Thuto360 Revision Bank

Free practice for every learner in Botswana

MOCK PAPER

BGCSE Biology — Thuto360 mock paper

Biology · Form 5 · BGCSE

QUESTIONS	TOTAL MARKS	TIME ALLOWED
44	**61**	**120 minutes**

Name _____

Class / school _____

Date _____

Score _____ / 61

Instructions

A Thuto360 practice paper in the style of the national examination — not an official BEC paper.

Section A is multiple choice and is marked as soon as you hand in. Section B is written: your teacher marks it, or, if you are practising on your own, you mark it yourself against the marking guide.

Multiple choice: circle the letter of the right answer. Where it says "tick every correct answer", more than one is right. Written questions: answer on the lines given; the marks for each part are in brackets. The answers are on the last page.

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Section A — multiple choice

1. Which chamber of the heart has the thickest wall?

- (A) Right atrium
- (B) Right ventricle
- (C) Left ventricle
- (D) Left atrium

2. Translocation is the movement of…

- (A) gases through stomata
- (B) minerals into root hairs
- (C) water in the xylem
- (D) sugars and amino acids in the phloem

3. What is the word equation for aerobic respiration?

- (A) Glucose + oxygen → carbon dioxide + water (+ energy)
- (B) Glucose → lactic acid
- (C) Carbon dioxide + water → glucose + oxygen
- (D) Glucose → ethanol + carbon dioxide

4. What is produced by anaerobic respiration in human muscles?

- (A) Ethanol
- (B) Lactic acid
- (C) Oxygen
- (D) Carbon dioxide only

5. Anaerobic respiration in yeast is used in…

- (A) making cheese only
- (B) digestion
- (C) bread making and brewing
- (D) photosynthesis

6. Which feature of the alveoli helps gas exchange?

Tick every correct answer.

- [ ] **A** Thin walls
- [ ] **B** Large surface area
- [ ] **C** A good blood supply
- [ ] **D** Moist lining

7. Which organ removes urea from the blood?

- (A) Lungs
- (B) Kidney
- (C) Liver
- (D) Heart

8. Which hormone lowers blood glucose?

- (A) Glucagon
- (B) Adrenaline
- (C) Insulin
- (D) Oestrogen

9. On a hot day, blood vessels near the skin…

- (A) disappear
- (B) stop carrying blood
- (C) constrict
- (D) dilate (vasodilation)

10. The part of the eye that controls how much light enters is the…

- (A) iris
- (B) lens
- (C) cornea
- (D) retina

11. A reflex action is...

(A) a learned skill
(B) a decision made by the brain after thinking
(C) a hormone response
(D) a fast, automatic response to a stimulus

12. Plant shoots growing towards light is called...

(A) photosynthesis
(B) geotropism
(C) phototropism
(D) hydrotropism

13. Where does fertilisation usually happen in humans?

(A) Oviduct
(B) Vagina
(C) Uterus
(D) Ovary

14. Which is an advantage of asexual reproduction?

(A) Variation
(B) Only one parent is needed
(C) Better resistance to disease
(D) Slower population growth

15. Which method protects against both pregnancy and sexually transmitted infections?

(A) Calendar method
(B) The pill
(C) Condoms
(D) Injection

16. How many chromosomes are in a normal human body cell?

- (A) 44
- (B) 46
- (C) 48
- (D) 23

17. A cross between two heterozygous tall plants (Tt × Tt) gives what ratio of tall to short?

- (A) 3 : 1
- (B) 1 : 1
- (C) All tall
- (D) 1 : 2 : 1

18. Which type of cell division produces gametes?

- (A) Meiosis
- (B) Budding
- (C) Mitosis
- (D) Binary fission

19. Sex in humans is decided by…

- (A) the temperature
- (B) whether the sperm carries an X or a Y chromosome
- (C) the mother's egg
- (D) the number of chromosomes

20. Blood groups A, B, AB and O are an example of…

- (A) continuous variation
- (B) natural selection
- (C) mutation
- (D) discontinuous variation

21. What is the main source of energy for nearly all ecosystems?

- (A) The sun
- (B) Water
- (C) Decomposers
- (D) The soil

22. Why is energy lost between trophic levels?

Tick every correct answer.

- [A] Parts not eaten
- [B] Undigested waste
- [C] Respiration, movement and heat

23. Which process returns carbon dioxide to the air?

Tick every correct answer.

- [A] Combustion
- [B] Photosynthesis
- [C] Decomposition
- [D] Respiration

24. Overgrazing in parts of Botswana mainly leads to…

- (A) more grass
- (B) more rainfall
- (C) cooler weather
- (D) soil erosion and bush encroachment

25. Which cells produce antibodies?

- (A) Lymphocytes
- (B) Platelets
- (C) Phagocytes
- (D) Red blood cells

26. Antibiotics are used to treat infections caused by…

- (A) bacteria
- (B) all diseases
- (C) viruses
- (D) allergies

27. HIV attacks…

- (A) red blood cells
- (B) a type of white blood cell (T-helper cells)
- (C) the liver
- (D) bones

28. Which organelle controls the activities of the cell?

- (A) Ribosome
- (B) Nucleus
- (C) Mitochondrion
- (D) Vacuole

29. Where does aerobic respiration take place in a cell?

- (A) Chloroplast
- (B) Mitochondria
- (C) Nucleus
- (D) Cell wall

30. Which is the correct order of organisation?

- (A) Cell → tissue → organ → organ system
- (B) Tissue → cell → organ → system
- (C) Organ → cell → tissue → system
- (D) Cell → organ → tissue → system

31. Osmosis is the movement of…

- (A) water molecules through a partially permeable membrane from a dilute to a concentrated solution
- (B) any particle from high to low concentration
- (C) glucose against a gradient using energy
- (D) gases only

32. Which process needs energy from respiration?

- (A) Diffusion
- (B) Evaporation
- (C) Active transport
- (D) Osmosis

33. Which test is used for starch?

- (A) Iodine solution
- (B) Ethanol emulsion
- (C) Benedict's solution
- (D) Biuret test

34. Benedict's test for reducing sugar gives a positive result of…

- (A) blue-black
- (B) cloudy white
- (C) purple
- (D) brick-red precipitate

35. Enzymes are made of…

- (A) fat
- (B) carbohydrate
- (C) minerals
- (D) protein

36. Why do enzymes stop working at high temperatures?

- (A) They are denatured — their active site changes shape
- (B) They turn into fat
- (C) They become too fast
- (D) They run out of energy

37. What is the word equation for photosynthesis?

- (A) Glucose + oxygen → carbon dioxide + water
- (B) Oxygen + water → glucose
- (C) Glucose → ethanol + carbon dioxide
- (D) Carbon dioxide + water → glucose + oxygen

38. Which mineral ion is needed to make chlorophyll?

- (A) Nitrate
- (B) Magnesium
- (C) Iron
- (D) Calcium

39. Through which pores does carbon dioxide enter a leaf?

- (A) Lenticels only
- (B) Stomata
- (C) Xylem
- (D) Root hairs

40. Which enzyme breaks down starch?

- (A) Lipase
- (B) Pepsin only
- (C) Protease
- (D) Amylase

Section B — structured questions

41. A student puts a potted plant in the dark for 48 hours, then covers part of one leaf with foil and leaves the plant in sunlight for 6 hours. The leaf is then tested for starch.

(a) Why was the plant first kept in the dark? [1]

(b) Describe how the leaf is tested for starch. [3]

(c) State and explain the results for the covered and uncovered parts. [2]

42. In cattle, the allele for no horns (polled, H) is dominant to the allele for horns (h). A farmer crosses a heterozygous polled bull with a horned cow.

(a) Write the genotypes of the parents. [2]

(b) Use a genetic diagram to show the possible genotypes of the calves. [2]

(c) What percentage of the calves would be expected to have horns? [1]

43. Describe the path of blood from the body back to the body, through the heart and lungs.

(a) From the body to the lungs. [3]

(b) From the lungs back to the body. [3]

44. The Makgadikgadi grasslands support zebra, wildebeest and the predators that hunt them.

(a) Explain why there are usually fewer predators than prey. [2]

(b) Suggest two human activities that threaten this ecosystem. [2]

Answers

Check your work after you finish. Multiple-choice questions score only when every right answer is chosen.

1	C	**2**	D	**3**	A	**4**	B	**5**	C
6	A, B, C, D	**7**	B	**8**	C	**9**	D	**10**	A
11	D	**12**	C	**13**	A	**14**	B	**15**	C
16	B	**17**	A	**18**	A	**19**	B	**20**	D
21	A	**22**	A, B, C	**23**	A, C, D	**24**	D	**25**	A
26	A	**27**	B	**28**	B	**29**	B	**30**	A
31	A	**32**	C	**33**	A	**34**	D	**35**	D
36	A	**37**	D	**38**	B	**39**	B	**40**	D
41	See below	**42**	See below	**43**	See below	**44**	See below		

Marking guide for written questions

Question 41

(a) [1] To destarch the leaves / use up stored starch (1)

(b) [3] Boil in water to kill it (1); warm in ethanol to remove chlorophyll (1); add iodine (1)

(c) [2] Uncovered turns blue-black — starch made in light (1); covered stays brown — no light, no photosynthesis (1)

Question 42

(a) [2] Bull Hh (1), cow hh (1)

(b) [2] Gametes H, h × h (1); Hh and hh in equal numbers (1)

(c) [1] 50% (1)

Question 43

(a) [3] Vena cava (1) → right atrium → right ventricle (1) → pulmonary artery to lungs (1)

(b) [3] Pulmonary vein (1) → left atrium → left ventricle (1) → aorta to the body (1)

Question 44

(a) [2] Energy is lost at each trophic level (1), so less energy is available to support predators (1)

(b) [2] Any two: fencing that blocks migration, overgrazing, poaching, veld fires, water extraction (1 each)