NAME	ADM NO
SCHOOL	CANDIDATES SIGN
DATE	CLASS
231/2	
BIOLOGY	
PAPER 2	
JUNE-2022	
TIME: 2 HOURS	



CEKENAS END OF TERM ONE EXAM-2022 FORM FOUR EXAM

Kenya Certificate of Secondary Education.(K.C.S.E)
BIOLOGY THEORY

PAPER 2

- ❖ Write your **name** class, and **index number** in the spaces provided above.
- Answer **ALL** the questions in the spaces provided.
- Answer all questions in Section A.
- In section B answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8.
- This paper consist of 12 printed pages.
- Students should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

For examiner's use only

Section	Question	Maximum score	Candidate's score
	1 2	8 8	
A	3	8	
	5	8 8	
В	6	20	
В	7/8	20	
	Total score	80	

1. a) Digestive enzymes are made by different organs in the digestive system. Complete the table below by putting a tick (\checkmark) or a cross (X) in the boxes. The first has been done. (2mks)

Enzyme	Salivary glands	Stomach	Pancrease	Ileum
Amylase	√	Х	√	√
lipase				
Protease				

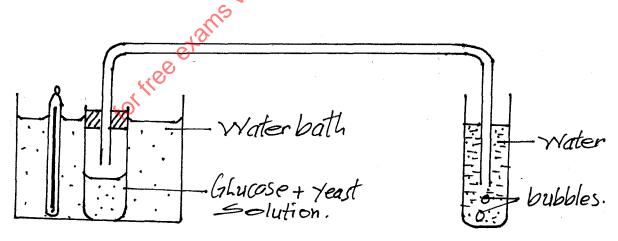
b) Name the features that increase the surface area of small intestines.	(2mks)
c) Name the vitamin which is associated with citrus fruits and green vegetables	(1mk)
in the second of	1mk)
e) Caecum is poorly developed in humans. Name the group of mammals in which its well developed outline its role.	
is why.	
2. The diagram below shows the structure of a chromosome. E D D	
a) Identify the parts labelled D and E.	(2mks)
D	
E	

1 \		-	
h)	N	am	e:

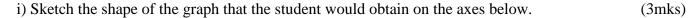
i) Two organelles in an animal cell where DNA is found.	(1mk)
ii) The process whereby DNA makes an identical copy of itself.	(1mk)

c) Coat colour in cats is determined by a sex linked gene with two alleles, black and orange. When black cats are mated with orange cats, the female offspring are always tortoise shell, their coats show black and orange patches of various sizes, while the male offspring have the same coat colour as their mothers. Using symbols (B) for black and (O) for orange, draw a punnet square to account for a cross of tortoise shell female with an orange male. (4mks)

3. A form 2 student wanted to investigate the effect of temperatures on the rate of carbon (IV) oxide production by yeast. He set up the apparatus as shown below.



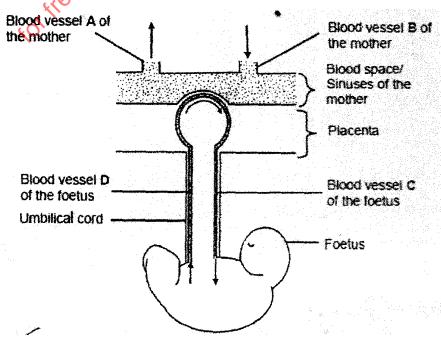
a) The student varied the temperatures of the water bath between $15^{0}c - 65^{0}c$. He measured the rate of carbon (IV) oxide production by counting the number of bubbles per minute.





ii) Account for the shape of the graph.	(1mk)
b) Give two variables that the student would need to keep at constant in his experiment.	(2mks)
c) i) Yeast is used in production of beer. Write the equation for the respiration of yeast that opposition of beer.	occurs during (1mk)
ii) Suggest why lactic acid produced in the body is not highly excreted out of the body.	(1mk)

4. The diagram below represents the relationship between the blood system of the foetus and that of the mother. The arrows indicate the direction of blood flow in the blood vessels.



a) Apart from diffusion of substances from the	e mother's blood to the fo	etus blood and vice versa, state
two other functions of the placenta.		(2mks)
1) N. M. M. M. M. C. I.D.		
b) i) Name the blood vessels C and D.		(2mks)
C		
D		
b) ii) State two differences between the comp blood vessel D.	osition of blood found in t	blood vessel C and blood found in (2mks)
С	D	<u></u>
	Lead was a harman hi	'e.
	2	Ser
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c) Explain one consequence for the foetus if l	plood vesselD becomes bl	ocked preventing blood flow. (2mks)
	'my'	
is		
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a of		
5. The diagram below is of a mammalian nep	hron and associated struct	ıres.
	B	D
Blood		
Blood Vessels	$(())(\cap)$	
	" U I I	
'I A		$\geq_{\mathcal{C}}$
•		1 1

a) i) Identify th	ne parts labelled D and E.	(2mks)
D		
E		
	in which most water is reabsorbed?	ions labelled B-E. Which two letters correspond (1mk)
	elow summarizes differences in the conce	ntration of some substances in the blood plasma red tubule.
Substances	Concentration in blood plasma	Concentration in filtrate at the end of PCT
Proteins	12	0
Glucose	0.15	0
Urea	0.04	0.09
Explain the res	sults.	excepasity (3mks)
c) In mammals	s there is a strong positive correlation between	ween the length of the loop of henle and the
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SECTION B (40marks)

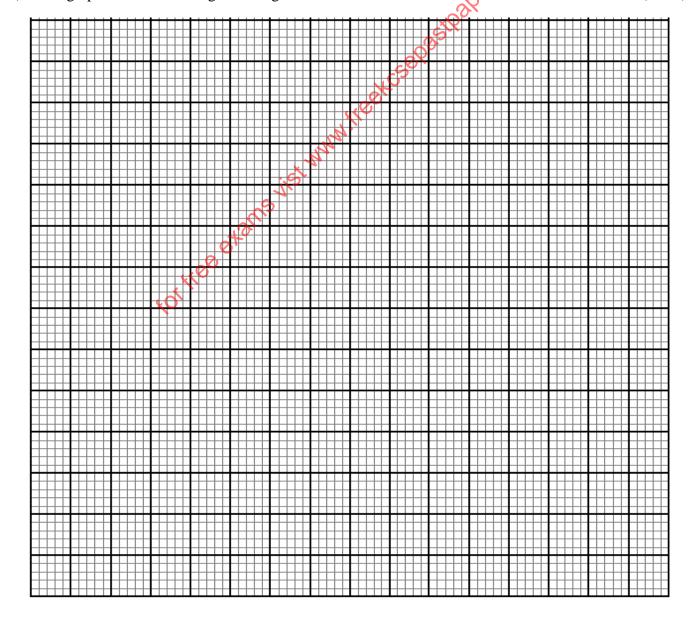
Answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8

6. The table below contains information on changes that occur in a river, downstream from sewage outflow.

Distance downstream	Concentration dissolved	Number of o	rganisms (arbit	rary units)
from point of sewage	oxygen (%)	Bacteria	Algae	Fish
entry (m)				
0	95	88	20	20
100	30	78	8	6
200	20	74	6	2
300	28	60	20	0
400	42	50	40	0
500	58	48	70	0
600	70	44	84	0
700	80	42	90	0
800	89	38	84	0
900	95	36	68	4
1000	100	34	68 545	20

a) Plot a graph of number of organisms against distance downstream.

(7mks)



6. b) Describe the changes in the concentration of oxygen dissolved in the water downstream	
point of sewage entry.	(2mks)
b) Account for the changes in the numbers or each of the following organisms downstream.	•••••
	(21)
a) Bacteria	(3mks)
b) Algae	(3mks)
asil a	
b) Algae c) Fish ijist www.treek.csep as to appear to a part of the control of	
-> E.I.	(21)
c) Fish	(3mks)
45	
10/2°	
c) State two ways in which the degree of water pollution covered by sewage can be reduced.	(2mks)
"tiob	
koj.	
7. Describe the evidences of organic evolution.	(20mks)
8. a) Describe the process of fertilisation in a flowering plant.	(15mks)
b) State the changes that take place in a flower after fertilization.	(5mks)
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