**NAME …………………………..……………….. DATE …………………………**

**INDEX NO. ……….……….…………………...…..… SIGNATURE ……………..…………..**

**231/3**

**BIOLOGY**

**PAPER 3**

**(PRACTICAL)**

**TIME: 1¾ HOURS.**

**INSTRUCTIONS TO CANDIDATES**

* Answer **all** the questions.
* You are required to spend the first 15 minutes of the 1¾ hours allowed for the paper reading the whole paper carefully before commencing your work.
* Answers must be written in the spaces provided in the question paper.
* Additional pages must not be inserted.
* Candidates may be penalized for recording irrelevant information and for incorrect spellings.
* This paper consists of 5 printed pages. Candidates should check to ensure that all pages are printed as indicated and no questions are missing

**FOR EXAMINER’S USE ONLY**

|  |  |  |
| --- | --- | --- |
| **Questions** | **Maximum score** | **Candidate's score** |
| Question 1 | 12 |  |
| Question 2 | 14 |  |
| Question 3 | 14 |  |
| **Total score** | **40** |  |

231/3

Biology

Paper 3 (practical)

1. You are provided with solution labeled Q, Benedict’s solution, DCPIP reagent, dilute sodium hydroxide and 1% copper (II) sulphate; Using

1. 2ml in a test-tube in each case, test for the food substances in solution Q (10mks)

|  |  |  |  |
| --- | --- | --- | --- |
| Test | Procedure | Observation | Conclusion |
| Burette Test |  (1mk) |  (1mk) |  (1mk) |
| DCPIP test |  (1mk) |  (1mk) |  (1mk) |
| Benedicts test |  (1mk) |  (1mk) |  (1mk) |

1. Name the deficiency disease in humans that would result from lack of nutrients contained in solution Q (1mark)

 ................................................................................................................................................................................................................................................................................................................................................

1. In the study of evolution researchers have observed that vertebrate’s animals have the type of structures shown below.

 **SEE PHOTOGRAPHS ATTACHED**

1. Which theory of evolution do these structures support? (1mark)

 ................................................................................................................................................................................................................................................................................................................................................

1. On the diagrams identify the basic similarities observed. (2marks)

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1. Explain clearly why this structure justify evolution in animals (3marks)

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1. The micrograph below shows stages in a type of cell-division that occurs in organisms.

 **SEE PHOTOGRAPHS ATTACHED**

a) State the type of cell – division (1 mark)

 ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Identify the stages indicated by letter. (4marks)

V

 .....................................................................................................................................................................

 X.

 ......................................................................................................................................................................

 Y

 ......................................................................................................................................................................

 Z

 ......................................................................................................................................................................

1. Name the type of cells in which the above process occurs. (1mark)

 ........................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................

1. State two significance of this type of cell-division (2marks)

 ................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................

1. From the micrograph, suggest with reason(s) whether the cell-division shown occurred in plants or animals (2marks)

 ................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................

1. Name one cellular activities that occurs in stage labeled W (1mark)

 ........................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................

1. Below are drawing of various organisms. Examine them

 **SEE PHOTOGRAPHS ATTACHED**

1. i ) Name the phylum to which B belongs (1mark)

 ........................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................

 (ii) Give three reasons for your answer in (a) (i) above (3marks)

 ........................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................

1. Name the class to which specimen B and E belong.

B

 .................................................................................................................................

 E

 .................................................................................................................................

1. Give three differences between specimen B and E (3marks)

 ........................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................

1. Use the dichotomous key provided to identify the organism.
2. a) Jointed legs present............................................................................ go to 2

 b) jointed legs absent.............................................................................. go to 7

1. a) Have 3 pairs of legs............................................................................ go to 3

 b) Have more than 3 pairs of legs........................................................... go to 5

1. a) With wings.......................................................................................... go to 4

 b) Without wings.................................................................................... Anoplura

1. a) Have one pair of wings....................................................................... Diptera

 b) Have two pairs of wings..................................................................... Hymenoptera

1. a) Have four pairs of legs........................................................................ Arachnida

 b) Have more than 10 pairs of legs.......................................................... go to 6

1. a) With one pair of legs per segment...................................................... Chilopoda

 b) With two pairs of legs per body segment........................................... Diplopoda

1. a) With body enclosed in a shell............................................................. Mollusca

 b) Body surface with spiny projections................................................... Echnodermata.

 Identify steps followed to identify organism A, B, C, and E (5marks)

|  |  |  |
| --- | --- | --- |
| Specimen | Steps followed | Identity |
| A |  |  |
| B |  |  |
| D |  |  |
| E |  |  |