**DARAJANI SECONDARY SCHOOL,**

**P.O. BOX 20-90129, NGWATA.**

**MID\_TERM 2, 2015\_ EXAMINATION**

**FORM 3**

**BIOLOGY PAPER 2**

**231/2**

**TIME: 2 HRS**

**NAME…………………………………………………………………………..……ADM. NO……………….. CLASS:…………….**

**SECTION A: 40 MARKS**

***Answer all the questions in this section in the space provided.***

1. During an ecological study the students collected and marked 120 ants and released them. After 48 hours, the students captured another 90 ants, 20 of which had been marked previous.
2. How many ants were there in the compound? (show your working) (3 marks)

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1. What are the assumptions of this method in sampling animal population? (4 marks)

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1. State two other methods which could be used to determine the population. (2 marks)

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1. In an experiment to investigate the action of pepsin on egg albumen, equal amount of 2M hydrochloric acid were added to equal amount of egg albumen in different test tubes. The test tubes were placed in water both at different temperatures.

The graph shows the time taken for the enzyme to digest proteins at each temperature.

1. What is the optimum temperature for enzymes? (1 mark)

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1. Account for the time taken to digest egg albumen at 60oC. (2 marks)

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1. With reasons, name the form in which enzyme pepsin is secreted. (2 marks)

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1. State three factors that affect enzyme controlled reactions. (3 marks)

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1. (a) Name two sites where gaseous exchange takes place in an aquatic plant. (2 marks)

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(b) The diagram below represents the gills of a bony fish. Study it and answer the questions that follow.

1. Name the parts labelled A, B, and C. (3 marks)

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1. State the function of the part labelled A. (1 mark)

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1. Explain how the part labelled C is adapted to perform its functions. (2 marks)

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1. State one characteristic of a respiration surface. (1 mark)

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1. The flow chart below represents a feeding relationship in an ecosystem.

Hawk

Frogs

Fish

Zoo planktons

Phyto plankton

Insects

Snails

1. Name:
2. The producers in the ecosystem. (1 mark)

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1. Two organisms which are both secondary and tertiary consumers. (2 marks)

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1. State two short term effects of immigration of insects in the insects. (2 marks)

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1. Name the organism which has the least biomass in the food web. Explain. (3 marks)

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1. State two disadvantages of using synthetic pesticides over biological control. (2 marks)

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1. State the role of the following in an ecosystem: (3 marks)
2. Saprophytes.

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1. Leguminous plants.

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1. Producers.

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1. Name one method that would be used to estimate the fish population in the ecosystem. (1 mark)

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**SECTION B (40 MARKS)**

Answer question 5 (compulsory) and either question 6 or 7

1. Lactic acid concentration in the blood was measured in an athlete who took a physical exercise for nine minutes and the results were tabulated as shown below.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Time in minutes | 0 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 |
| Lactic acid concentration in mg/100cm3 blood | 20 | 74 | 95 | 88 | 79 | 70 | 65 | 59 | 54 | 47 | 41 |

1. From the data given, draw a graph showing lactic acid concentration in mg/100cm3 blood against time. (6 marks)
2. By how much did the lactic acid increase during the period of exercise? (1 mark)

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1. What was the concentration of lactic acid 57 minutes after commencing the exercise? (1 mark)

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1. Account for the shape of the curve between:-
2. 0 -15 minutes (3 marks)

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1. 15 -55 minutes (3 marks)

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1. What is the importance of the process by which lactic acid is produced to athlete? (1 mark)

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1. Name two hormones that are likely to be produced in the athlete’s body. (2 marks)

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1. State three factors that affect the rate of cellular respiration. (3 marks)

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1. Describe how mammalian heart is adapted o its function. (20 marks)

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1. State four sources of air pollution. (4 marks)

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1. Describe the effects and methods of control of air pollution. (16 marks)

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