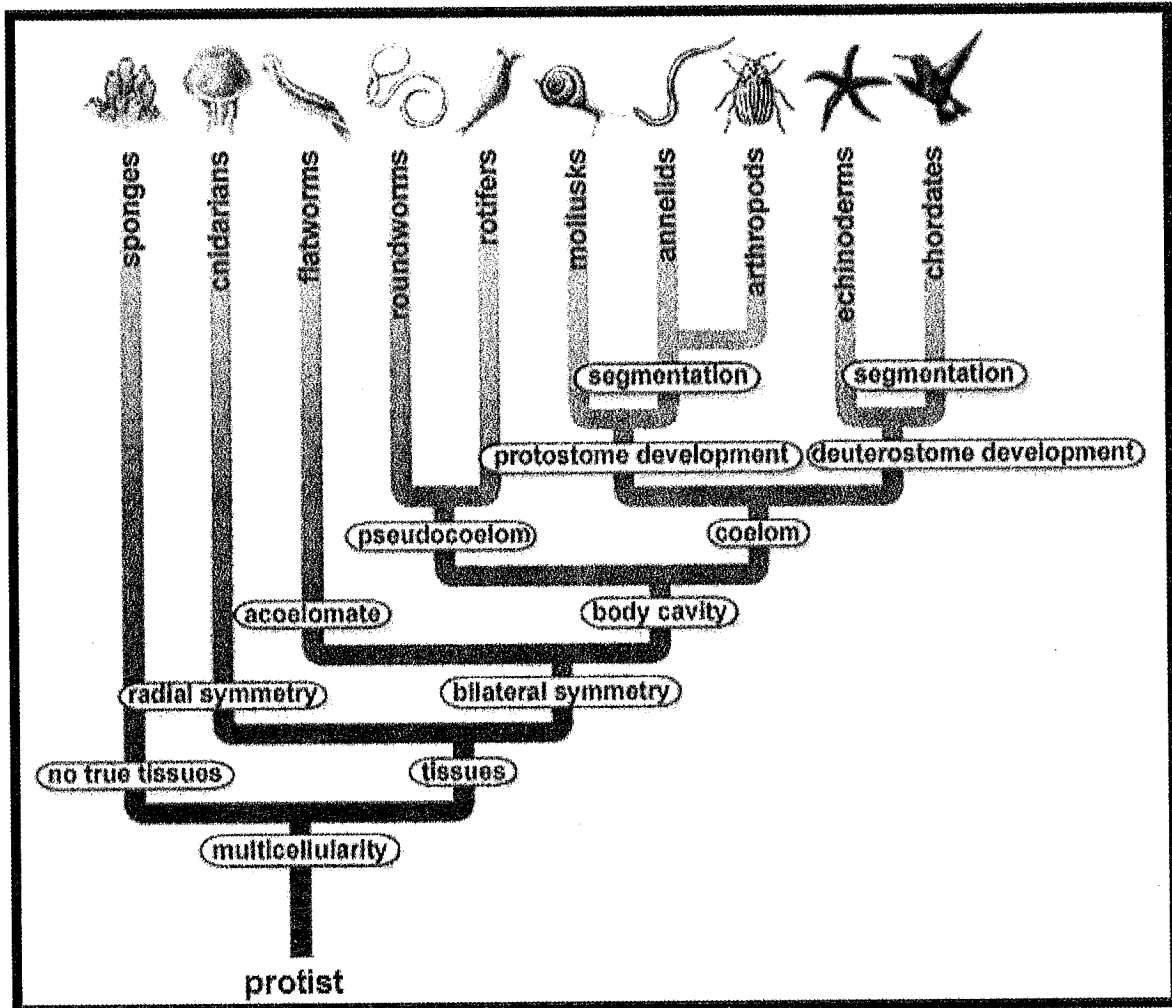
(2)

3.1.4 State TWO characteristics of the group represented by **Plant D** that prevent them from being as tall as the group represented by **Plant A**.

(2)

(9)

3.2 The diagram below represents the phylogenetic tree of different groups of animals.



3.2.1 State the ancestor of the animal kingdom. (1)

3.2.2 Name the group of animals that is: (1)

(a) Asymmetrical (1)

(b) Acoelomate (1)

3.2.3 Which phylum, Cnidaria or Arthropoda is more closely related to the Chordata? (1)

3.2.4 Explain your answer in QUESTION 3.2.3 (2)

(6)  
[15]

TOTAL SECTION B:

30



**SECTION C****QUESTION 4**

Describe the role of bacteria in maintaining balance in the environment, the importance of invertebrates in agriculture and ecosystems, and the significance of seed banks.

|                   |             |
|-------------------|-------------|
| <b>Content:</b>   | <b>(17)</b> |
| <b>Synthesis:</b> | <b>(3)</b>  |
|                   | <b>(20)</b> |

**NOTE:** NO marks will be awarded for answers in the form of flow charts, tables or diagrams.

|                         |           |
|-------------------------|-----------|
| <b>TOTAL SECTION C:</b> | <b>20</b> |
| <b>GRAND TOTAL:</b>     | <b>60</b> |