

| MARKER CODE | | | |
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| STUDENT ENROLMENT NUMBER | | | | | | | | | |
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Samoa School Certificate

BIOLOGY

2015

QUESTION and ANSWER BOOKLET

Time Allowed: 3 Hours & 10 Minutes

INSTRUCTIONS

1. You have 10 minutes to read **before** you start writing.
2. Write your **Student Education Number (SEN)** in the space provided on the top right hand corner of this page.
3. Answer **ALL QUESTIONS**. Write your answers in the spaces provided in this booklet.
4. If you need more space for answers, ask the Supervisor for extra paper. Write your SEN on all extra sheets used and clearly number the questions. Attach the extra sheets at the appropriate places in this booklet.

| STRANDS | Page Number | Time (Minutes) | Weighting |
|---------------------------|-------------|----------------|------------|
| STRAND 1: VARIETY OF LIFE | 2 | 22 | 12 |
| STRAND 2: CELL BIOLOGY | 5 | 22 | 12 |
| STRAND 3: GENETICS | 9 | 14 | 8 |
| STRAND 4: PLANTS | 11 | 50 | 30 |
| STRAND 5: ANIMALS | 18 | 58 | 29 |
| STRAND 6: ENVIRONMENT | 25 | 14 | 9 |
| TOTAL | | 180 | 100 |

Check that this booklet contains pages 2-27 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

1. Classification is a system of categorising living things. There are 7 divisions. What is the smallest division? (*Circle the correct answer*)

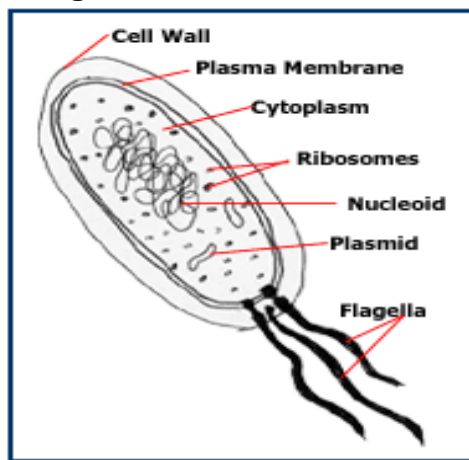
- A. Phylum
- B. Class
- C. Species
- D. Order

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

2. Which Phylum in the in the Plant Kingdom do monocotyledons and dicotyledons belong?

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

Use the diagram below to answer Question 3.



3. State the function of the flagella to the above micro-organism.

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

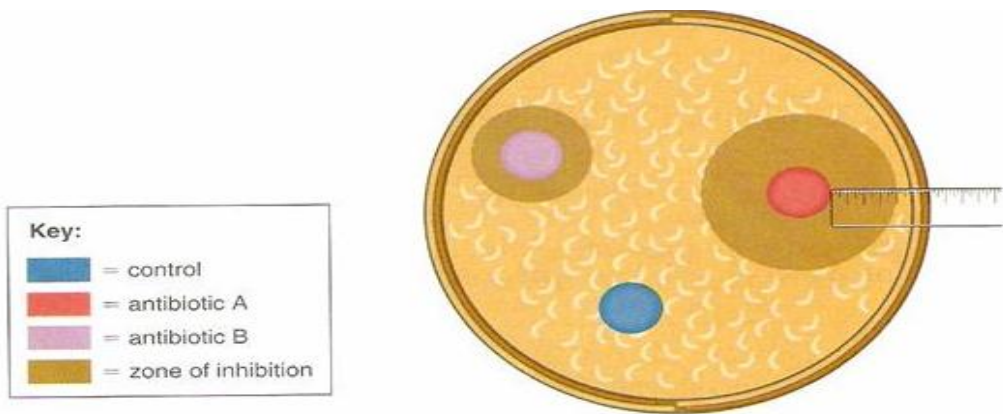
4. Explain why viruses are pathogenic.

| Skill Level 3 | |
|---------------|--|
| 3 | |
| 2 | |
| 1 | |
| 0 | |
| NR | |

5. Describe how microorganisms feed.

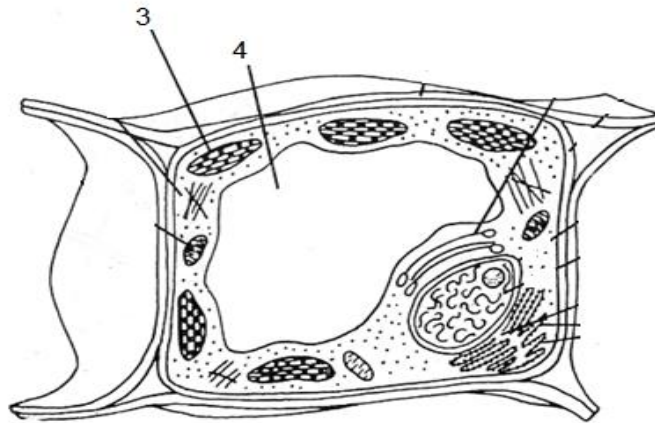
| Skill Level 2 | |
|---------------|--|
| 2 | |
| 1 | |
| 0 | |
| NR | |

6. Study the following results of a bacterial culturing experiment. Give a detailed discussion of the results shown by the two antibiotics.



| Skill Level 4 | |
|---------------|--|
| 4 | |
| 3 | |
| 2 | |
| 1 | |
| 0 | |
| NR | |

The diagram below shows a plant cell. Use the diagram to answer questions 7 and 8.



7. What organelle is represented by number 3 in the diagram?

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

8. State the main function of the organelle represented by number 4.

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

9. Name an organelle that is found **ONLY** in plant cells.

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

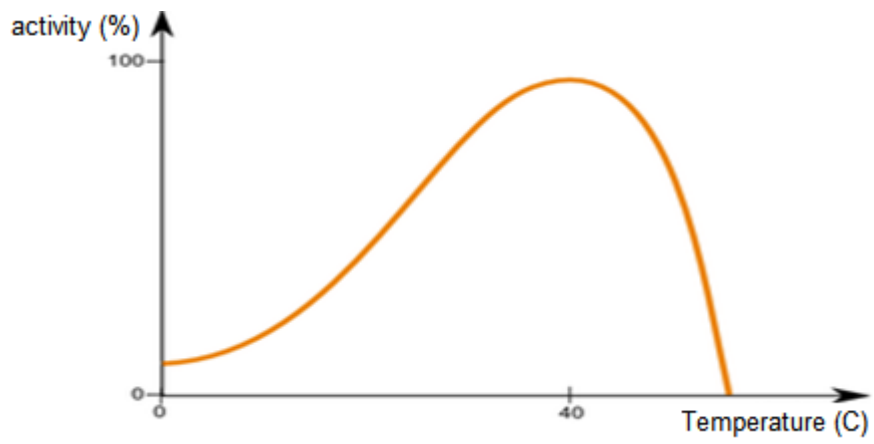
10. Define 'cellular respiration'

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

11. Describe the process of osmosis in cell transport.

| Skill Level 2 | |
|---------------|--|
| 2 | |
| 1 | |
| 0 | |
| NR | |

12. Study the graph below. Explain how temperature affects the action of enzymes.



Action of enzymes in relation to temperature.

| Skill Level 3 | |
|---------------|--|
| 3 | |
| 2 | |
| 1 | |
| 0 | |
| NR | |

13. Compare aerobic and anaerobic respiration. Your answer should include sites of the processes, the amount of energy released and the end product(s) of the two processes.

| Skill Level 3 | |
|---------------|--|
| 3 | |
| 2 | |
| 1 | |
| 0 | |
| NR | |

Define the following terms for QUESTIONS 14- 16

14. Meiosis

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

15. Discrete variation

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

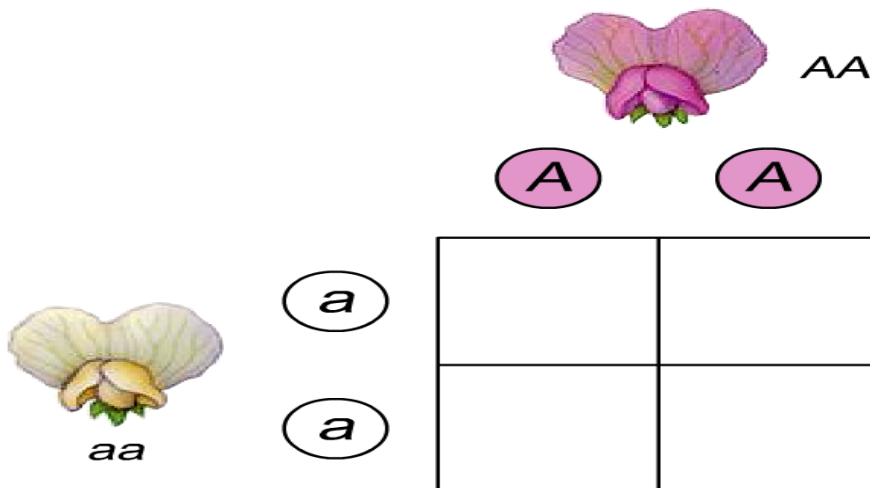
16. Homozygous gene pairs

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

17. How do the processes of meiosis and fertilization help in mixing genetic material in organisms?

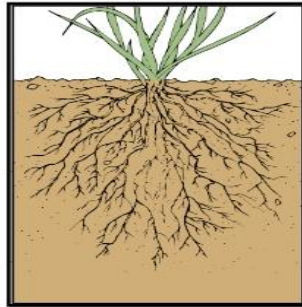
| Skill Level 3 | |
|---------------|--|
| 3 | |
| 2 | |
| 1 | |
| 0 | |
| NR | |

18. Complete the Punnet Square by filling in the boxes below. “A” being dominant for Red colour and “a” for recessive white colour.



| Skill Level 2 | |
|---------------|--|
| 2 | |
| 1 | |
| 0 | |
| NR | |

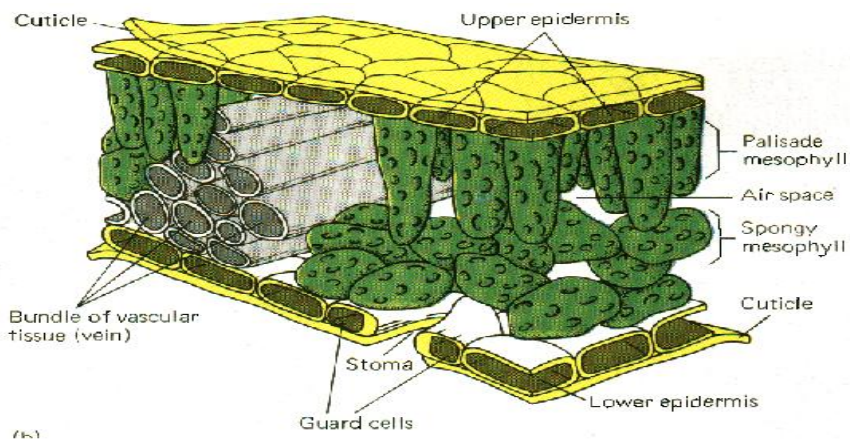
Study the diagram below and then answer question 19



19. What type of root system is shown in the diagram above?

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

Use the diagram below to answer question 20 & 21



20. State one importance of the Cuticle layer?

| Skill Level | |
|-------------|--|
| 1 | |
| 0 | |
| NR | |

21. The diagram above shows the cross-section of a part of a plant. Name the part of the plant.

| Skill Level | |
|-------------|--|
| 1 | |
| 0 | |
| NR | |

Define the following terms for Number 22 to 24.

22. Photosynthesis

| Skill Level | |
|-------------|--|
| 1 | |
| 0 | |
| NR | |

23. Pollination

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

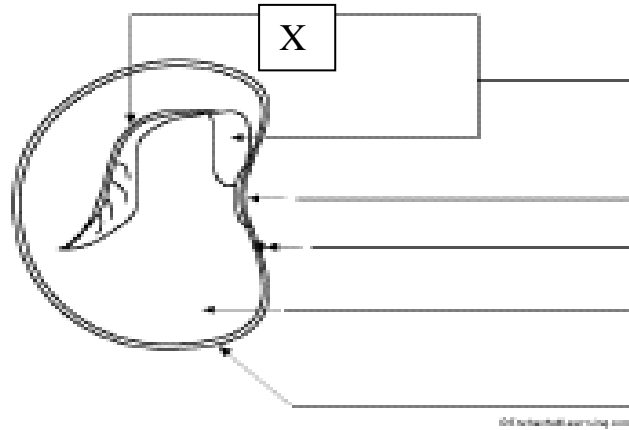
24. Geotropism

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

25. Give one advantage of asexual reproduction in plants.

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

Use the diagram below to answer question 26



26. What is the collective name of the two parts labelled X?

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

27. Write the chemical equation for the process of photosynthesis.

| Skill Level 2 | |
|---------------|--|
| 2 | |
| 1 | |
| 0 | |
| NR | |

28. Describe the conditions needed for seed germination.

| Skill Level 2 | |
|---------------|--|
| 2 | |
| 1 | |
| 0 | |
| NR | |

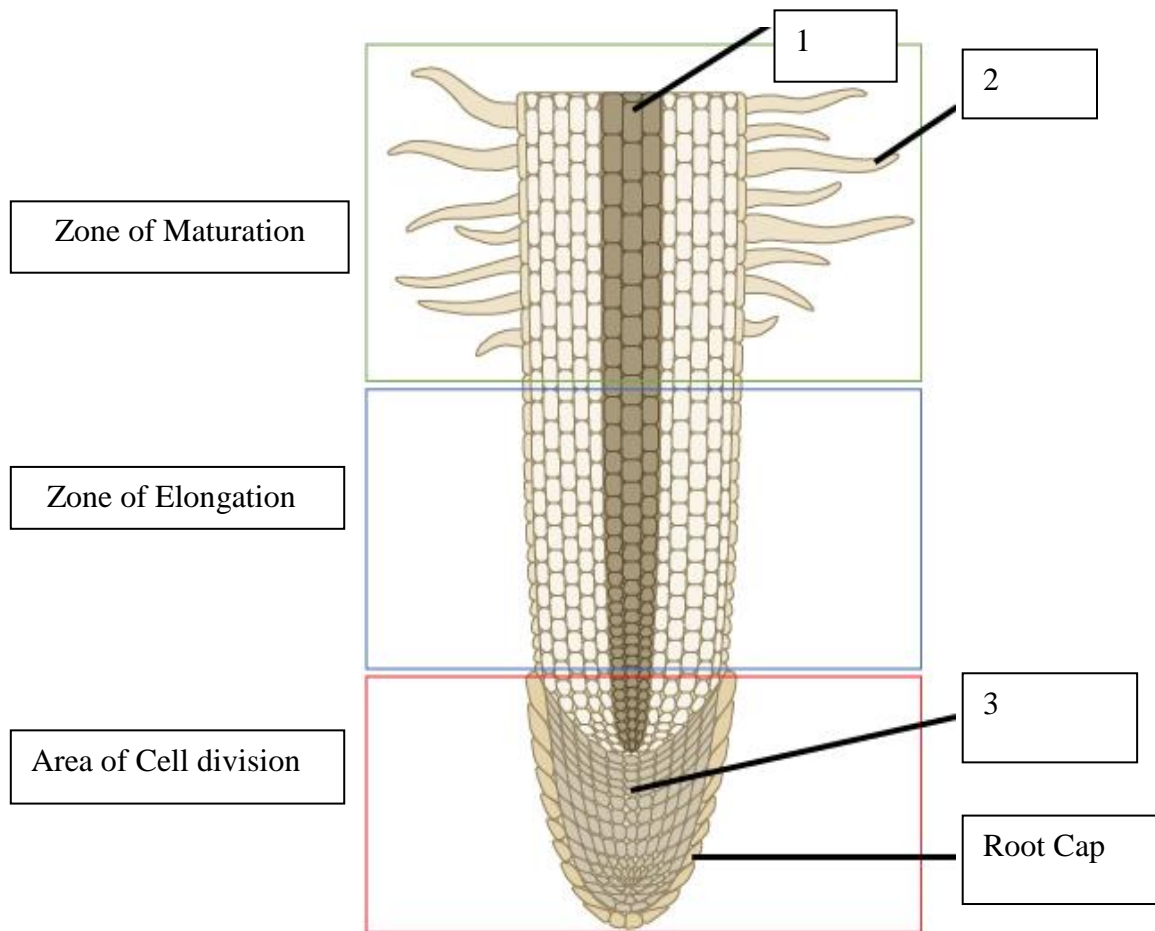
29. Why are carbon and hydrogen very important to plants?

Carbon:

Hydrogen:

| Skill Level 2 | |
|---------------|--|
| 2 | |
| 1 | |
| 0 | |
| NR | |

30. Label the parts marked 1, 2 and 3. Write your answers in the **spaces provided**.



Answers:

1. _____

2. _____

3. _____

| Skill Level 2 | |
|---------------|--|
| 2 | |
| 1 | |
| 0 | |
| NR | |

31. Explain the effect of the lack of chlorophyll in the process of photosynthesis.

| Skill Level 3 | |
|---------------|--|
| 3 | |
| 2 | |
| 1 | |
| 0 | |
| NR | |

32. Discuss how environmental factors such as wind, humidity and temperature affect transpiration in plants. Give specific examples.

| Skill Level 4 | |
|---------------|--|
| 4 | |
| 3 | |
| 2 | |
| 1 | |
| 0 | |
| NR | |

33. Fatima was asked to perform an experiment where leaf pigments can be observed. She got the results expected but could not explain them in scientific principles.

Discuss what you would write for Fatima's findings?

| Skill Level 4 | |
|---------------|--|
| 4 | |
| 3 | |
| 2 | |
| 1 | |
| 0 | |
| NR | |

34. Compare three different methods of seed dispersal.

| Skill Level 3 | |
|---------------|--|
| 3 | |
| 2 | |
| 1 | |
| 0 | |
| NR | |

Define the following terms for Question 35 to 37.

35. Lipids

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

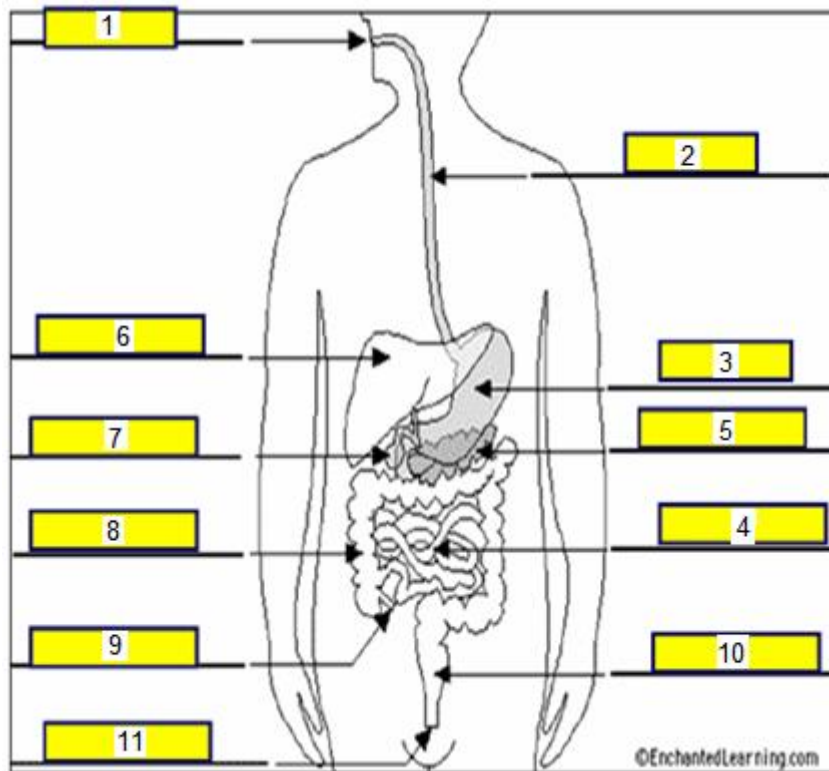
36. Minerals

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

37. Vitamins

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

Use the diagram below of the digestive system to answer questions 38 and 39.



38. Name the part labelled as number 5.

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

39. State the function of the part labelled as number 4.

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

40. What is the role of the circulatory system in humans?

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

41. What are vertebrates?

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

42. Name the gland of the endocrine system that secretes the hormones oestrogen and progesterone.

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

43. Define the term 'gametogenesis'.

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

44. List TWO excretory products of the human body.

| Skill Level 2 | |
|---------------|--|
| 2 | |
| 1 | |
| 0 | |
| NR | |

45. Describe the importance of movement for animals.

| Skill Level 2 | |
|---------------|--|
| 2 | |
| 1 | |
| 0 | |
| NR | |

46. Describe how an invertebrate (snail) would respond to an external stimuli such as light.

| Skill Level | |
|-------------|--|
| 2 | |
| 1 | |
| 0 | |
| NR | |

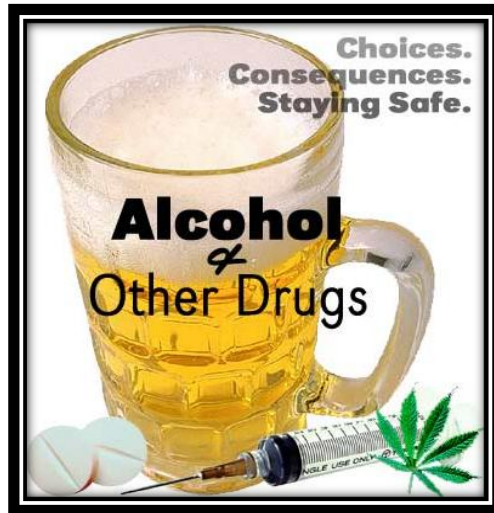
47. “A small hormonal imbalance in the body is very risky and can affect human health.” Explain what this means and give examples.

| Skill Level 3 | |
|---------------|--|
| 3 | |
| 2 | |
| 1 | |
| 0 | |
| NR | |

48. Explain how regular exercise affects functions of the body.

| Skill Level 3 | |
|---------------|--|
| 3 | |
| 2 | |
| 1 | |
| 0 | |
| NR | |

Study the following picture and then answer question 49



49. Discuss the dangerous effects of alcohol and illicit drugs on human health, giving specific examples.

| Skill Level 3 | |
|---------------|--|
| 3 | |
| 2 | |
| 1 | |
| 0 | |
| NR | |

50. Discuss why your pulse rate and breathing rate change when doing different activities such as sleeping, walking and playing

| Skill Level 3 | |
|---------------|--|
| 3 | |
| 2 | |
| 1 | |
| 0 | |
| NR | |

Define the following terms for Number 51 to 54:

51. Adaptation

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

52. Biological control

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

53. Commensalism

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

54. Parasitism

| Skill Level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

55. List some of the contributing factors to the issue of climate in the world.

| Skill Level 2 | |
|---------------|--|
| 2 | |
| 1 | |
| 0 | |
| NR | |

56. Why is the recycling of nutrients in the carbon and the nitrogen cycles very important to life on earth?

| Skill Level 3 | |
|---------------|--|
| 3 | |
| 2 | |
| 1 | |
| 0 | |
| NR | |

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BIOLOGY

2015

(For Markers only)

| STRANDS | Weighting | Marks | Check Marker |
|----------------------------------|------------|-------|--------------|
| STRAND 1: VARIETY OF LIFE | 12 | | |
| STRAND 2: CELL BIOLOGY | 12 | | |
| STRAND 3: GENETICS | 8 | | |
| STRAND 4: PLANTS | 30 | | |
| STRAND 5: ANIMALS | 29 | | |
| STRAND 6: ENVIRONMENT | 9 | | |
| TOTAL | 100 | | |