Name…… Stream……

MBOGO MIXED SECONDARY SCHOOL

S.4 – BIOLOGY TOPICAL TEST - 2020

NUTRITION

TIME: 2HR

INSTRUCTION: Attempt ALL questions.

Section A: Answer sheet

1		11		21		31		41	
2		12		22		32		42	
3		13		23		33		43	
4		14		24		34		44	
5		15		25		35		45	
6		16		26		36		46	
7		17		27		37		47	
8		18		28		38		48	
9		19		29		39		49	
10		20		30		40		50	

1. The chamber of the herbivore stomach from which food is returned to the mount for rechewing is called

A. Omasum B. Abomasum C. Rumen D. Reticulum

2. A healthy potted bean plant was kept in a dark room for about 48 hours with one of it's leaves partly enclosed in a flask containing sodium hydroxide. Then the whole plant was left in bright sunlight for a few hours. Then the leaf which was partly enclosed in the flask was tested for starch. The colour of the part of the leaf enclosed within the flask was

A. Blue-black B green C. colourless D. Yellow-brown

3. Which of the following conditions will not affect the rate of photosynthesis as shown on the graph?

A. Light intensity B. Carbon dioxide concentration

C. Temperature D. Wind velocity

4. In a certain organism the bile duct was blocked so that the flow of bile was cut off. Which of the following would happen as a result of the above?

A. Storage of glycogen in the liver would not be possible

B. The hepatic portal vein would not longer carry food

C. Digestion of fats and oils would not proceed normally

D. The absorption of digested food would be decreased

5. The diagram above shows a section of the small intestine of a mammal. What is the specific function of the part labelled X?

A. Secretion of fat digesting enzymes

B. Absorption of digested carbohydrates and proteins

C. Secretion of carbohydrate digesting enzyme

D. Absorption and transport of fatty acids and glycerol.

6. A student carried out an experiment to see effect of temperature on the activity of an enzyme ptyalin acting on starch.

The results are shown in the graph above. Why did the peak of the graph occur as shown on the graph?

A. the enzymes had already acted upon most of the starch molecules

B. the optimum temperature for this enzyme is around human body temperature.

C. Most enzymes are destroyed beyond 40^{o}C.

D. The number of enzymes, molecules had increased at the optimum temperature.

7. Although saliva is swallowed together with food, digestion of starch which is started in the mouth does not continue in the stomach for long. This is because

A. In the stomach there is mostly absorption of food.

B. The temperature of the stomach is not suitable for action of enzymes in the saliva.

C. Gastric juice in the stomach deactivate the enzyme s in the saliva

D. In the stomach there is only chuming of food and no digestion.

8. The table below shows a student's results in an experiment to determine the amount of ascorbic acid.

Contents in four different fruit juices, F,G,H, I using 0.15% DCPIP

Juice	% Ascorbic acid	No. of drops needed to decolourise $1cm^3$ of DCPIP
F	0.20	21
G	0.60	7
H	n	30
I	0.30	14

From the results, what is the ascorbic acid content of fruit juice H given as n?

A. 0.36% B.2.57% C. 0.14% D. 0.63%

9. When cut cubes of *Solanum tubersum* are dropped into a container of hydrogen peroxide solution, there is an evolution of gas around the cubes. This is because the

A. enzyme in the potato releases oxygen from the hydrogen peroxide

B. cube cells become plasmolysed by hydrogen peroxide

C. rate of potato cell respiration has been increased by hydrogen peroxide

D. hydrogen peroxide displaces the air between the cell

10. The following results were obtained as experiment using a food substance, S. and an enzyme solution T.

	Experiment	Results
1	S burnt in a test tube and gas produced shaken with lime water	Lime water turned milky
2	Solution of S heated with benedict's solution	Colour remained blue
3	Solution S + solution T kept for 10 min and the mixture boiled with Benedict's solution	Orange – yellow precipitate

From these results, the food present in solutions is?

A. Glucose B. Maltose C. sucrose D. Fructose

11. A child suffering from marasmus

A. Had a thin body and swellings of the hands and feet

B. Is underweight and small except the head

C. Has wounds on the skin and silky hair

D. Is always sleeping and not concened about surroundings

12. An expecting mother suffering from anaemia should be advised to eat food rich in

A. calcium B. Iron C. Phosphorus D. Nitrogen

13. If the liver of a person is damaged which of the following activities is likely to be affected

A. Digestion of proteins B. Formation of glycogen

C. Elimination of urine D. Regulation of water

14. Starch is a complex sugar which does not give a positive test with either Benedics or Fehlings solution.

A student however carried out the following tests in the lab. In which one do you expect a red precipitate after treating the starch

A. Boiled starch at 100^{o}C for 2 min

B. Added saliva and left for 10min.

C. Added hydrochloric acid and kept the mixture at 0^{o}C for 3 min

D. Added boiled saliva and left for 10min

15. An average man requires about 100g of protein per day for the proper build up of his body muscles.

Considering the information given in the table below which of the 4 foods would a person need to eat the greatest amount so as to obtain sufficient calories and protein for one day?

Food	Calories per 100g	Protein per 100g
A. Maize	356	8.3
B. Bananas	94	1.3

C. Wheat	370	10.8
D. Potatoes	85	2.0

16. Some plants like the **pitcher** eat insects and are described as carnivorous plants. Which one of the following nutrients would they obtain in sufficient amounts from this method or nutrition?

A. Carbohydrates for the supply of energy

B. Nitrogen for photosynthesis

C. Phosphates for nuclear formation

D. Magnesium for chlorophyll synthesis

17. The table below shows the relative value in the composition of a food reserves different seeds.

Relative food reserves

Seeds	**Carbohydrates**	**Protein**	**Fats**
Castor oil	0	18	65
Groundnuts	22	25	45
Maize	74	10	5
Rice	75	9	2

Which one of the four seeds would provide the greatest quantity of nutrients for the growth of the foetus in expectant mothers?

A. Maize B. Rice C. Groundnuts D. Castor oil

18. Humans can synthesize very few.

A. Fats B. Proteins C. Hormones D. Vitamins

19. Which one of the following statements best explains why digestion or lipids does not occur in the human stomach.

A. Ph of the stomach is too low for lipases to function.

B. Bile salts that emulsfy fat are missing in the stomach

C. Ph is too high in this part of the alimentary canal

D. Lipases are active within a normal range of Ph.

20. Which of the following are examples of Heterotrophic organisms

1. Saprophytes, parasites, carnivores

2. photosynthetic bacteria, herbivores, saprophytes

3. herbivores, carnivores and saprophytes

4. saprophytes, parasites and herbivores

5. parasites, carnivores, and nitrifying bacteria

A. 1,3,4 B. 1,2, 3 C. 1,2,4 D. 1,3,5

21. One reason why the human body cannot manufacture proteins directly from salts and carbohydrates is because these compounds lack

A. Sulphur B. Phosphorus C. Phosphorus D. Nitrogen

22.Below are some diets in Uganda. Which one of them could easily cause kwashiorkor in children.

A. Millet with fish B. cassava and beans

C. Rive with meat D. Bananas with green vegetables

23. The following are possible causes of anaemia

(i) Lack of O_2 in the blood

(ii) Deficiency of iron in the diet

(iii) Lack of vitamin B

(iv) Lack of protein

(v) Loss of blood

Which of the above could be prevented by a proteinaceous diet?

A. i and iv B. i and v C. iii and iv D. iii and v

24. During a food test practical a student heated a mixture of powdered maize with copper oxide. He observed that the gas produced turned lime water milky. He then made the following conclusions.

1. The maize contained protein

2. The maize contained carbon

3. carbon dioxide was evolved

4. the solid contained starch

Which of the conclusions are correct?

A. 1 only B 2 only C. 3 and 4 D. 3 only

25. When the leaves of a previously de-starched potted plant are completely coated with grease and left in sunlight photosynthesis will

A. Take place normally

B. Not take place because CO_2 cannot enter the leaves

C. Take place at a faster rate than respoiration

D. Take place only in the upper part of the leaves.

26. Three test-tubes were set up so that tubes 1 and 2 contained glucose and tube 3 contained distilled water. A few drop of solution X were added to test-tube 1 and 3 only. After five minutes samples from each test-tube were added to a drop of iodine solution on a white tile. The results were tabulated as shown below.

Test tube	1	2	3
Reaction	Blue colour	No colour change	No colour change

From the results, what chemical compound was present in solution X?

A. Starch B. Glucose C. Enzyme D. sucrose

27. The above is an experiment set to show one of the characteristics of enzymes. After 10 minutes iodine solution was added both tubes. The mixture in tube X turned brown while the mixture in tube Y turned black. Which one of the following conclusions will fit this particular characteristic of enzymes?

A. Enzymes are destroyed by heat

B. Diastase is an active enzyme

C. Enzymes work with iodine solution

D. Enzymes cannot work in cold conditions

28. Green plants produce less carbon dioxide during the day because

A. The rate of respiration is low during the day

B. Some of the carbon dioxide produced is used up internally for photosynthesis

C. Transpiration interferes with carbon dioxide evolution by leaves

D. Most stomata close due to strong heat during the day

29. Why does grass turn yellow when covered by a wooden board for some time?

A. Light is needed for photosynthesis

B. The wood does not contain iron

C. Light is needed for chlorophyll formation

D. The board prevents oxygen from preaching the grass

30. A green plant needs to take in nitrogen from the soil in form of nitrates in order to

A. make chlorophyll so that it can photosynthesise its food

B. complete the formation of carbohydrates after photosynthesis

C. Produce protein from the materials produced by photosynthesis

D. Maintain an osmotic pressure in the roots so that they can take in water from the soil

31. A mother fed her young child for three years on meat, maize meal, butter and milk. Which of the following deficiency disease is that child likely to suffer from?

A. kwashiorkor B. marasmus C. Scurvy D. Rickets

32. Green plants and some bacteria are said to exhibit a

A. heterotrophic mode of nutrition B. symbiotic relationship with each other

C. saprophytic mode of nutrition D. autotrophic mode of nutrition

33. The purpose of boiling a leaf in methylated spirit (alcohol) when testing it for starch is to

A. remove the cuticle B. remove the chlorophyll

C. soften the leaf D. kill the protoplasm

34. The main reason why there is no starch in the white region of a variegated leaf is because it

A. is made of dead cells B. reflects most of the light

C. absorbs most of the light D. the white part do not contain chlorophyll

35. If a green plant leaf was tested for starch which of the following would not show the characteristic blue-black colour with iodine? The

A. mesophyll layer B. palisade layer

C. epidermis layer D. guard cells

36. In the test for non-reducing sugars, sodium bicarbonate is used

A. to neutralize excess acid

B. to break down complex sugars into simple sugars

C. as an oxidizing agent

D. as a reducing agent

37. The deficiency of magnesium and calcium in plants causes a change of leaf colour to

A. Purple B. Green C. Yellow D. Brown

38. The effect shown in the question above indicates that magnesium and calcium are connected with

A. major processes in the leaves

B.formation of chlorophyll

C.colour change in leaves

D.photosynthesis in leaves

39. Which of the following methods is the most successful for maintaining good health

A.prevention of infection

B.Artificial immunity

C. Inspection of food by health authorities

D. Easting a balanced diet

40.In a food test experiment a student observed that the mixture turned purple. Which of the following food substances is likely to heave been tested?

A. Starch B. Protein C. Vitamin C D. Sugar

41.Which one of the following statements is true about digestion in man?

A. Digestion of sucrose starts in the stomach

B.Digestion of sucrose starts in the ileum

C.Sucrose is digested to glucose in the ileum

D.Sucrose is converted to glucose and galactose

42.Which one of the following structural adaptation of leaves is important for light absorption during photosynthesis?

A.Dense network of veins

B.Large number of stomata on leaf surface

C.Large intercellular air space in the spongy layer

D.Broad and flat shape of leaves

43.Which one of the following is the function of the diastema?

A. Assists the teeth in chewing the food

B.Performs the role of canines and premolars

C.Separates the food being chewed from that being cut

D.Provides a passage for the bolus

44. A vulture is called a scavanger because if

A.hunts other live animals

B.feeds on dead animals left-overs

C.hunts at night

D.is fed on by other animals

45. A farmer grew beans and noticed that the leaves turned yellow but the veins remained green. The minerals likely to be deficient in the soil are

A. Magnesium and iron B. Potassium and manganese

C. calcium and potassium D. zinc and calcium

46. What would happen to an enzyme if the temperature of its medium was increased to above 50^{o}C? It would be

A. killed B. activated C. denatured D. inactivated

47. A rabbit is able to utilize cellulose because it

A.has symbiotic bacteria in the stomach

B.has symbiotic bacteria in the ceacum

C.has a very long alimentary canal

D.secretes the enzyme cellulose

48. Which one of the following factors is not important as far as nutrition of the common mould is concerned?

A.Production of large quantities of spores

B.Anaerobic respiration

C.Highly branched mycelium

D.Secretion of enzymes

49.The gas likely to be evolved from a submerged aquatic plant placed in bright sunlight is

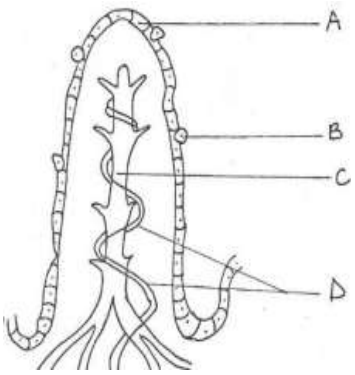
A. carbon dioxide B. Oxygen C. Hydrogen D. Nitrogen

50.The above diagram represents the action a particular type of teeth of a mammal as shown by arrows. The action shown by arrows is

A. grinding B. nipping C. piercing D. cutting

SECTION B

51. The diagram below shows the structure of a villus. Use it to answer the questions that follow.



(a) Name the parts labelled A-D (2mks)

A…… C……

B…… D……

(b) What food substance enter

(i) A?……(1mk)

(ii) B?……(1mk)

(c) State two factors that make a villus an effective absorbing structure:

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d) Give the blood vessel into which structure (ii) carries its contents.

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e) Which part of the alimentary canal has the highest number of the structure above?

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f) State four adaptations of the part of the alimentary canal in 9d) above to its functions.

(i)

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(ii)
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(iii)
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(iv)
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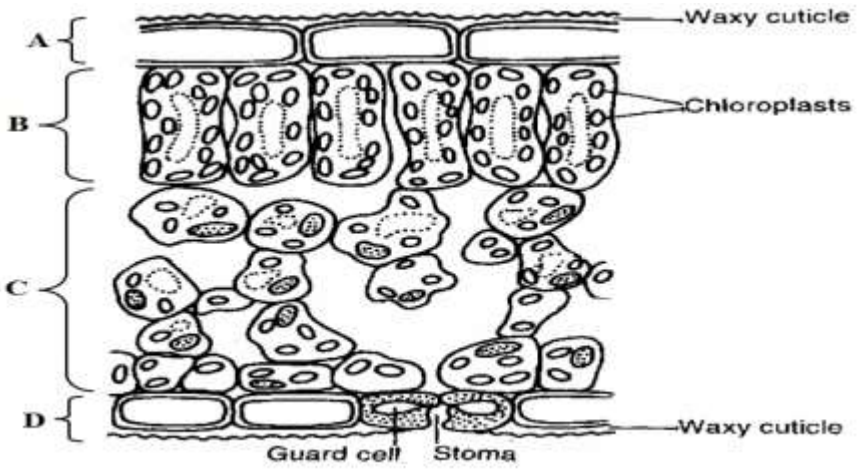
52.The diagram below shows a cross section of a typical leaf



(a) Name the cells labelled A, B, C and D.

A…… C……

B…… D……

(b) Which of these cells has the highest rate of photosynthesis? Give a reason for your answer. (2mks)

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(c) (i)State two structural differences between cell in B and D . 2mks

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(ii)How is the structure of the leaf above suited to carry out photosynthesis? 3mks

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END