**NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ADMNO\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **CLASS\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**231/1**

**BIOLOGY**

**PAPER 1**

**THEORY**

**EAGLE II JOINT EXAMINATION**

**Instructions to candidates**

* Write your name admission number and class in the space provide above
* Answer all the question in the space provided

**Form examiner’s use only**

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| Question  | Maximum score  | Candidates’ score |
| 1 – 24 B | 80 |  |
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1. Give the structure of the cell that perform the following function-: (2Mks)
2. Regulate exchange of substances in and out of the nucleus

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b) Synthesis of ribosomes

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1. State the functions of the followings apparatus in collecting and observing specimens (3Mks)
2. **Pooter**

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1. **Abait trap**

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1. **Pit fall trap**

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1. Define the term resolution (1Mk)

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1. Explain the absence of the following components in urine of a healthy person (2Mks)
2. Glucose

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1. Plasma proteins

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1. Differentiate between primary and secondary growth (2Mks)

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1. Give a reason why lack of roughage in diet often leads to constipation. (1Mks)

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**7.** a) State the role of the following bacteria in the nitrogen cycle (3Mks)

i) Rhizobium bacteria

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ii) Nitrosomonas

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 iii) Nitrobacter

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1. What is the function of carnassial teeth. (2Mks) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. List the changes that takes place during inhalation in the breathing cycle of a mammal in the following (2Mks)
3. Ribcage

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1. Diaphragm

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**10.**a)What is metamorphosis? (1Mk)

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 b) What is the biological importance of the larval stage during metamorphosis (2Mks)

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**11.**a) What is seed dormancy ? (1Mk)

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b) Name a growth inhibitor in seeds (1Mk)

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c) Differentiate between hypogeal and epigeal germination in seeds (2Mk)

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**12.** Name the causative agent of the following diseases in man (2Mks)

a) Candidiasis

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b) Syphilis

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**13.** Study the diagram below and answer the questions that follow



**Atrium**

**Ventricle**

1. i) Identify the type of circulatory system shown above (1Mk)

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ii) Give a reason for your answer in (a) (i) (1Mk)

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iii) Give a disadvantages of this type of circulation (1Mk)

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**14.** Give a reason for each of the following biological phenomenan (2Mks)

a) A mature plant cell does not lose its shape after losing water

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b) Amoeba will not burst when placed in a hypotonic solution

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**15.** Mention two differences between pollen grains of wind and insect pollinated flower

 (2Mks)

|  |  |
| --- | --- |
| Wind  | insect |
|  |  |
|  |  |
|  |  |

**16.** State the functions of the following structures in human reproductive system (3Mks)

Seminiferous tubules\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Interstitial cells\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Epidydimis\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**17.** The following are text messages on a cell phone that represent gene mutation

Intended message Actual message

1. Buy me a coat Buy me a goat
2. John is paying John is praying

a) Identify the type of gene mutation that is represented in each case (2Mks)

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b) Identify any two disorder arising due to gene mutation in humans (2Mks)

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**18.** State one effect of magnesium deficiency in green plants. (1Mks)

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 **19.** Explain why water logging of the soil may lead to death in plants. (2Mks)

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**20.** A dog weighing 15.2kg requires 216kj while a mouse weighing 50g requires 2736kj per day. Explain. (2Mks)

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**21.** The equation below shows an oxidation reaction of food substance.

 5C51 H98O6 + 145CO2 102CO2 + 98H20 + Energy

a) Determine respiratory quotient of the oxidation of food substance. (2Mks)

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 (b) Give two reasons why the above food is not the main substrate. (2Mks)

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**22.** An individual is blood group B positive (2Mks)

a) Name the antigens in the individual’s blood

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b) Give the reason why the individual cannot receive blood from blood group A donor (2Mks)

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**23.** Below data was obtained in an ecosystem

Mango tree - 1

Caterpillars – 100

Sparrow- 50

Hawk- 5

1. Sketch a pyramid of numbers for their feeding relationship (2Mks)
2. Identify the shape of the pyramid of number (1Mk)

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**24.** a) What is organic evolution? (1Mks)

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b) i)What are vestigial structures? (1Mk)

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ii) Give two examples of vestigial structures in human (2Mks)

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**25.** Name the kidney disease which affects the glomerulus (1Mk)

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**26.** Name the kingdom to which plasmodium belongs. (1Mks)

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**27.** a) What is non- disjunction (1Mk)

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b) State two disorders in human that are as a results of non-disjunction (2Mks)

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**28.** Name two external features found in the class Mammalia only. (2Mks)

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**29.** State two roles of diffusion in human being. (2Mks)

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**30.** How do the following factors affect the rate of diffusion. (2Mks)

a) Diffusion gradient

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b) Surface area to volume ratio

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**31.** Name two fat soluble vitamin manufactured by the human body. (2Mks)

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**32.** Name two sites of gaseous exchange in frogs. (2Mks)

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**33.** State two characteristic features of members of division Bryophyta. (2Mks)

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**34.** How are lenticels adapted for gaseous exchange. (2Mks)

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