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Biology

Standard level

Paper 1A

11 May 2026

Zone A afternoon | **Zone B** afternoon | **Zone C** afternoon

1 hour 30 minutes [Paper 1A and Paper 1B]

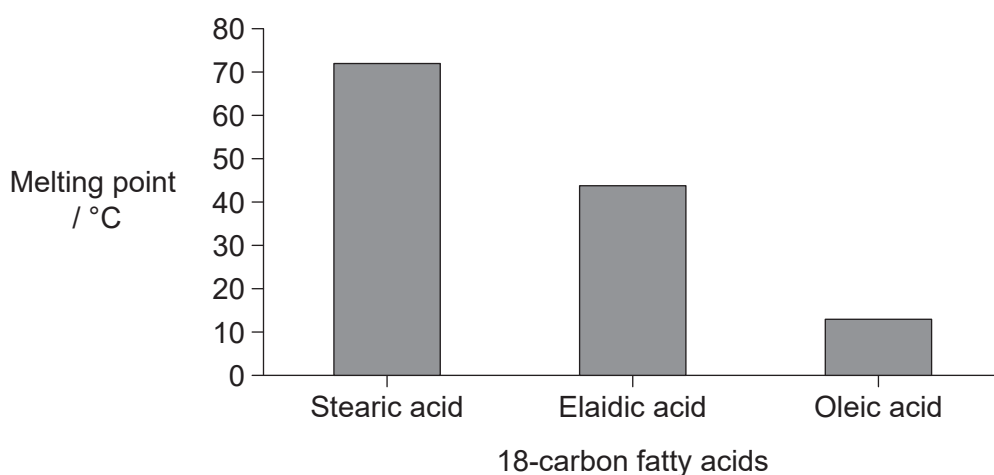
Instructions to students

- Do not open this examination paper until instructed to do so.
- Answer all questions.
- For each question, choose the answer you consider to be the best and indicate your choice on the answer sheet provided.
- A calculator is required for this paper.
- The maximum mark for paper 1A is **[30 marks]**.
- The maximum mark for paper 1A and paper 1B is **[55 marks]**.

1. Which features are common to all viruses?

- I. Non-living
 - II. Contain genetic material
 - III. Contain DNA
- A. I and II only
 - B. I and III only
 - C. II and III only
 - D. I, II and III

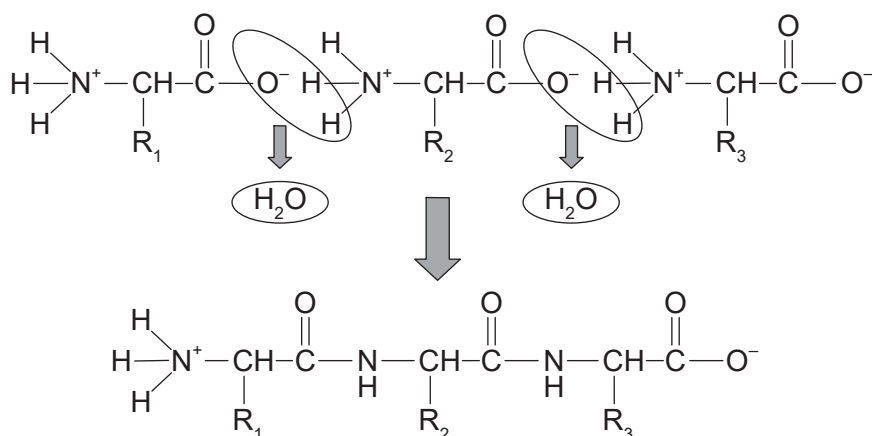
2. The graph shows the melting point of three different 18-carbon fatty acids.



What would explain the higher melting point of stearic acid?

- A. It is saturated with one carbon double bond.
- B. It is saturated with no carbon double bonds.
- C. It is monounsaturated with more than one carbon double bond.
- D. It is monounsaturated with one carbon double bond.

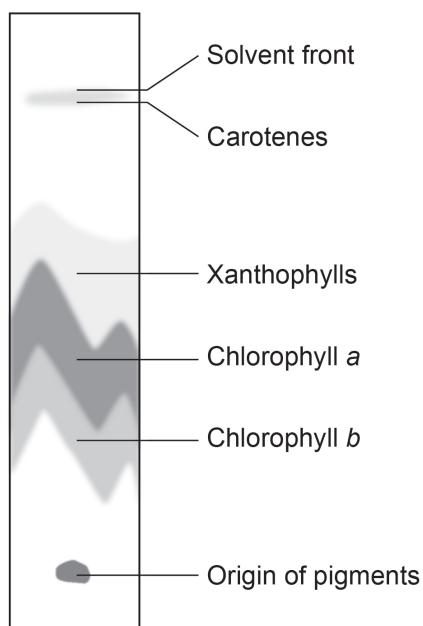
3. The diagram shows the synthesis of an organic molecule.



Which features apply to the synthesized molecule?

- I. Peptide bonds are present.
 - II. Hydrolysis formed the molecule.
 - III. The R-groups could be different.
- A. I and II only
 - B. I and III only
 - C. II and III only
 - D. I, II and III

4. The diagram shows photosynthetic pigments separated by chromatography.



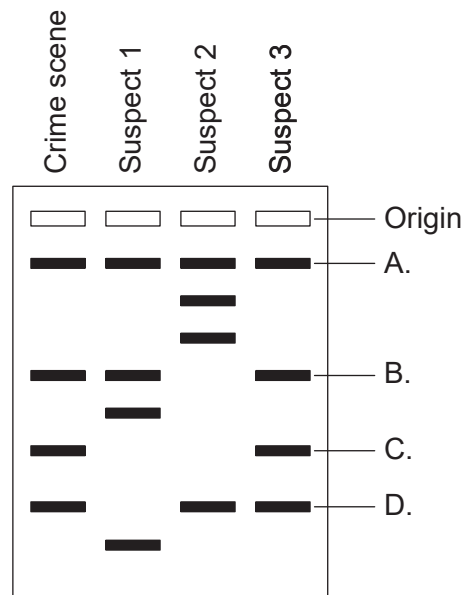
Which would have the highest R_f value?

- A. Carotenes
 - B. Chlorophyll *a*
 - C. Chlorophyll *b*
 - D. Xanthophylls
5. Which reaction is catabolic?
- A. Synthesis of enzymes
 - B. Glycogen formation
 - C. Transcription
 - D. Oxidation of fats

6. Which type of mutation has occurred in the replicated DNA sequence?

GTTTCGTACTAAGCA → GTTCGTACGAAGCA

- A. Frameshift
 B. Substitution
 C. Insertion
 D. Deletion
7. The diagram shows a gel plate with DNA fragments separated by gel electrophoresis. Which fragment consists of the largest number of nucleotides?



8. What are features of fungi?

	Cell wall	Nucleus	Chloroplast
A.	present	present	absent
B.	present	present	present
C.	absent	present	absent
D.	absent	absent	absent

9. Which cell structure is considered to be an organelle?

- A. Cell wall
- B. Ribosome
- C. Cytoskeleton
- D. Cytoplasm

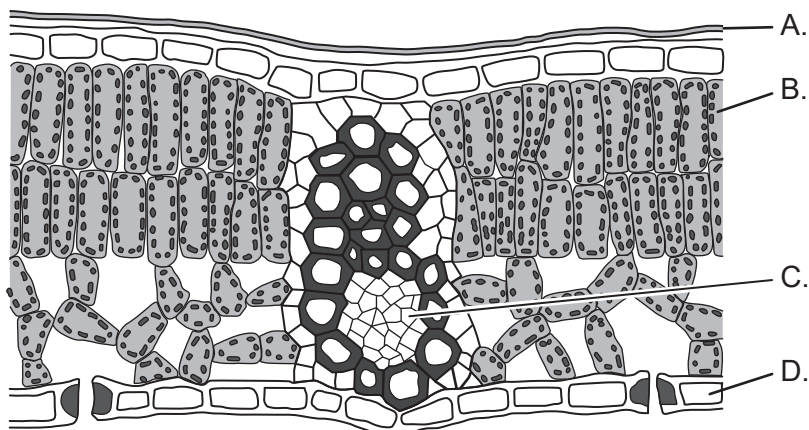
10. How would surface area-to-volume ratio and the rate at which materials are exchanged across a cell surface change as a cell becomes bigger, if the cell does not change its shape?

- A. Surface area-to-volume ratio increases, and the rate of exchange of materials decreases.
- B. Surface area-to-volume ratio decreases, and the rate of exchange of materials increases.
- C. Surface area-to-volume ratio decreases, and the rate of exchange of materials decreases.
- D. Surface area-to-volume ratio increases, and the rate of exchange of materials increases.

11. What is a response to depolarization of the presynaptic membrane?

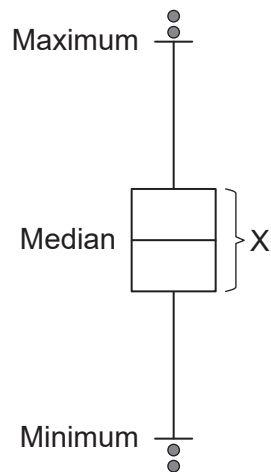
- A. Uptake of calcium into the presynaptic neuron
- B. Uptake of sodium into the presynaptic neuron
- C. Release of calcium from the presynaptic neuron
- D. Release of sodium from the presynaptic neuron

12. Which cell results from unequal cytokinesis?
- A. A human egg cell
 - B. A human sperm cell
 - C. A human skin cell
 - D. A bacterial cell
13. *Ursus americanus* and *Bufo americanus* are both native to North America. What conclusion can be drawn about an *Ursus americanus* individual and a *Bufo americanus* individual that are living in the same ecosystem?
- A. They are members of the same genus.
 - B. They are members of the same species.
 - C. They are members of the same population.
 - D. They are members of the same community.
14. Which two environmental changes would reduce transpiration rates in plants?
- A. Increased humidity and decreased temperature
 - B. Decreased humidity and decreased temperature
 - C. Increased temperature and decreased wind speed
 - D. Decreased temperature and increased wind speed
15. The diagram shows a transverse section of a dicotyledonous leaf. Which labelled structure is responsible for transporting materials through the leaf?



- 16.** Which cells produce antibodies?
- A. Plasma B-cells
 - B. Helper T-cells
 - C. Phagocytes
 - D. Activated T-cells
- 17.** What transmits signals to skeletal muscle cells?
- A. Interneurons
 - B. Pain receptors
 - C. Dendrites
 - D. Motor neurons
- 18.** Which characteristic of COVID-19 makes it a zoonosis?
- A. Can affect all animals
 - B. Transferred from another species to humans
 - C. Resistant to antibiotics
 - D. Rapidly mutating and evolving
- 19.** How many copies of each autosomal gene are found in a human liver cell?
- A. 1
 - B. 2
 - C. 3
 - D. 4

20. The diagram shows a box-and-whisker plot for student height.

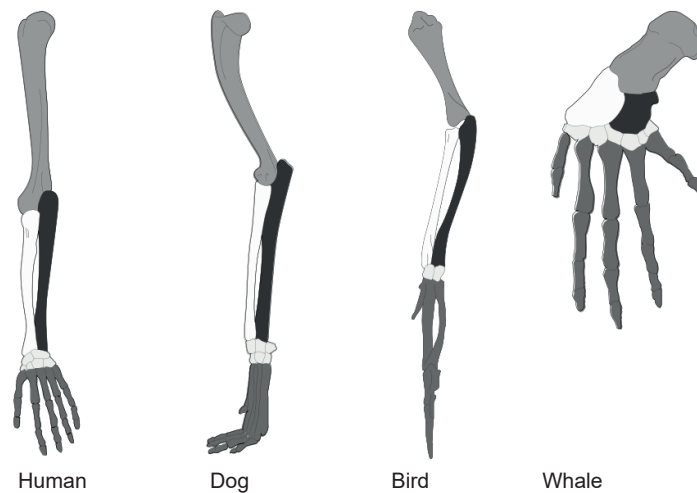


What does the location labelled X on the diagram represent?

- A. The first quartile range of a discrete (discontinuous) variable
 - B. The interquartile range of a discrete (discontinuous) variable
 - C. The first quartile range of a continuous variable
 - D. The interquartile range of a continuous variable
21. What is the role of insulin and of glucagon in blood sugar regulation?

	Insulin	Glucagon
A.	stimulates liver to release glucose	increases blood sugar
B.	stimulates liver to store glucose	decreases blood sugar
C.	decreases blood sugar	stimulates liver to release glucose
D.	increases blood sugar	stimulates liver to release glucose

22. The diagram shows evidence for common ancestry based on limb development in vertebrates.



- What describes this type of evidence?
- A. Homologous structures
 - B. Analogous structures
 - C. Convergent evolution
 - D. Selective breeding
23. Which statement about the number of species on Earth is supported by evidence?
- A. There are very few species left to be discovered.
 - B. The biodiversity is the same as it was at any time in the past.
 - C. All the species on Earth have been discovered.
 - D. There are more species alive on Earth today than at any time in the past.
24. Which biome has warm and wet conditions, nutrient-poor soil and high levels of biodiversity?
- A. Taiga
 - B. Tundra
 - C. Tropical forest
 - D. Grassland

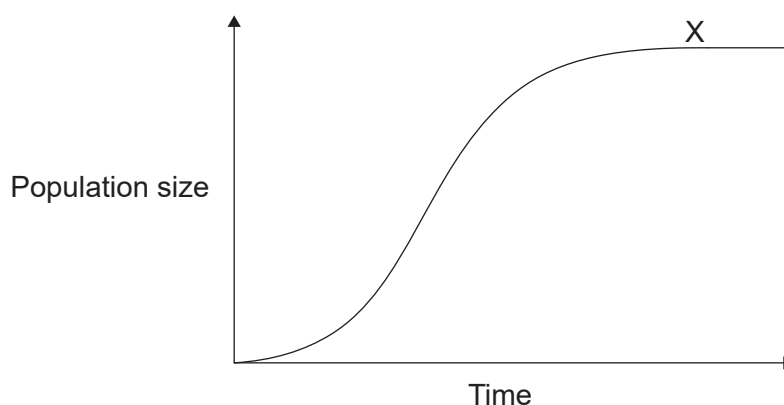
25. What describes the ability of *Escherichia coli* bacteria to survive with the presence or absence of oxygen gas in the environment?
- A. Obligate anaerobe
 - B. Facultative anaerobe
 - C. Obligate aerobe
 - D. Mixotrophic aerobe
26. The image shows Fabaceae (legume family) root nodules, which host bacteria.



Which type of relationship exists between the bacteria and the plant?

- A. Mutualistic and intraspecific
 - B. Parasitic and intraspecific
 - C. Parasitic and interspecific
 - D. Mutualistic and interspecific
27. The black walnut (*Juglans nigra*) secretes chemicals into the environment that inhibit the growth processes of potential competitor species. What describes this process?
- A. Intraspecific competition
 - B. Parasitism
 - C. Allelopathy
 - D. Pathogenicity

28. The graph shows a population growth curve.



What does the part of the graph labelled X represent?

- A. Carrying capacity with unlimited resources
 - B. Growth phase with limited resources
 - C. Growth phase with unlimited resources
 - D. Carrying capacity with limited resources
29. What are possible effects of leaching of nitrogen fertilizers into a river?

	Population of algae	Biochemical oxygen demand (BOD)
A.	decreases	increases
B.	increases	decreases
C.	increases	increases
D.	decreases	decreases

30. What causes an increase in genetic variation within populations?

- A. Nuclear division by mitosis
 - B. Asexual reproduction
 - C. Random orientation of bivalents in meiosis
 - D. Cytokinesis following mitosis
-

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