

**SOUTH WEST REGIONAL MOCK EXAMINATION  
GENERAL EDUCATION**

The Teachers' Resource Unit (TRU) in collaboration with the Regional Pedagogic Inspectorates and the Subject Teachers' Association (STA)	<b>Subject Code</b> 0710	<b>Paper Number</b> 1
CANDIDATE NAME ..... CANDIDATE NUMBER ..... CENTRE NUMBER .....	<b>Subject Title</b> <b>BIOLOGY</b>	
ADVANCED LEVEL		

**Time Allowed: One hour thirty minutes**

**INSTRUCTIONS TO CANDIDATES:**

1. USE A SOFT HB PENCIL THROUGHOUT THIS EXAMINATION.
2. DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

**Before the Examination begins:**

3. Check that this question booklet is headed "Advanced Level – 0710 Biology, Paper 1".
4. Insert the information required in the spaces provided above.
5. Without opening the booklet, pull out the answer sheet carefully from inside the front cover of this booklet. Take care that you do not crease or fold the answer sheet or make any marks on it other than those asked for in these instructions.

6. Insert the information required in the spaces provided on the answer sheet using your HB pencil:

**Candidate Name, Centre Number, Candidate Number, Subject Code Number and Paper Number.**

**How to answer questions in this examination:**

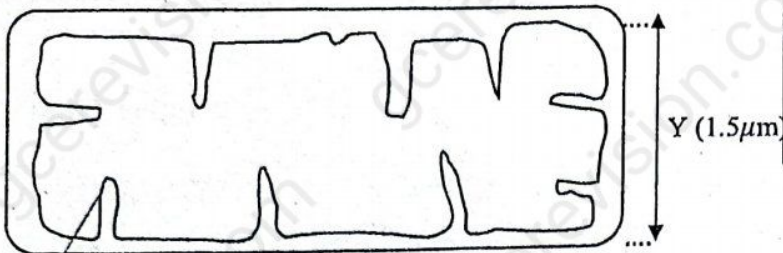
7. Answer ALL the 50 questions in this examination. All questions carry equal marks.
8. Non-programmable calculators are allowed.
9. For each question there are four suggested answers, A, B, C, and D. Decide which answer is correct. Find the number of the question on the Answer sheet and draw a horizontal line across the letter to join the square brackets for the answer you have chosen. For example, if C is your correct answer, mark C as shown below:

( A ) ( B ) ( ~~C~~ ) ( D )

10. Mark only one answer for each question. If you mark more than one answer, you will score zero for that question. If you change your mind about an answer, erase the first mark carefully, and then mark your new answer.
11. Avoid spending much time on any question. If you find a question difficult, move to the next question. You can come back to this question later.
12. Do all rough work in this booklet using, where necessary, the blank spaces in the question booklet.
13. Mobile phones are **NOT ALLOWED** in the examination room.
14. You must not take this booklet and answer sheet out of the examination room. All question booklets and answer sheets will be collected at the end of the examination



Below is a diagram of a cell organelle. Study it and answer the following questions



- What is the part labeled X?
  - Ribosome
  - Crista
  - Matrix
  - Inner membrane
- Of what function is the organelle?
  - Provides energy for biochemical reactions
  - Contains chlorophyll that absorbs sunlight energy
  - It is a site for protein synthesis
  - Controls the activities of cells
- What is the width of the organelle?
  - $1.5 \times 10^7$
  - $1.5 \times 10^{-8}$  cm
  - $1.5 \times 10^{-4}$  cm
  - $1.5 \times 10^{-3}$  cm

Question 4-7 concerns the following statements. Choose

- A – If statement 1 is true and statement 2 is false  
 B – If statement 1 is false and statement 2 is true  
 C – If both statements 1 and 2 are false  
 D – If both statements 1 and 2 are true

	Statement 1	Statement 2
4	Amino acids are amphoteric in having just the acid component	Acetylcholine is broken down by an enzyme called cholinesterase
5	The loop of Henle is located in the renal medulla of the kidney	The loop of Henle is longer in Kangaros/camels than in humans
6	The taking over of a	Koshland brought forth

	new piece of land where life has never existed is called primary succession	the 'lock and key' hypothesis of enzymes
7	The juvenile hormone is secreted by the pro-thoracic gland of insects	Short sightedness (myopia) can be corrected using a convex lens.

Questions 8-9 are concerned with these statements below:

"The energy available from the complete breakdown of glucose is -2880KJ/mol. Part of the energy is lost in respiration. Only the energy trapped in ATP is available for metabolism. The free energy liberated by the hydrolysis of ATP is -30.7KJ/mol. Complete the maximum efficiency of respiration in:

8. Aerobic condition?

- 40.5%
- 39.1%
- 93%
- 50%

9. Anaerobic condition

- 1.1%
- 3.2%
- 2.1%
- 2.9%

10. A herbivore harvested grass this morning. Classify the proper order in which the grass will pass along its alimentary canal

- Mouth, rumen, abomasum, reticulum
- Mouth, abomasum, rumen, reticulum
- Mouth, reticulum, rumen, abomasum
- Mouth, rumen, reticulum, abomasum

11. A woman with a normal 28 days menstrual cycle menstruated on 14/02/2020. Predict when probably was her next menses.

- 11/03/2020
- 12/02/2020



20. It was the hypothesis of Singer and Nicholson

- A. Two protein layers and one lipid layer arranged in a mosaic manner
- B. It is made up of a helical chain composed of alternate phosphate groups and pentose sugar
- C. Thin actin filaments slide and pass through the thick myosin filaments in a Ratchet manner.
- D. The more you use a part, the more efficient it becomes but when not in use, the part degenerates

21. Which of the following will give a greater and sustaining amount of energy when successful broken down and why?

- A. 1g Carbohydrate because it can easily be broken down
- B. 1g Lipid/fat because it cannot easily be broken down
- C. 1g Protein because it can be stored in the body
- D. 1g Nucleic acids because it contains genetic material

For question 22-31, there are 2 statements. Read through the statements and then choose

- A. If both statements are true and the 2<sup>nd</sup> explains the 1<sup>st</sup>
- B. If both statements are true but the 2<sup>nd</sup> does not explain the 1<sup>st</sup>
- C. If the 1<sup>st</sup> statement is true and the 2<sup>nd</sup> is false
- D. If the 1<sup>st</sup> statement is false and the 2<sup>nd</sup> is true

	First statement	Second statement
22	The diameter, permeability of the membrane and temperature influence impulse transmission	Cocaine blocks the uptake of mono-amide into the pre-synaptic membrane.
23	Endocrine glands are ductless	Ductless glands do not produce secretions into the blood stream
24	The ovule of flowering plants is made up of parenchyma tissues called nucellus	Nucellus provides food and support to the egg cell
25	Nitrosomonas is an example of bacteria	Nitrosomonas help convert $\text{NH}_3$ to $\text{NO}_2$

	found in the root nodules of soya bean plants	
26	For the past few years there had been an eminent rise in environmental temperature	Human activities such as deforestation leads to global warming
27	A nucleotide minus a nitrogen base is called a nucleoside	A DNA molecule is said to H parallel
28	Bacteria and fungi decompose organic matter saprophically	Saprotrophs secretes amylase, lipase and protease
29	The matrix of cartilage is called chondrin	Cartilage connects bones to bones
30	The largest artery of the body is the pulmonary artery	The pulmonary artery pumps blood to the lungs
31	In the production of yoghurt, fresh milk needs to be pasteurized	Heating milk above a particular temperature kill pathogens

32. Which of the following two controls parturition (birth)?

- A. Oxytocin + prostaglandin
- B. LH + prostaglandin
- C. FSH + LH
- D. FSH + oxytocin

Below is the dental formula of a chordate

$$2(I\ 3/3, C\ 1/1, PM\ 4/4, M\ 2/3) = 42$$

33. Which animal has the above dental formula?

- A. Goat
- B. Cat
- C. Dog
- D. Man

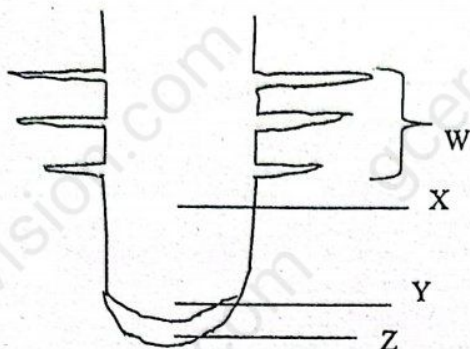
34. How many teeth has the animal on the left upper jaw bone?

- A. 11
- B. 21
- C. 42
- D. 10



- C. 13/03/2020  
D. 14/03/2020

The diagram below represents a longitudinal section through the tip of a dicotyledonous root.



Identify a zone (W, X, Y or Z) in which the following types of cell might be found

12. A small cell with thin cellulose cell walls, dense cytoplasm, no vacuole and a large nucleus.

- A. W  
B. X  
C. Y  
D. Z

13. An elongated cell, several times longer and broad with no living contents, but spiral bands of lignin in the wall

- A. W  
B. X  
C. Y  
D. Z

14. Cystic fibrosis occurs in a population with a frequency of 2 in 2200. What is the frequency of the carrier genotype?

- A. 5.9%  
B. 3.0%  
C. 9.7%  
D. 4.1%

15. Specify which pigment is found in molluscs

- A. Chlorophyll  
B. Haemoglobin  
C. Haemocyanin  
D. Fucozanthin

16. What is the probability for a couple who are both normal to have a haemophiliac child and what can possibly be the sex of the child?

- A. 50% -female  
B. 25% -male  
C. 50% -male  
D. 25% -female

17. The events listed below occur during transmission of nerve impulses across a synapse

- 1) Depolarization of pre-synaptic membrane
- 2) Propagation of the post-synaptic action potential
- 3) Hydrolysis of Acetylcholine
- 4) Rupturing of synaptic vesicles

Arrange them in sequential order

	1st	2nd	3 <sup>rd</sup>	4 <sup>th</sup>
A	1	3	2	4
B	1	4	2	3
C	4	1	3	2
D	4	3	1	2

18. If 25,000 primary germ cells undergo meiosis during spermatogenesis. How many sperm cells would you expect to be produced by a human male?

- A. 25,000  
B. 50,000  
C. 100,000  
D. 200,000

19. Trace the path taken by a sperm cell before affecting fertilization.

- A. Vagina, cervix, uterus, oviduct  
B. Vagina, cervix, uterus, oviduct, ovary  
C. Vagina, uterus, cervix, ovary  
D. Vagina, cervix, uterus, ovary, oviduct



From questions 35-42, one or more of the responses is/are correct. Choose

- A. If (i), (ii) and (iii), are correct
- B. If (i), and (iii) are correct
- C. If (ii) and (iv) are correct
- D. If only (iv) is correct

35. During the uptake of water by roots

- i The water potential in the cortex is more than that in the xylem
- ii Water moves through the cortex by vacuolar, symplastic and apoplastic pathways
- iii The casparian strip prevents the apoplastic pathway
- iv The uptake and movement of water is purely by diffusion

36. Phaeophytes such as focus (brown algae)

- i Stores carbohydrates in the form of laminarin
- ii Stores carbohydrate in the form of starch
- iii Have fucoxanthin as their dominant photosynthetic pigment
- iv Have chlorophyll as their dominant photosynthetic pigment

37. Which of these are properties of a genetic code?

- i It is made up of 3 symbols
- ii It is universal
- iii It is redundant or degenerate
- iv It is branched and non directional

38 During muscle contraction

- i The A-band reduces
- ii The sarcomere reduces
- iii The M-line reduces
- iv The H-zone reduces

39. During inspiration in humans

- i The diaphragm becomes domed shape
- ii External intercostal muscles relax
- iii The internal pressure rises compared to atmospheric pressure

- iv There is the outward and downward movement of the rib cage

40. A drop in glucose level in blood will lead to

- i The stimulation of the  $\alpha$ -cells of the islet of the langerhans
- ii The stimulation of the liver cells to convert glucose to glycogen
- iii A process called glycogenolysis
- iv Conversion of sugar to fat, protein,  $\text{CO}_2$  and  $\text{H}_2\text{O}$  and Energy

41. The high pressure needed for ultra-filtration is achieved due to the fact that:

- i The afferent blood vessel is bigger than the efferent
- ii The kidneys are closer to the heart
- iii The renal artery is relatively shorter
- iv The capillaries of the glomerulus are less coiled

42. Advantages of transgenic organism is/are

- i Sexual reproduction is necessary
- ii It is faster than the conventional breeding
- iii Its apparatus require special training skills
- iv Desirable properties such as disease resistance can be identified and cloned

43. Which is a non-sense code?

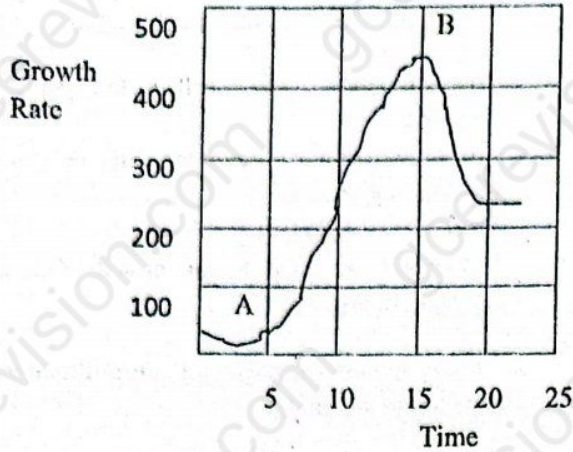
- A. ACG
- B. ATC
- C. UTC
- D. UAA

44. It is not a characteristic of Angiosperms

- A. They produce cones
- B. They bear fruits
- C. They undergo double fertilization
- D. They bear or produce flowers



Question 45- 46 concerns the graph below which shows a growth curve for a population of paramecium growing in a laboratory culture.



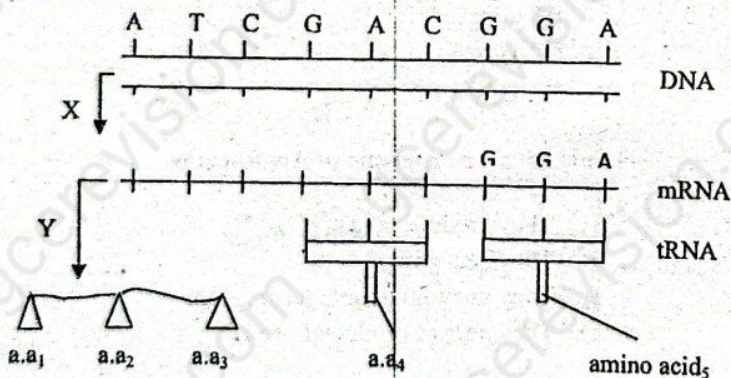
45. What is the approximate carrying capacity of the population under culture?

- A. 200
- B. 450
- C. 300
- D. 350

46. Determine the gradient of the curve at point A and B

- A. 30
- B. 35
- C. 38
- D. 40

Question 47- 50 is concerned with the diagram below



47. What are the missing bases from the DNA template?

- A. TAGCTGCCT

- B. TTCGCACCT
- C. TUGCTGCCT
- D. UTGCUGCCT

48. What are the missing bases on the mRNA strand?

- A. TAGCTGCCT
- B. UTCGUCGGT
- C. AUCGACGGA
- D. ATGCACGGA

49. Which bases are missing in the tRNA carrying amino acid ( a.a ) 4?

- A. CCU
- B. GGU
- C. GTC
- D. CUG

50. Which processes are respectively represented by X and Y?

- A. Translation and transcription
- B. Transcription and translation
- C. Translation and replication
- D. Transcription and replication