

MINISTRY OF EDUCATION AND HIGHER EDUCATION

GRADE 12 EXAMS, 2008

BIOLOGY



P/LAND NATIONAL EXAMINATION BOARD



Name

School

Roll Number.....

Puntland State of Somalia

Ministry of Education

Puntland National Examination Board

Form 4

BIOLOGY Examination

2008

Time 2 hours

Plus 10 minutes before the exam for reading through the paper

TOTAL TIME 2 hours 10 minutes

INSTRUCTIONS TO CANDIDATES

This paper consists of 15 printed pages

Count them now. If there are any missing, inform the invigilator

There are two parts:

SECTION A – Multiple Choice Questions	10 MARKS
SECTION B – Structured Questions	90 MARKS
TOTAL	100 MARKS

- Answer all questions
- All answers and working must be written on this paper in the spaces provided immediately after each question
- Rough work can be done on page 2. This will not be marked
- No extra paper is allowed
- No calculators are allowed
- If you make a mistake, cross out the incorrect answer and clearly write your correct answer

SECTION A: MULTIPLE CHOICE QUESTIONS (10 MARKS)

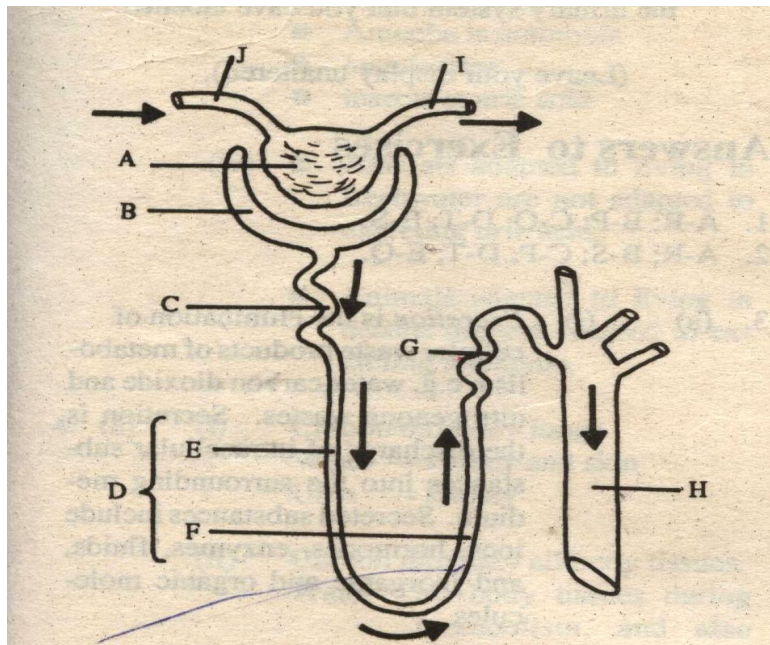
Instructions for this section: For each question in this section, circle the correct answer

1. Which of the following disease is not a hereditary disease
 - A. Sickle cell anaemia
 - B. Mumps
 - C. Down's Syndrome
 - D. Haemophilia
2. Ruminants are animals whose stomach is divided into four chambers arranged as;
 - A. Rumen, Reticulum, Abomasum, Omasum
 - B. Omasum, Reticulum, Abomasum, Rumen
 - C. Rumen, Reticulum, Omasum, Abomasum
 - D. Reticulum, Rumen, Abomasum, Omasum
3. The female reproductive organs of a flower is called
 - A. Sepals
 - B. Corolla
 - C. Anther
 - D. Carpel (Pistile)
4. The following are some of the functions of the liver. Which one is not?
 - A. Production of bile
 - B. Detoxication
 - C. Regulation of blood sugar
 - D. Helps in gaseous exchange
5. Which of the following enzyme digests starch?
 - A. Trypsin
 - B. Maltase
 - C. Amylase
 - D. Lipase

6. White blood cells are also known as?
- A. Leucocytes
 - B. Blood plasma
 - C. Platelets
 - D. Erythrocytes
7. Human blood group are determined by
- A. Genes
 - B. Alleles
 - C. Nucleotides
 - D. Chromosomes
8. What would be the phenotype of F1 generation if Tall plant (dominant) is crossed with a Dwarf plant (recessive)?
- A. All tall plants
 - B. Some tall, some dwarf
 - C. All dwarf plants
 - D. None of the above
9. H.I.V / AIDS is transmitted through?
- A. Sharing or using the same utensils
 - B. Hands shake
 - C. Contact with infected body fluids
 - D. Physical exercises
10. What is the organ for gaseous exchange in a fish?
- A. Spiracles
 - B. Lungs
 - C. Mouth
 - D. Gills

SECTION B (90 MARKS)

1. The figure below shows the different parts of a nephron



a) (i) Name the structures labeled

A	B
C	D
E	F
G	H
I	J

(5 Marks)

(ii) Where does filtration occur in this structure?

(1 mark)

.....

(iii) Where is glucose mainly reabsorbed?

(1 mark)

.....

(iv) Where are Na^+ and Cl^- ions mainly reabsorbed? (1 mark)

.....

2. A student found two skulls in the wilderness. Skull A had jaws that had a gap where canines usually occur. It had no incisors in the upper jaw. The molars had sharp ridges with the upper and the lower molars fitting well into each other. Skull B had long canines and the molars were flattened.

(a) What diet was each of the two animals A and B likely to have been adapted to feeding on?

A.....
..... (1 mark)

B.....
..... (1 mark)

(b) (i) What is the name of the gap that the student observed between the molars and incisors? (1 mark)

.....
.....

(ii) What role does this gap play in the living animal? (2 marks)

.....
.....
.....

(iii) Why are the molars from specimen A sharp – ridged and well fitting? (1 mark)

.....
.....
.....

(c) (i) What is the role of sharp canines in B? (1 mark)

.....
.....
.....

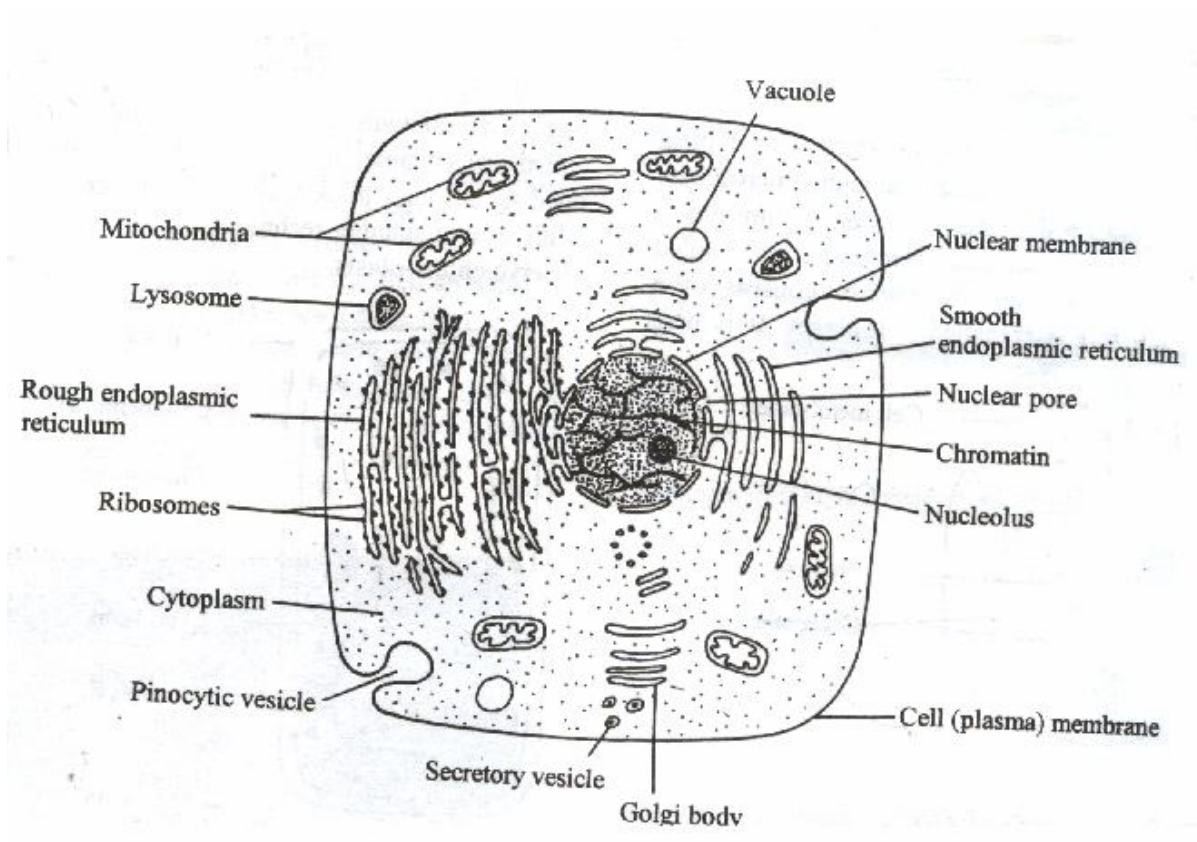
(ii) What role would flattened molars play in B? (1 mark)

.....
.....
.....

3. A camel and a cedar tree are both living things yet they are different. Briefly explain how they differ under the following characteristics. (4 marks)

	Cedar Tree	Camel
Nutrition		
Irritability		
Movement		
Excretion		

4. Study the diagram below which shows unidentified generalized cell as seen under the electron microscope and use it to answer questions that follow.



(a) (i) Is this an animal or a plant cell?

..... (1 mark)

why?.....

..... (1 mark)

(ii) Write down the four major functions of the Endoplasmic reticulum. (4 marks)

.....

(b) What is the function of the following in plants? (2 marks)

- i) Xylem.....
- ii) Phloem.....

5. (a) List seven groups of substances or materials that should be present in

a) balanced diet. (3.5 Marks)

.....

.....

.....

.....

(b) Explain why it is not healthy to feed on milk only even though it may be containing all substances required by the body. (2.5 marks)

.....

.....

.....

6. In an ecological study, a grasshopper population and that of crows was estimated in a certain grassland area over a period of one year. The results are as shown in the table below.

7.

	J	F	M	A	M	J	J	A	S	O	N	D
No. of adult grasshoppers x 10 ²	90	20	11	25	200	1652	120	15	10	35	192	456
No. of Crows	4	2	0	1	8	22	7	2	1	1	5	15
Amount of rainfall (mm)	20	0	55	350	520	250	12	10	25	190	256	350

(a) What is the relationship between the rainfall and the grasshopper population? Account for this relationship. (2 marks)

.....
.....
.....

(b) Suggest what happens to the population of crows and that of grasshoppers during the dry month (2 marks)

crows.....
.....
.....

grasshoppers.....
.....
.....

(c) Draw a food chain to illustrate the interrelationships shown in these results (1 mark)

.....
.....

(d) What is the trophic level of

- (i) the crows.....
- (ii) the grasshoppers.....
- (iii) the grass in this study.....

(3 marks)

8. (i) State the functions of

(a) Deoxy-ribonucleic Acid (DNA)

.....
..... (1.5 marks)

(b) Ribonucleic Acid (RNA)

.....
..... (1.5 marks)

(c)

9. (i) In which two ways do mammals show parental care? (2 marks)

.....
.....

(ii) Name one hormone that stimulates the uterus during labour (1 mark)

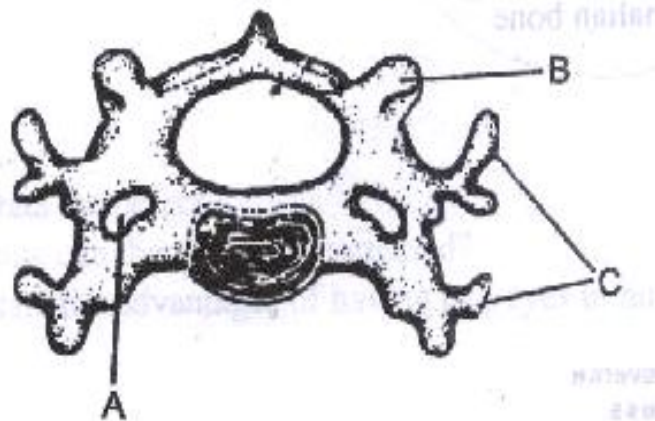
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(iii) List three secondary sexual characteristics present in a male and a female human being indicating the hormone that stimulate each characteristic.

Male characteristic	Hormone responsible	Female characteristic	Hormone responsible

(6marks)

10. A bone obtained from mammals is represented by the diagram below



(a) Name the bone

.....(1 mark)

(b) State the importance of the part labeled A (1 mark)

.....
.....

(c) State the adaptations of the transverse process to its function (1 mark)

.....
.....

10. (i) Give two causes of chromosomal mutation. (2 marks)

.....
.....

(ii) What are the components of a chromosome? (2 marks)

.....
.....

(iii) Give one reason why it is only mutations in genes of gametes that influence evolution. (2 marks)

.....
.....

11. (a) In the table below, mark with a plus (+) where clumping will take place and minus (-) where clumping will not occur. (Some have been filled to guide you). (5 marks)

		RECIPIENT			
		BLOOD GROUP	A	B	AB
DONOR	A			X	
	B	+			
	AB		+		+
	O	X		X	

(b) Write two precautions that must be taken before transfusing blood (2marks)

.....
.....

(c) Which blood group people are called:

i) Universal recipients..... (1 mark)

ii) Universal donors`..... (1 mark)

12. (a) Define the following terms

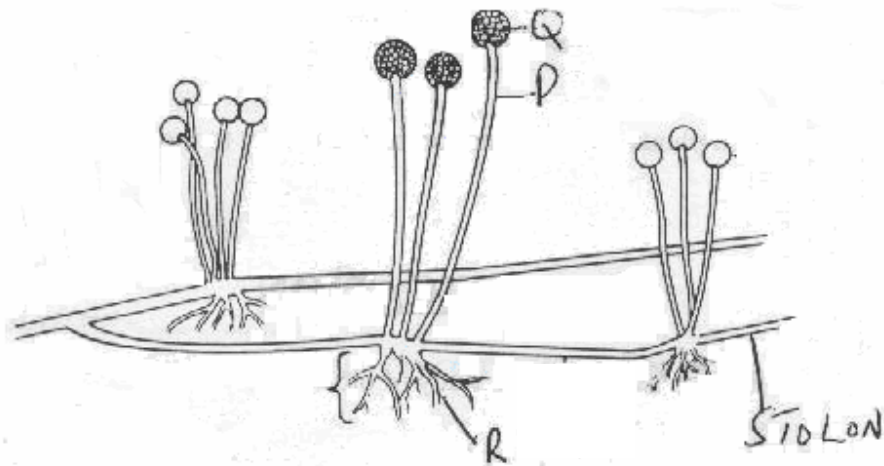
(i) Binomial nomenclature (1 mark)

.....
.....
.....

(ii) Species (1 mark)

.....
.....

(b) Study the diagram below of a *Rhizopus* Sp and answer the questions that follow



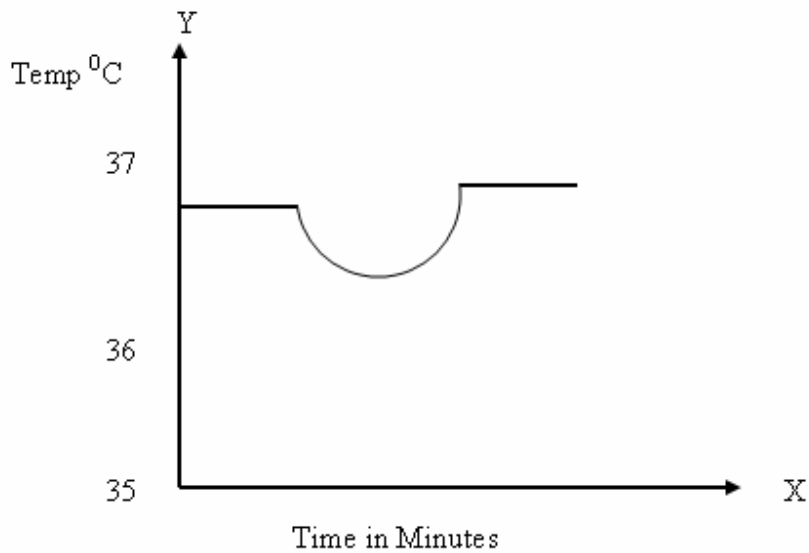
Name the parts labeled:

i) Q..... (1mark)

ii) R..... (1mark)

iii) P..... (1mark)

13. The temperature of a person was taken before bath, during bath and after taking cold bath. The results are shown in the graph.



(a) Explain why the temperature fell during bath (2 marks)

.....

(b) What changes appeared in the skin that enabled the body temperature to return to normal? (1 mark)

.....

(c) Explain why it is necessary to maintain a relatively constant level of the following conditions in the mammalian body.

(i) Temperature (1 mark)

.....
.....
.....

(ii) PH (1 mark)

.....
.....
.....

14. (a) Name three products of aerobic respiration (3 marks)

.....
.....
.....

(b) Give two uses of anaerobic respiration at home. (2 marks)

.....
.....

15. List three diseases that are caused by cigarette smoking. (3 marks)

.....
.....
.....

END