

## NAMIBIA SENIOR SECONDARY CERTIFICATE

### BIOLOGY ORDINARY LEVEL

**4322/1**

PAPER 1 Multiple Choice

1 hour

Marks 40

**2020**

Additional Materials: Multiple choice answer sheet  
Soft clean eraser  
Soft pencil (type B or HB is recommended)

### INSTRUCTIONS AND INFORMATION TO CANDIDATES

- Write in soft pencil.
- Answer **all** questions.
- Make sure that you receive the multiple choice answer sheet with your **Candidate Number** on it.
- There are **forty** questions on this paper.
- For each question, there are four possible answers **A, B, C** and **D**. Choose the one you consider correct and record your choice in soft pencil on the separate answer sheet.
- If you want to change an answer, thoroughly erase the one you wish to delete.

**Read the instructions on the answer sheet carefully.**

- Each correct answer will score one mark.
- All questions in this paper carry equal marks.
- Any rough working should be done in this booklet.
- You may use a non-programmable calculator.

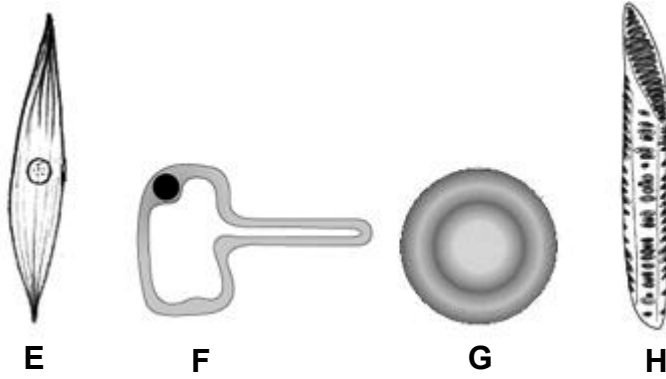
This document consists of **11** printed pages and **1** blank page.



Republic of Namibia  
**MINISTRY OF EDUCATION, ARTS AND CULTURE**

- 1 What allows reptiles to thrive in arid environments?
  - A They have a flexible endoskeleton.
  - B They are brightly coloured to reflect light.
  - C They have leathery scales to prevent dehydration.
  - D They can see clearly in bright sunlight.
  
- 2 Which characteristic is common to both bacteria and viruses?
  - A Both have protein coats.
  - B Both can be killed using antibiotics.
  - C Both contain genetic material.
  - D Both have a cell membrane.
  
- 3 Mammals such as dik-diks give birth to live young. Which characteristic of living organisms does this show?
  - A growth
  - B nutrition
  - C reproduction
  - D sensitivity
  
- 4 Prokaryotic and eukaryotic cells generally have which of the following features in common?
  - A a cell wall made of cellulose
  - B a membrane bound nucleus
  - C flagella that contain microtubules
  - D ribosomes
  
- 5 Which terms are listed in order of increasing level of organisation in a multicellular organism?
  - A organ → tissue → organ system
  - B organ → organ system → tissue
  - C tissue → organ → organ system
  - D tissue → organ system → organ
  
- 6 Which is the correct function of the ciliated cells in the nasal passage of humans?
  - A They move trapped dust particles to the back of the mouth cavity.
  - B They cause the incoming air to be warmed.
  - C They moisten the incoming air.
  - D They secrete mucus which traps dust particles.

7 Four different cell types, **E**, **F**, **G** and **H** are shown.



Which row **A**, **B**, **C** or **D** gives the correct function for each cell type?

	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>
<b>A</b>	absorption	contraction	support	transport
<b>B</b>	contraction	absorption	transport	support
<b>C</b>	support	transport	absorption	contraction
<b>D</b>	transport	support	contraction	absorption

- 8 The sodium-potassium pump moves sodium and potassium ions against their concentration gradients. Which of these describes the process used by the sodium-potassium pump?
- A** active transport
  - B** diffusion
  - C** osmosis
  - D** photosynthesis
- 9 Frog eggs are surrounded by jelly-like masses which are permeable to water. What will most likely happen if frog eggs are taken from a fresh water pond and placed in a salt water aquarium?
- A** Water will move into the eggs.
  - B** The eggs will burst.
  - C** Water will move out of the eggs.
  - D** Water will neither move in or out of the eggs.
- 10 What do we call the mode of nutrition in which an organism produces its own food?
- A** autotrophic nutrition
  - B** heterotrophic nutrition
  - C** malnutrition
  - D** xerophytic nutrition

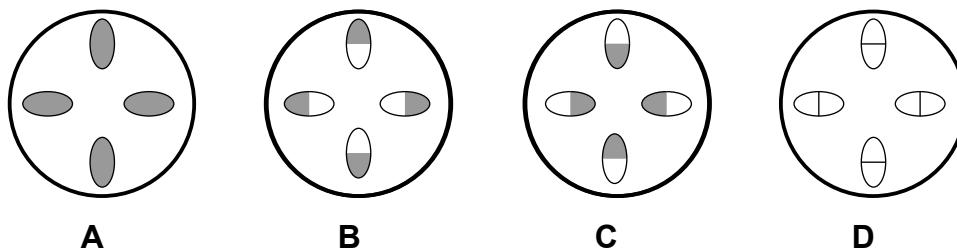
- 11 The table shows the nutritional information of a daily juice. Which nutrient needs no digestion?

<b>A</b>	fat	<1g
<b>B</b>	glucose	8.3 g
<b>C</b>	protein	0.6 g
<b>D</b>	starch	9.0 g

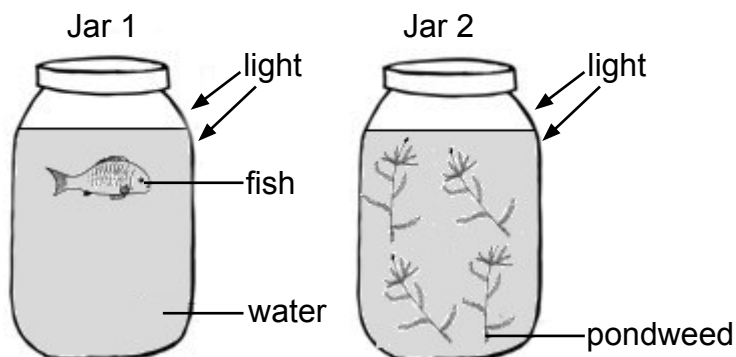
- 12 Which of the following word equations best represents photosynthesis?

- A** carbohydrate + oxygen  $\xrightarrow{\text{light}}$  energy + carbon dioxide + water
- B** carbon dioxide + water  $\xrightarrow{\text{light absorbed by chlorophyll}}$  carbohydrate + oxygen
- C** carbon dioxide + water  $\xrightarrow{\text{light reflected by chlorophyll}}$  carbohydrate + oxygen
- D** carbon dioxide + oxygen  $\xrightarrow{\text{light absorbed by chlorophyll}}$  carbohydrate + water

- 13 Which of the following diagrams represents a cross section through the stem of a photosynthesising dicotyledonous plant after it has been treated with an iodine solution for the phloem?



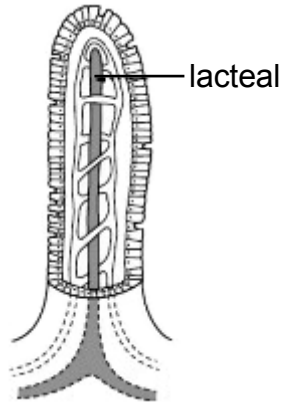
- 14 Two jars were set up as shown in the diagram below.



How will the concentration of dissolved carbon dioxide in the water change after four hours?

	JAR 1	JAR 2
<b>A</b>	decreases	decreases
<b>B</b>	decreases	increases
<b>C</b>	increases	decreases
<b>D</b>	increases	increases

15 The diagram shows a villus from the small intestine



Which of the following products of digestion are absorbed into the lacteal?

- A glucose and amino acids
  - B glucose and fatty acids
  - C glycerol and amino acids
  - D glycerol and fatty acids
- 16 Where does most water enter a plant?
- A guard cells
  - B mesophyll cells
  - C root hair cells
  - D xylem vessels
- 17 Which **two** conditions will increase the transpiration rate of a plant?

	Condition 1	Condition 2
<b>A</b>	Cold temperature	High humidity
<b>B</b>	Cold temperature	Low humidity
<b>C</b>	Warm temperature	High humidity
<b>D</b>	Warm temperature	Low humidity

- 18** Regular physical activity can help reduce the risk of heart disease. There are weekly recommendations for physical activity.

The table shows the percentage of males and females of different age groups, who meet these recommendations.

Age group	Percentage meeting the weekly recommendations for physical activity	
	Males	Females
16-24	83	63
25-34	75	65
35-44	74	67
45-54	69	64
55-64	61	53

Which of the following statements is correct based on the data in the table?

- A** 25% of females aged 25–34 do not meet the weekly recommendations.
- B** 26% of males aged 35–44 meet the weekly recommendations.
- C** The percentage of females meeting the weekly recommendations consistently decreases as age increases.
- D** The percentage of males meeting the weekly recommendations consistently decreases as age increases.
- 19** What is the function of fibrinogen?
- A** helps in blood clotting
- B** helps in fighting against diseases
- C** helps in giving red colour to the blood
- D** helps in hormone regulation
- 20** Which word equation represents anaerobic respiration in yeast?
- A** glucose  $\longrightarrow$  lactic acid + energy
- B** glucose  $\longrightarrow$  ethanol + carbon dioxide + energy
- C** glucose + oxygen  $\longrightarrow$  carbon dioxide + water + energy
- D** glucose + oxygen  $\longrightarrow$  ethanol + water + energy
- 21** Which are requirements for efficient exchange of gases through membranes in humans?
- A** dryness, large surface area and one layer of cells thick
- B** moistness, large surface area and many layers of cells thick
- C** moistness, large surface area and one layer of cells thick
- D** moistness, small surface area and many layers of cells thick

- 22** In a dialysis machine, which **one** of the following substances moves from the patient's blood into the dialysis fluid?
- A** glucose
  - B** blood
  - C** urea
  - D** water
- 23** Which organ breaks down alcohol?
- A** bladder
  - B** kidney
  - C** liver
  - D** pancreas
- 24** Some organs are part of more than one system of the body. To which combination of systems does the pancreas belong?
- A** circulatory and hormonal systems
  - B** digestive and circulatory systems
  - C** excretory and endocrine systems
  - D** hormonal and digestive systems
- 25** Which of the following pathways constitutes a reflex arc?
- A** effector – relay neuron – motor neuron
  - B** motor neuron – effector – sensory neuron
  - C** receptor – effector – sensory neuron
  - D** sensory neuron – relay neuron – motor neuron
- 26** Why do plant stems bend towards a light source?
- A** Less auxin and less plant cell growth on the side of the stem away from the light source.
  - B** More auxin and less plant cell growth on the side of the stem away from the light source.
  - C** Less auxin and more plant cell growth on the side of the stem near the light source.
  - D** More auxin and more plant cell growth on the side of the stem away from the light source.

- 27 What happens to the blood vessels near the skin surface and to sweat production when the body temperature falls below normal?

	blood vessels	sweat production
<b>A</b>	constrict	decreases
<b>B</b>	constrict	increases
<b>C</b>	dilate	decreases
<b>D</b>	dilate	increases

- 28 Which of the following is an advantage of asexual reproduction?

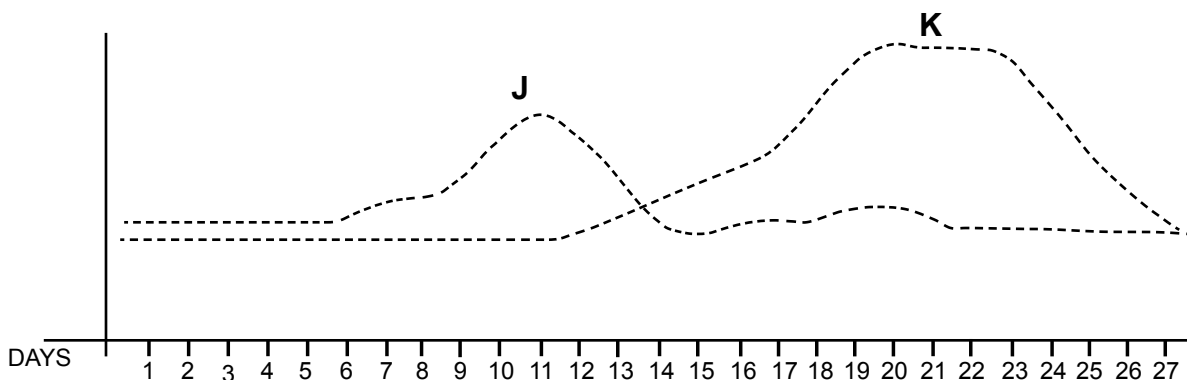
- A** The species can adapt to new environments.
- B** The species can exploit a suitable habitat quickly.
- C** The species has a slower population increase.
- D** The species has greater variety in offspring.

- 29 Some species of plant are strongly adapted to pollination by certain insects. Which of the following characteristics would be regarded as adaptations to pollination by bees?

- A** Small green petals, light smooth pollen grains and production of scent
- B** Small green petals, sticky pollen grains and anthers outside the flower
- C** White or coloured petals, light smooth pollen grains and stigmas inside the flower
- D** White or coloured petals, sticky pollen grains and anthers inside the flower

- 30 The diagram below shows the change of hormonal levels during the menstrual cycle of a woman, in the month of March.

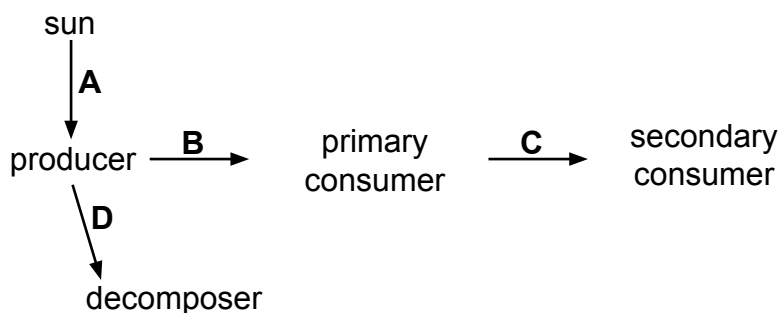
Which hormones are indicated by **J** and **K** respectively?



	<b>J</b>	<b>K</b>
<b>A</b>	oestrogen	progesterone
<b>B</b>	progesterone	oestrogen
<b>C</b>	progesterone	testosterone
<b>D</b>	oestrogen	testosterone



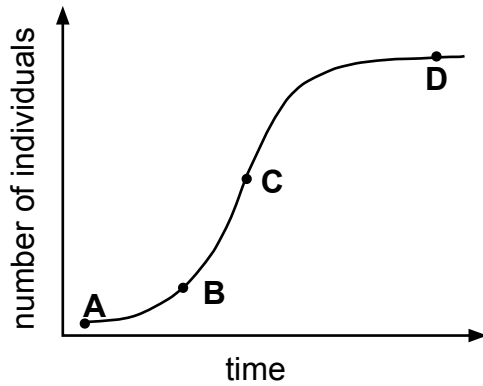
- 31 A couple has 5 children, all sons. If the woman gives birth to a sixth child, what is the probability that the sixth child will be a son?
- A 1/6  
B 1/5  
C 1/2  
D 5/6
- 32 In sheep, eye colour is controlled by two alleles for brown eyes and green eyes. When a homozygous brown-eyed sheep is crossed with a homozygous green-eyed sheep, only green-eyed offspring are produced. If these green-eyed offspring are crossed with each other, what percentage of their offspring will most likely have brown eyes?
- A 25%  
B 50%  
C 75%  
D 100%
- 33 What leads to natural selection?
- A competition for unlimited resources  
B genetic variation in population  
C mutation in the DNA of elderly people  
D selective breeding by farmers
- 34 Which one of the following statements is false?
- A Continuous variation can result from genetic differences.  
B Continuous variation results from environmental effects only.  
C Discontinuous variation cannot be altered by environmental effects.  
D Discontinuous variation results entirely from genetic differences.
- 35 The diagram shows energy flow in an ecosystem. Where does energy enter the food chain?



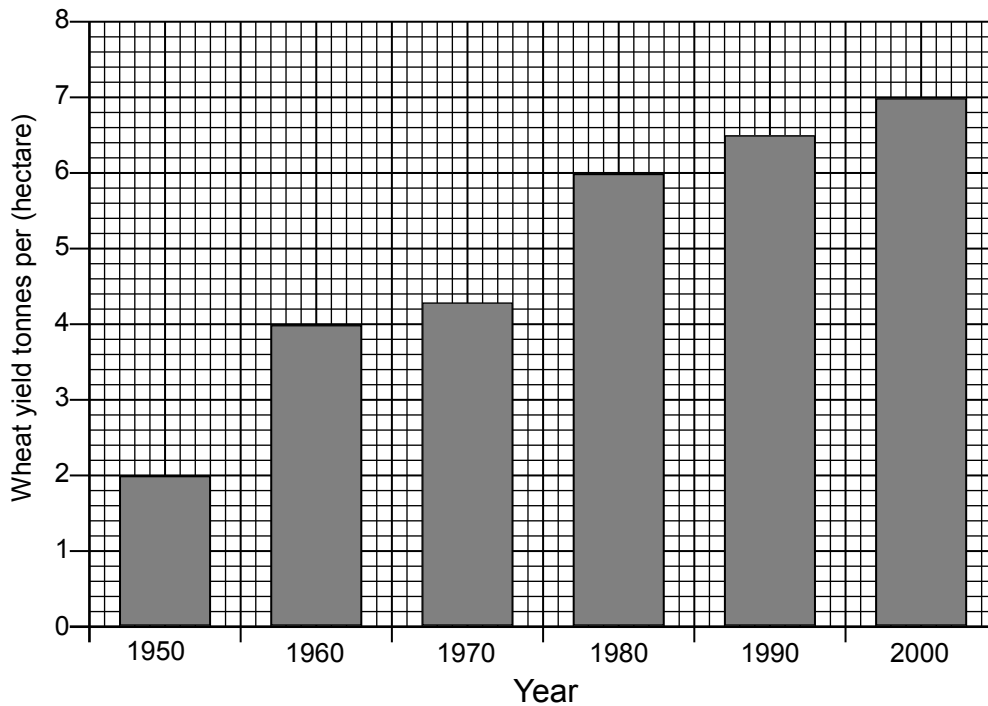
36 What do leguminous plants do with the nitrates they absorb from the soil?

- A for building proteins
- B starch formation
- C for photosynthesis
- D for respiration

37 The diagram represents a sigmoid curve of population growth. At which point on the curve was birth rate equal to death rate?



38 The following graph shows the changes in wheat yield over a fifty-year period.



What is the percentage increase in wheat yield from 1950 to 2000

- A 5
- B 40
- C 250
- D 350

39 What are the main undesirable effects of overuse of fertilisers, sulphur dioxide pollution from factories and nuclear fall-out?

	Overuse of fertiliser	Sulphur dioxide pollution	Nuclear fall-out
<b>A</b>	acid rain	excess nitrate	genetic mutation
<b>B</b>	excess nitrate	acid rain	genetic mutation
<b>C</b>	genetic mutation	acid rain	excess nitrate
<b>D</b>	excess nitrate	genetic mutation	acid rain

40 In what ways could human activity lead to the extinction of a species in an area?

- A Breeding the endangered species in captivity.
- B Making it illegal to destroy protected plants.
- C Making it illegal to kill the threatened animals.
- D Over-hunting and farming.

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