

UACE MOCK EXAMINATIONS2014

P530/3 BIOLOGY PRACTICAL

TIME: 3 HOURS

Instructions

- Answer **all** questions
- Write answers in only the spaces provided

1. You are provided with specimen K which is freshly killed.

(a) Examine the dorsal part of the skin and the foot of the hind limbs. How is their structure related to function for the survival of the organism in its habitat.

(i) Dorsal part of skin

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(ii) Foot of hind limbs

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(b) (I) Dissect the specimen to display blood vessels that

- (i) Drain blood from the head region
- (ii) Supply blood to the lungs

Draw and label the vessels on the left hand side of the specimen including an undisplaced heart. (13 marks)

(II) By carefully loosening the tissue, cut out the rectum and lower part of ileum without damaging the capillaries around it. Displace the remaining part of alimentary canal to the left of specimen and liver lobes sideways to display blood vessels that drain blood from the abdominal region back to an displaced heart. Draw and label the visible structures within the abdominal region. (23 marks)

2. You are provided with solutions X,Y, Z and W. Carry out tests to determine the food nutrients contained in solutions X,Y and Z. Thereafter investigate the action of solution Z

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 and W on solutions X and Y and then action of solution W on solution Z following the instructions provided.

(a) Carry out Iodine, Benedict's and Biuret tests on solutions X,Y and Z. Record your tests, observations and deductions in table I (23 marks)

Test	Solution		
(i) Iodine test	X		
	Y		
	Z		
(ii) Benedict's test	X		
	Y		
	Z		
(iii) Biuret test			
	X		
	Y		
	Z		

(b) Label 5 test tubes as X,Y₁, Y₂, Y₃ and Y₄. Add into each test tube 3cm³ of the corresponding solution, followed by 2cm³ of solution W into test tube X and Y₁ while in test tubes Y₂, Y₃ and Y₄ add 2cm³ of solution Z. Continue to add 5 drops of sodium bicarbonate solution and dilute hydrochloric acid to test tubes Y₃ and Y₄ respectively. Label another test tube as Z to be added 2cm³ of solution Z and 2cm³ of solution W. Incubate the mixtures at a temperature of 37°C – 40°C for 1 hour (proceed with other work for meantime). After time duration, carry out Iodine, Benedict's and biuret tests on the contents of test tubes and record your observations and deductions only as indicated in Table 2.

Table 2

Test	Test tube	Observations	Deductions
Iodine test	X		
Benedict's test	X		
	Z		
Biuret test	X		
	Y ₁		
	Y ₂		
	Y ₃		
	Y ₄		

(c) Suggest an explanation for your results in (b) (05 marks)

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3. You are provided with specimens R,S,T and V.

(a) (i) State the phylum to which these specimen belong. (1 mark)

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(ii) State three structural features which are characteristics of the phylum (03 marks)

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(b) What are the structural differences between the abdominal regions of R and S.

R	S
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(c) Cut out and observe the head regions of both specimen R and S under low power of microscope.

(i) Draw and label the mouth parts of R from the anterior view. (07 marks)

(ii) State one difference in structure between the antennae and another in the modification of structure of mouth parts. (2 marks)

R	S
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(d) (i) Cut off the hind limb of specimen S. Observe it laterally using a hand lens or low power of microscope. Draw and label the tibia and the tarsal region. (05 marks)

(ii) How is the structure drawn in (d) (i) above adapted to function for survival of organism? (02 marks)

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(e) Using dissection instruments, examine the head region of the specimen. Construct a dichotomous key for their identification in the order of R,T S and V. (5 marks)

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