Candidate's Name:		*****	*****	*****	****		*****	****	
Signature:		Random No.				Personal No.			
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(Do not write your School/ Centre Name or Number anywhere on this booklet.)

553/1 BIOLOGY (Theory) Paper 1 Oct. / Nov. 2019 2 ½ hours



UGANDA NATIONAL EXAMINATIONS BOARD

Uganda Certificate of Education

BIOLOGY (THEORY)

Paper 1

2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES:

This paper consists of sections A, B and C.

Answer all questions in Sections A and B, plus two questions in Section C.

Write the answers to Section A in the boxes provided, answers to Section B in the spaces provided, and answers to Section C in the answer booklets provided.

	For Examiners' Use Only					
Section		Marks	Examiner's Signature and No.			
A	No. 1-30					
	No. 31					
В	No. 32					
	No. 33					
	No.					
C	No.					
	Total					

SECTION A (30 MARKS)

Answer all questions in this section. Write the letter representing the correct answer to each question in the boxes provided.

1.	Which one of the following is a characteristic of a monocotyled	onous stem?
	A. Scattered vascular bundles.	
	B. Vascular bundles arranged in a ring.	
	C. Vascular bundles have cambium.	<u> </u>
	D. Have distinct pith.	
2.	The lipase enzyme catalyses the breakdown of	
	A. fats.	
	B. proteins.	47
	C. maltose.	
	D. sucrose.	
3.	The kind of solution which would make a fully turgid plant cell	placed in it
J.	to shrink is	placed in it
	W SIMILE IS	
	A. more dilute than the cell content.	·
	B. of the same concentration as the cell content.	
	C. more concentrated than the cell content.	
	D. less in quantity than the cell sap.	
4.	Which one of the following features is common to both class ins	secta and
	class arachnida?	
	A. Having three main body divisions.	• [
	B. Possession of an exoskeleton.	
	C. Having three pairs of legs.	
	D. Possession of antennae.	
5.	Which one of the following vectors transmits yellow fever?	
	A. Female Anopheles mosquito.	
	B. Culex mosquito.	
	C. Tsetse fly.	
	D. Aedes mosquito.	<u></u>
6.	Which one of the following is a benefit of using manure?	
	A. Preventing soil erosion.	
	B. Improving crumb structure of soil.	
	C. Reducing population of harmful organisms in soil.	
	D. Maintaining adequate soil cover.	

2

19 6:

7. Figure 1 shows a food web. Eagle Termite Rabbit Hen Grass Fig.1 Which one of the following organisms in figure 1 is a secondary consumer? A. Hen. В. Grass. C. Eagle. D. Termite. Which one of the following pairs is made up of only major elements in plant 8. nutrition? Magnesium and Calcium. Α. Molybdenum and Iodine. B. Boron and Chlorine. Ç. Manganese and Copper. D. Which of the following blood transfusion will lead to agglutination? 9. Recipient's blood group Donor's blood group A. AB O B. В AB C. A A D. 0 В During expiration in a bony fish, the operculum is forced open when the 10. A. floor of the buccal cavity is lowered. В. volume of the buccal cavity increases. C. pressure in the buccal cavity decreases. D. pressure in the buccal cavity increases. In which part of the nephron does reabsorption of sugars take place? 11. Distal convoluted tubule. A.

Loop of Henle.

Collecting duct.

Proximal convoluted tubule.

В.

C. D.

12.	Where is the image of a far object formed in the eye of a short-sighted person?		
,	A. On the choroid. B. Behind the retina. C. In front of the retina. D. On the blind spot.		
13.	A potted plant placed horizontally on a rotating klinostat continues to grow in a horizontal direction because auxins		
	A. migrate to the tip of the shoot. B. are uniformly distributed in the shoot. C. migrate to the dark side of the shoot. D. migrate to the illuminated side of the shoot.		
14.	Which one of the following characteristics can be used to identify a cervical vertebra? Presence of		
	A. small neural canal and metapophysis. B. long neural spine and large centrum. C. small transverse processes and narrow neural spine. D. vertebraterial canals and short neural spine.		
15.	Which one of the following characteristics of flowers encourages cross pollination?		
	A. Being unisexual. B. Being bisexual. C. Anthers above the stigma. D. Stamens and pistil remain enclosed within petals.		
16.	Which one of the following human characteristics exhibits discontinuous variation?		
	A. Height. B. Blood groups. C. Weight. D. Skin colour.		
17.	The function of sodium hydrogen carbonate in an experiment to show that carbon dioxide is necessary for photosynthesis is to;		
	A. absorb carbon dioxide. B. reduce oxygen. C. produce water. D. produce carbon dioxide.		

	· -	ia eloi	igation of the hypo	cotyl during se	ea	j.dr
A. B. C. D.	Plumule grows st Cotyledon is carri	raight ied abo	out of the ground.	27.1 310 271	zi.	COMPANY OF THE PROPERTY AND
				haemophiliae o	hild.	-
A. B. C. D.	Male, because he Female, because s	inheri she inh	ted the trait from th	ne carrier father in the normal fa	ther.	
		_	re correct products	of aerobic res	oiration i	n."
A. B. C. D.	Alcohol and carbo Carbon dioxide as	on dio	er.	els.		
		-		to occur in the	human b	ody
A. B. C. D.			or pili muscle.		•	With the second second
Figur	e 2 represents part	of a se	ensorý neurone.			
	×	What A. B. C. D.	is the pathway of produces the mye speeds up impuls	the nerve impulin sheath.		
ل Fi:	# z. 2					
	A. B. C. D. Which both p. A. B. C. D. Which when A. B. C. D. Figur	A. Cotyledon remain B. Plumule grows st C. Cotyledon is carrid. Hypocotyl straight A normal man married to Suggest the sex of the classical A. Female, because the C. Carban dioxide and carban A. Lactic acid and was alcohol and carban C. Carban dioxide at D. Lactic acid and carban C. Carban dioxide at D. Lactic acid and carban C. Carban dioxide at D. Lactic acid and carban C. Carban dioxide at C. Carban dioxide at D. Lactic acid and carban C. Carban dioxide at C. Carban diox	A. Cotyledon remains under B. Plumule grows straight C. Cotyledon is carried about D. Hypocotyl straightens. A normal man married to a normal man married to a normal man married to a normal suggest the sex of the child with A. Female, because males of B. Male, because he inhering C. Female, because he inhering the male, because he inhering the male of the following pairs a both plants and animals? A. Lactic acid and water. B. Alcohol and carbon diorection of the following rewhen environmental temperature. A. Vasodilation. B. Shivering. C. Contraction of the erection. Figure 2 represents part of a second the male of the part of a second the male of the plants. What A. B. C. D.	germination? A. Cotyledon remains underground. B. Plumule grows straight out of the ground. C. Cotyledon is carried above ground. D. Hypocotyl straightens. A normal man married to a normal woman had a Suggest the sex of the child with a reason. A. Female, because males do not suffer from B. Male, because he inherited the trait from the C. Female, because she inherited the trait from the compact of the following pairs are correct products both plants and animals? A. Lactic acid and water. B. Alcohol and carbon dioxide. C. Carbon dioxide and water. D. Lactic acid and carbon dioxide. Which one of the following responses are likely twhen environmental temperature increases? A. Vasodilation. B. Shivering. C. Contraction of the erector pili muscle. D. Increased metabolism. Figure 2 represents part of a sensory neurone. What is the function of the produces the mye C. speeds up impulse to the compact of the carries impulse to the compact of the carries impulse to the compact of the carries impulse to the carries in the carries impulse to the carries in the carri	A. Cotyledon remains underground. B. Plumule grows straight out of the ground. C. Cotyledon is carried above ground. D. Hypocotyl straightens. A normal man married to a normal woman had a haemophiliae of Suggest the sex of the child with a reason. A. Female, because males do not suffer from haemophilia. B. Male, because he inherited the trait from the carrier father. C. Female, because she inherited the trait from the normal factor. D. Male, because he inherited the trait from the carrier moth. Which of the following pairs are correct products of aerobic responds plants and animals? A. Lactic acid and water. B. Alcohol and carbon dioxide. C. Carbon dioxide and water. D. Lactic acid and carbon dioxide. Which one of the following responses are likely to occur in the lawhen environmental temperature increases? A. Vasodilation. B. Shivering. C. Contraction of the erector pill muscle. D. Increased metabolism. Figure 2 represents part of a sensory neurone. What is the function of the part marked. A. is the pathway of the nerve impute B. produces the myelin sheath. C. speeds up impulse transmission. D. carries impulse to the cell body.	A. Cotyledon remains underground. B. Plumule grows straight out of the ground. C. Cotyledon is carried above ground. D. Hypocotyl straightens. A normal man married to a normal woman had a haemophiliac child. Suggest the sex of the child with a reason. A. Female, because males do not suffer from haemophilia. B. Male, because he inherited the trait from the carrier father. C. Female, because she inherited the trait from the normal father. D. Male, because he inherited the trait from the carrier mother. Which of the following pairs are correct products of aerobic respiration in both plants and animals? A. Lactic acid and water. B. Alcohol and carbon dioxide. C. Carbon dioxide and water. D. Lactic acid and carbon dioxide. Which one of the following responses are likely to occur in the human be when environmental temperature increases? A. Vasodilation. B. Shivering. C. Contraction of the erector pili muscle. D. Increased metabolism. Figure 2 represents part of a sensory neurone. What is the function of the part marked X? It A. is the pathway of the nerve impulse. B. produces the myelin sheath. C. speeds up impulse transmission. D. carries impulse to the cell body.

23.	Whi	ch one of the following is a function of oestrogen in humans?	
	A. B.	Causes Graafian follicle to develop. Repairs the uterine lining.	
	C. D.	Causes degeneration of the corpus luteum. Causes ovulation.	ļ
24.		ch one of the following is an adaptation of arteries to transport blood er high pressure?	
	A.	Their innermost layer is smooth.	1
	B.	They have thick and elastic walls.	
	C.	They have wide lumen.	ļ
	D.	Their walls are thin and inelastic.	
25.	Whi	ch one of the following bones is found in the human fore limb?	
	Α.	Fibula.	1
	B.	Femur.	l
	C.	Tibia.	J
	D.	Ulna.	
26.	Spe	ms in the mammalian male reproductive system are stored in the	
	A .	urethra.	1
	В.	epididymis.	l
	C.	seminiferous tubule.	
	D.	prostate gland.	
27.	Whi wate	ch one of the following characteristics belongs to a fruit dispersed by	
		Hooks.	_
	A. B.	Wings.	1
	C.	Fibrous mesocarp.	l
	D.	Pericarp with line of weakness.	,
	٠.		
28.	Whi	ch one of the following conditions increases the rate of transpiration?	
	A.	High temperature.	_
	B.	Low light intensity.	1
	C.	Still air.	
	D.	High atmospheric pressure.	L

29. The association between nitrogen fixing bacteria in the root nodules and the leguminous plant can best be described as A. mutualism. commensalism. B. C. parasitism. competition. D. All the following conditions result from deficiency of vitamins of the B 30. group except A. beriberi. В. pellagra. C. pernicious anaemia. D. failure of blood to clot. **SECTION B (40 MARKS)** Answer all questions in this section. Answers must be written in the spaces provided. In an experiment, two glass tubes were filled with different soil samples A 31. and B. The glass tubes were placed in a basin of water and left to stand for 5 days. The rise of water column in each soil sample was measured and recorded each day for 5 days as shown in table 1. Table 1: Rise of water column in soil samples A and B. Rise of water column (cm) Days Soil sample A Soil sample B 1 20 2 16 24 32 26 37 27 27 38 What soil factor was being investigated? (a) (01 mark)

Using the results in table 1, plot a graph showing the rise of water in (b) the two soil samples A and B. (06 marks) Describe the rise of water through soil samples A and B as shown on (c) the graph. (04 marks) Soil sample A Soil sample B ***********************************

	(d)	Explain the differences in the water rise through the two soil samples. (04 mar	ks)
	••••••		

	• • • • • • •	***************************************	
	(e)	Using the rise of water column on the graph for day 1, suggest with a reason the type of soil samples A and B. (02 mar	ks)
		Soil sample A	
		Reason:	
		Soil sample B	
		Reason:	
	(f)	What is the importance of the factors being investigated in plants? (03 mar	ks)
•••••			
32.	Figu	are 3 is a diagram showing the uterus of a pregnant woman. Study it and	
		Fig. 3	
	(a)	Name the parts labelled A, B, C and D. (02 mar	ks)
		A	
		B	
		c	
		D	

	(b)	Give any one function for each of the parts labelled A,	B, C and D.
		A	(04 marks)
		A	
		B.	•••••
		C.	************
		D ,	•••••
	(c)	State any two adaptations of part A for its function.	(02 marks)
• • • • •			
• • • • •			
• • • • •	(d)	Using letter X, indicate on the diagram the part that dev	relons into a
	(u)	baby.	(01 mark)
	(e)	Name the hormone that enables part D to be efficient du	
		pregnancy.	(01 mark)
33.	(a)	What kind of response is demonstrated when maggots p choice chamber move towards the wet part?	olaced in a (01 mark)
			· · ·
	(b)	Give the importance of the response stated in (a) to the	
	(-)		(02 marks)
••••	•••••		***************
•••••	٠٠٠٠٠٠	77	(64 an amilia)
	(c)	Explain any three tropic responses.	(04 marks)
••••			
• • • • •			
••••	••••••	······································	
••••	•••••		
	* > * * *		***********

(α)	EAD	(i) providing support to plants.	(1½ marks)
	4 = 4 4 5	······································	•
	*****	(ii) aiding photosynthesis.	(1½ marks)
		SECTION C (30 MARKS)	
not i	-	y two questions from this section. Additional questions answerked. Answers to these questions must be written in the answe	\
34.	(a)	Describe the different types of immunity in humans.	(06 marks)
<i>5</i> 71		Explain the role of blood in body defence.	(04 marks)
	(b)		
	(c)	Give any five ways in which the body immunity can be wea	kenea. (05 marks)
35.	(a)	How is light from a nearby object focused on the retina of a eye?	human (08 marks)
	(b)	(i) Explain why a long sighted person cannot see near ob	jects
		clearly.	(03 marks)
		(ii) Using a diagram, explain how long sightedness can b corrected.	e (04 marks)
36.	(a)	Give the meaning of each of the following terms:	
	. ,	(i) Parasitism.	(02 marks)
		(ii) Symbiosis.	(02 marks)
	(b)	How is a tapeworm adapted to its parasitic mode of life?	(08 marks)
	(c)	Outline three control measures to prevent the spread of tape	worms in
	()	humans.	(03 marks)
37.	(a)	Describe how leaves of green plants are suited for photosyn	thesis. (10 marks)
	(b)	Explain how each of the following substances is utilised by	•
	, ,	(i) Water absorbed.	(02 marks)
		(ii) Food manufactured.	(03 marks)