Name: ……..…… Index No. ……

Signature: …… School: ……..…….

P530/3
BIOLOGY
PAPER 3
July/Aug 2024
3 HOURS

NATIONAL EDUCATION RESEARCH & EXAMINATIONS BUREAU

UACE NEREB NATIONAL MOCKS 2024

BIOLOGY PRACTICAL

PAPER 3

Time: $3^{1}/_{4}$hours

INSTRUCTIONS TO CANDIDATES

- Answer all questions
- Answers must be written in the spaces provided

FOR EXAMINER'S USE ONLY

QUESTION	MARKS
1	
2	
3	
TOTAL	

1. You are provided with specimen K.
a) Place the specimen dorsal side uppermost with head facing you. How are the following features significant in the life of the animal in its habitat?

i) Fore limb structure. (2 marks)

……

……

……

……

……

ii) Fore limb location (2 marks)

……

……

……

……

……

iii) Hind limb foot structure (2 marks)

……

……

……

……

……

b) Dissect the specimen ventral side uppermost. Carefully displace the alimentary canal to the left loosening the tissue holding it to expose the urinary system structures within the abdominal cavity.

Continue to expose vessels that carry blood.

i) From the forelimbs and exposed body cavity organs except the spleen and gonads back to heart.

ii) To the head region from the heart. With a displaced heart anteriorly, draw and label **ONLY** the mentioned structures and blood vessels. (23 marks)

c) Unpin the specimen and place it dorsal side uppermost. Continue to dissect to remove the skin from the whole left hind limb. Draw to show the observable structural features. (7 marks)

2. You are provided with solutions P, Q, R, S,T, X, Y and Z and specimen W. Solutions P and Q are extracts from same plant organ but of different developmental stages. Solutions R, S and T are sucrose solutions of varying concentrations. Solutions X, Y and Z are laboratory reagents.

a) Carry out procedures (i) – (vi) below.

i) Label test tubes R, S and T. add $8cm^3$ of corresponding solution to each of them as initial volume.

ii) cut three equal sized cubes from specimen W each measuring 2cm x 2cm x 2cm. Divide the first cube into eight smaller cubes of uniform sizes and transfer all the pieces into solution R and start timing.

iii) Repeat procedure (ii) using remaining cubes and solutions S and T respectively.

iv) Leave the set up to stand for one hour **(Meanwhile proceed with other work)**

v) After one hour, decant all the solution from test tube R into measuring cylinder and record the final volume

vi) Repeat this procedure for solutions from the test tubes S and T and tabulate your results in table 1 as follows.

Final volume (mm^3)	R	S	T
Change in volume (mm^3)			

b) Explain the results in test tubes where the change in volume was

i) Lowest (4 marks)

……

……

……

……

……

……

ii) almost zero (3 marks)

……

……

……

……

c) Examine the physical condition of the tissues removed from test tube R. Record your observations and suggest the ecological significance of the changes in the cubes on the plant from which specimen W was obtained.

(3 marks)

……

……

……

……

……

……

d) i) Label test tubes 1, 2, 3, 4 and 5. In each add $2cm^3$ of solution Z. Further add contents to each as shown in table 2. Record your observations. (5 marks)

Table 2

Test tube	**Test**	**Observations**
1	$2cm^3$ of P	
2	$2cm^3$ of Q	
3	$2cm^3$ of X followed by $2cm^3$ of P	
4	$2cm^3$ of Y followed by $2cm^3$ of P	
5	$2cm^3$ of P that has been	

	boiled and cooled	

ii) Explain your results in table 2 (6 marks)

……

……

……

……

……

……

e) i) Carry out tests to establish the relative nutrient concentration of starch and reducing sugars in solutions P and Q. Record your tests, observations and deductions in table 3. (13 marks)

Table 3

Tests	**Observations**		**Deductions**
Starch	P		
	Q		
Reducing sugars	P		
	Q		

ii) Explain any differences between the nutrient contents of P and Q in your results.

(3 marks)

……

……

……

……

……

……

3. You are provided with specimen E, F, G, H and I.

a) Describe the floret arrangement in specimen

i) E (2 marks)

……

……

……

……

ii) F (2 marks)

……

……

……

……

……

……

iii) G (2 marks)

……

……

……

……

b) Describe the structure of

i) Outer bracts of florets in E. (2 marks)

……

……

……

ii) Observable named features in tubular floret of F. (2 marks)

……

……

……

c) How are the following adapted for pollination

i) Stamen of floret of E (2 marks)

……

……

……

ii) Observable feature of gynoecium of I. (2 marks)

……

……

……

d) Carefully open and remove other floral parts to expose the essential reproductive parts of H. Draw and label. (6 marks)

e) Using only essential reproductive structures of florets/flowers, construct a dichotomous key for the identification of E, F, G, H and I. (4marks)

END *