

A Level Biology A
H420/02 Biological Processes

Question Set 21

Multiple Choice Questions

1 Membranes are found within and surrounding cells.

Which of the statements, **A** to **D**, is **not** a role of membranes in cells?

- A** acts as a barrier between areas
- B** cell signalling
- C** provides support for cell
- D** site of chemical reactions

Your answer

C

[1]

2 Which of the statements, **A** to **D**, about amylopectin is correct?

- A** it contains 1-4 and 1-6 glycosidic bonds between α -glucose monomers
- B** it is an unbranched chain of α -glucose monomers
- C** it contains α 1-4 and β 1-6 glycosidic bonds
- D** it is made up of β -glucose monomers and is uncoiled

Your answer

A

[1]

3 Which of the following processes occur during DNA replication?

- 1 breakage and (re)formation of glycosidic bonds
- 2 breakage and (re)formation of hydrogen bonds
- 3 alignment of free nucleotides with their complementary bases

- A** 1, 2 and 3
- B** Only 1 and 2
- C** Only 2 and 3
- D** Only 1

Your answer

C

[1]

4 Cut pieces of agar jelly can be used to investigate the factors affecting diffusion rates in cells.

Four pieces of agar jelly containing universal indicator were soaked in the same concentration of hydrochloric acid for one minute.

The cubes were then removed and blotted dry.

Which of the following pieces of agar jelly would be the first to turn entirely red?

- A a cube with edges 4 cm each
- B a cuboid with edges 2 cm, 4 cm and 6 cm
- C a cuboid with edges 3 cm, 3 cm and 5 cm
- D a sphere with diameter 4 cm

	V	SA	SA:V
A	64	$6(4)(4) = 96$	1:0.67
B	48	$2[2 \times 4 + 4 \times 6 + 2 \times 6] = 88$	1:0.54
C	45	$2[3 \times 5 + 3 \times 5 + 3 \times 3] = 78$	1:0.58
D	$\frac{4}{3} \pi (2)^3 = \frac{32}{3} \pi$	$4\pi (2)^2 = 16\pi$	1:0.67

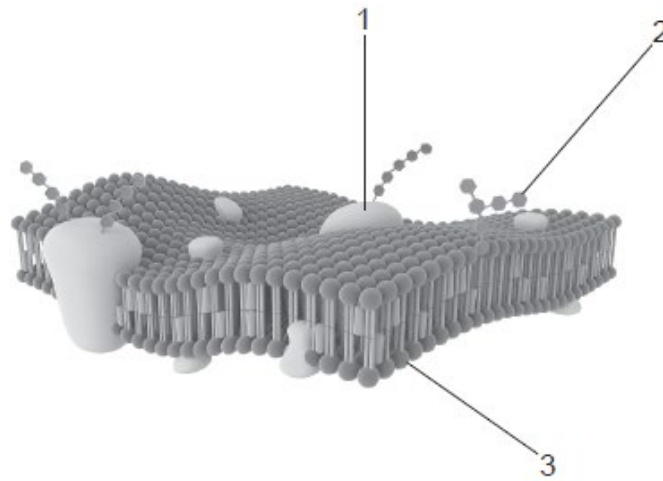
Your answer

B

[1]

5 The diagram below shows part of a plasma membrane.

B has lowest ratio



Which of the label lines points to a structure that could contain a sulfur atom?

- A 1, 2 and 3
- B Only 1 and 2
- C Only 2 and 3
- D Only 1

Your answer

D

[1]

6 Which of the following best describes a microscope with *high resolution*?

- A The microscope can distinguish structures that are very close together.
- B The microscope can view structures that are very small.
- C The microscope is capable of high magnification.
- D The microscope has an in-built eyepiece graticule.

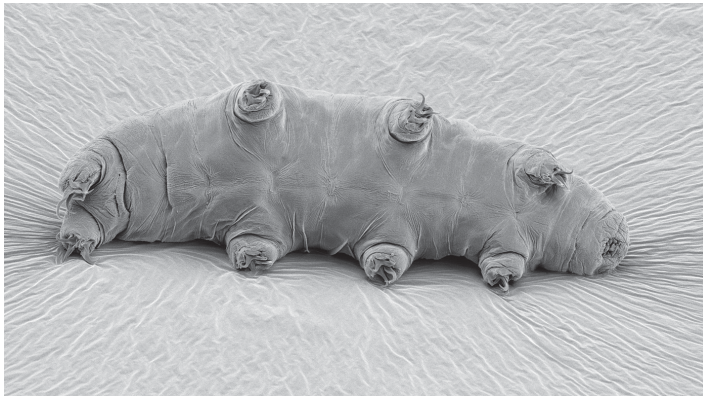
Your answer

A

[1]

7 The image below shows a tardigrade, *Echiniscus granulatus*, viewed from the underneath. The magnification is $\times 110$.

How long is the tardigrade in real life?



- A $115\mu\text{m}$
- B $1.14 \times 10^{-5}\text{m}$
- C $8.64 \times 10^{-4}\text{m}$
- D 0.116mm

$$A = \frac{I}{M}$$
$$= \frac{\text{length in image}}{\text{magnification}}$$

Your answer

C

[1]

8 Which of the following processes involves the formation of ester bonds?

- 1 synthesis of polynucleotides
- 2 synthesis of triglycerides
- 3 synthesis of polypeptides

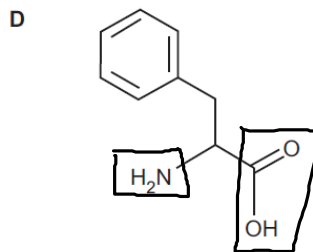
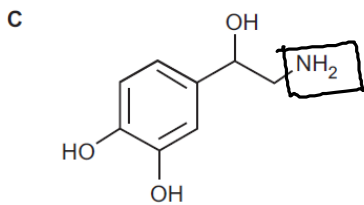
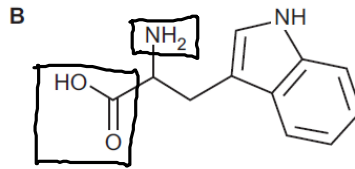
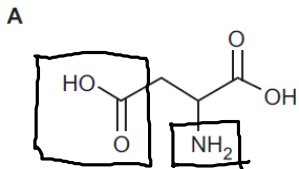
- A 1, 2 and 3
- B Only 1 and 2
- C Only 2 and 3
- D Only 1

Your answer

B

[1]

9 Which of the following could **not** be an amino acid?



Your answer

C

[1]

10 Lipids are a diverse group of chemicals that are neither polar nor charged and hence are insoluble in water. The_(1) nature of the heads of phospholipids allows them to form membranes.

__(2) also contain fatty acids and form part of the membrane. Lipids can be used for energy storage in the form of__(3)__. Some hormones are also lipids and they are similar in structure to_(4)_.

Which row shows the correct sequence of missing words?

	1	2	3	4
A	hydrophilic	glycolipids	triglycerides	cholesterol molecules
B	hydrophilic	triglycerides	cholesterol molecules	glycolipids
C	hydrophobic	cholesterol molecules	triglycerides	bile
D	hydrophilic	cholesterol molecules	triglycerides	glycolipids

Your answer

A

[1]

11 During which stage of the cell cycle does semi-conservative DNA replication take place?

- A** first growth phase
- B** prophase
- C** second growth phase
- D** synthesis phase

Your answer

D

[1]

12 The cell cycle includes a number of checkpoints.

Which of the following statements about the cell cycle is correct?

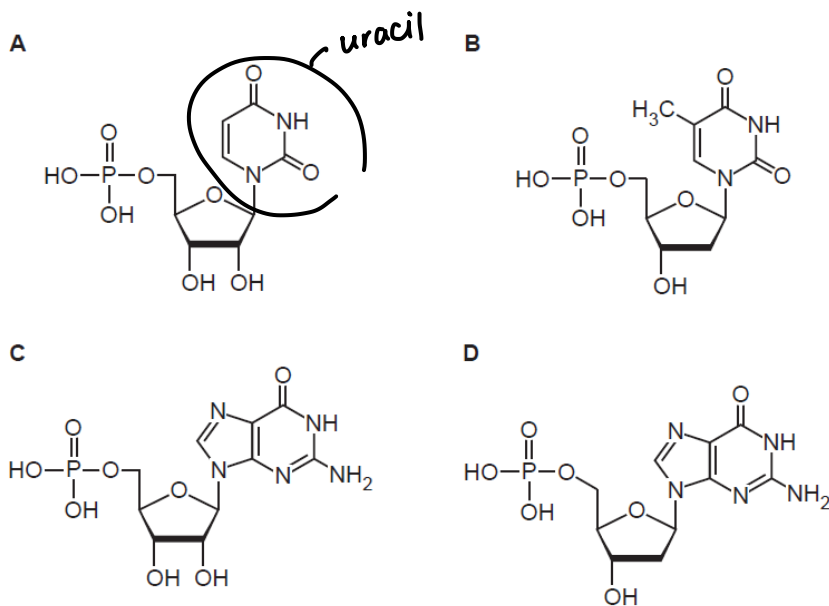
- A If damaged DNA is detected at a checkpoint apoptosis is triggered.
- B If damaged DNA is detected at the G_2 checkpoint the cell cycle is halted and the cell tries to repair the damage.
- C If a mistake is detected at a checkpoint the cycle reverts to an earlier checkpoint and is repeated.
- D The G_1 checkpoint checks for mistakes in DNA replication.

Your answer

B

[1]

13 Which of the following nucleotides contains uracil?



Your answer

A





[1]

14

The image below shows a diagram of an enzyme.



Which of the following could be a competitive inhibitor of this enzyme?

- A 
- B 
- C 
- D 

Your answer

D

[1]

Total Marks for Question Set 21: 14

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