

Cells, tissues and organelles: practice questions

8 questions · 24 marks · mark scheme at the back

For Pearson Edexcel International AS Biology XBI11 and International A Level Biology YBI11. **A Level only** is IA2 content (Units 4 to 6), not needed for the International AS.

Name

Total / 24

1 UNIT 2 STYLE [1 mark]

Which organelle is the site of synthesis of ribosomal RNA?

- A. ☐ Golgi apparatus
- B. ☐ Nucleolus
- C. ☐ Rough endoplasmic reticulum
- D. ☐ Lysosome

2 UNIT 2 STYLE [1 mark]

Which statement correctly describes a prokaryotic cell?

- A. ☐ Linear DNA associated with histones and 80S ribosomes
- B. ☐ Circular DNA with no nuclear envelope and 70S ribosomes
- C. ☐ Circular DNA inside a nucleus and 70S ribosomes
- D. ☐ Linear DNA with no nuclear envelope and 80S ribosomes

3 UNIT 2 STYLE [3 marks]

State what is meant by the term tissue, and describe how tissues are organised into organs and organ systems.

4 UNIT 2 STYLE

[4 marks]

Describe the structure of a mitochondrion and explain how its structure is related to its function.

5 UNIT 2 STYLE

[5 marks]

Cells of the pancreas make digestive enzymes that are secreted from the cell. Describe the roles of the rough endoplasmic reticulum and the Golgi apparatus in the production and secretion of these enzymes.

6 UNIT 2 STYLE

[4 marks]

Bacteria that cause infections often have a capsule, a flagellum and plasmids. Explain how each of these structures helps the bacterium to survive or to spread an infection.

7 UNIT 2 STYLE

[3 marks]

A student looked at an electron micrograph of a liver cell. She identified one structure as rough endoplasmic reticulum and another as a mitochondrion. State the features she would have seen to identify each organelle.

8 UNIT 2 STYLE

[3 marks]

Lysosomes contain hydrolytic enzymes. Explain why the enzymes are enclosed within a membrane and describe one function of lysosomes.

Mark scheme

One mark for each point unless a maximum is given. Words in brackets are not needed for the mark.

1. [1]

B B (nucleolus)

2. [1]

B B

3. [3]

- tissue is a group of similar (specialised) cells (1)
- working together to perform a particular function (1)
- an organ is made of different tissues working together (1)
- an organ system is a group of organs working together to carry out a major function (1)
- Max 3

4. [4]

- double membrane / outer and inner membrane (1)
- inner membrane folded into cristae (1)
- large surface area for the enzymes of the electron transport chain / ATP synthesis (1)
- matrix contains enzymes (for the Krebs cycle / link reaction) (1)
- site of aerobic respiration / produces ATP (1)
- Max 4

5. [5]

- ribosomes on rough ER synthesise the (enzyme) protein (1)
- protein enters the lumen of the rough ER and is folded (1)
- transport vesicles bud off the rER and carry the protein to the Golgi apparatus (1)
- Golgi apparatus modifies the protein (for example adds carbohydrate) (1)
- protein packaged into secretory vesicles (1)
- vesicles fuse with the cell surface membrane and release the enzyme by exocytosis (1)
- Max 5

6. [4]

- capsule protects the bacterium from the host's immune system / phagocytes / from drying out (1)
- capsule helps it stick to surfaces / host cells (1)
- flagellum allows it to move towards nutrients / the host (1)
- plasmid carries genes such as antibiotic resistance (1)
- plasmids can be passed to other bacteria, spreading resistance (1)
- Max 4

7. [3]

- rough ER: flattened sacs / cisternae (1)
- with black dots / ribosomes on the surface (1)
- mitochondrion: oval / rod-shaped with a double membrane (1)
- inner membrane folded into cristae (1)
- Max 3

8. [3]

- membrane keeps the enzymes separate from the cytoplasm (1)
- so that they do not digest / damage the cell's own contents (1)
- digest worn-out organelles / bacteria engulfed by phagocytosis / material taken in by the cell (1)
- Max 3