

**A Level Biology A**  
**H420/01 Biological Processes**

**Question Set 23**

Multiple Choice Questions

1. Which of the options, **A** to **D**, occurs in the nucleus of a cell?

- A** synthesis of enzymes
- B** synthesis of RNA
- C** modification of polypeptides
- D** synthesis of carbohydrates

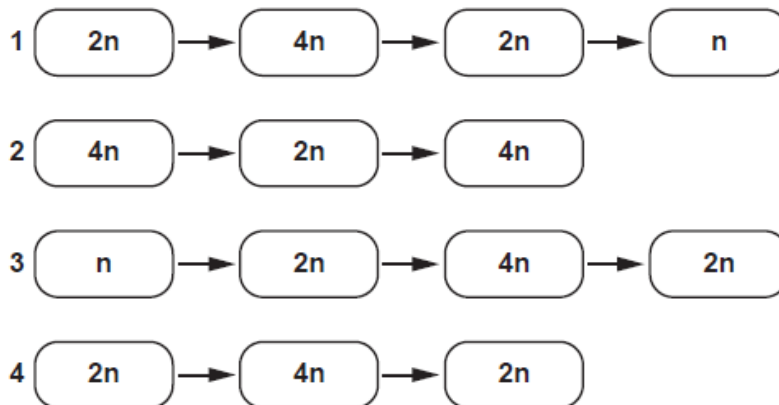
Your answer

**B**

[1]

2. During cell division, the chromosome number in the cells changes.

The following sequences describe the chromosome number in cells before, during and after different types of cell division.



Which of the options, **A** to **D**, correctly describes the stages of mitosis and meiosis in human cells?

- A** 1 is mitosis, 2 is meiosis
- B** 2 is mitosis, 3 is meiosis
- C** 3 is mitosis, 4 is meiosis
- D** 4 is mitosis, 1 is meiosis

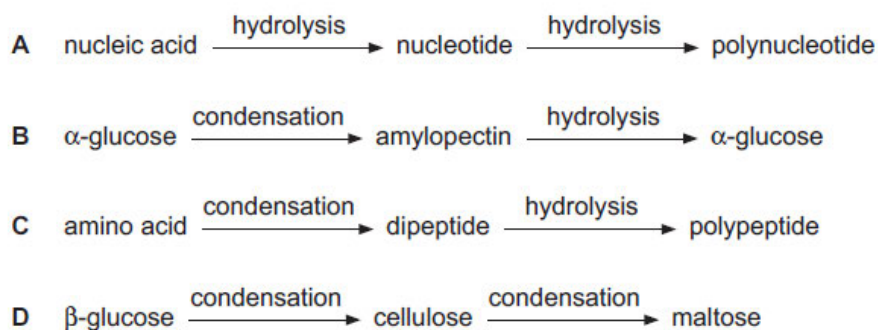
Your answer

**D**

[1]

- 3 The following are a series of organic molecules and the chemical processes that occur to convert them into different molecules.

Which of the rows, **A** to **D**, is correct?



Your answer

**B**

[1]

- 4 The following table describes the approximate percentage mass of different chemical elements inorganic polymers.

	Polymer	N (%)	C (%)	O (%)	H (%)	P (%)
<b>A</b>	nucleic acid	20.0	30.0	20.0	10.0	20.0
<b>B</b>	carbohydrate	0.0	33.3	33.3	33.3	0.0
<b>C</b>	protein	30.0	10.0	10.0	0.0	50.0
<b>D</b>	lipid	0.0	50.0	49.0	1.0	0.0

Which of the rows, **A** to **D**, is correct?

Your answer

**A**

[1]

- 5 Which of the following statements, **A** to **D**, about DNA replication is correct?

- A** DNA polymerase breaks the hydrogen bonds between the two strands.
- B** The distance between the strands in the double helix will always be the same.
- C** The proportion of adenine in a nucleic acid will always equal the proportion of guanine.
- D** The formation of phosphodiester bonds will occur in the same direction on each strand during DNA replication.

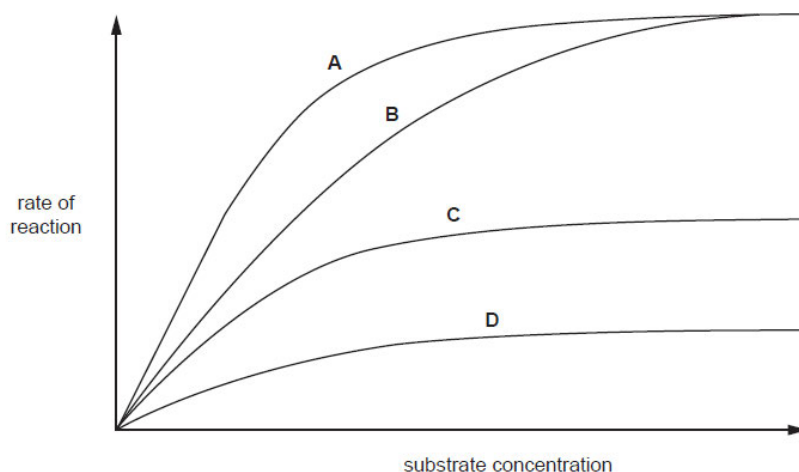
Your answer

**D**

[1]

6

The following graph shows the rate of reaction of an enzyme in different substrate concentrations.



Which letter, **A** to **D**, shows the rate of reaction with a fixed quantity of competitive inhibitor?

Your answer

**B**

[1]

7 Rheumatoid arthritis is a long-term condition that causes pain, swelling and stiffness in the joints.

Which of the following, **A** to **D**, explains why stem cells are a potential source of treatment for rheumatoid arthritis?

- A** Stem cells can be harvested from the umbilical cords of newborn babies.
- B** Stem cells are cheaper than other drug-based therapies.
- C** Stem cells allow regeneration of a variety of tissue types.
- D** Stem cells can be obtained from embryos without any ethical concerns.

Your answer

**C**

[1]

- 8 The image below shows a micrograph of two different types of blood cell.

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Which of the following rows, **A** to **D**, shows the correct cell names from the image above?

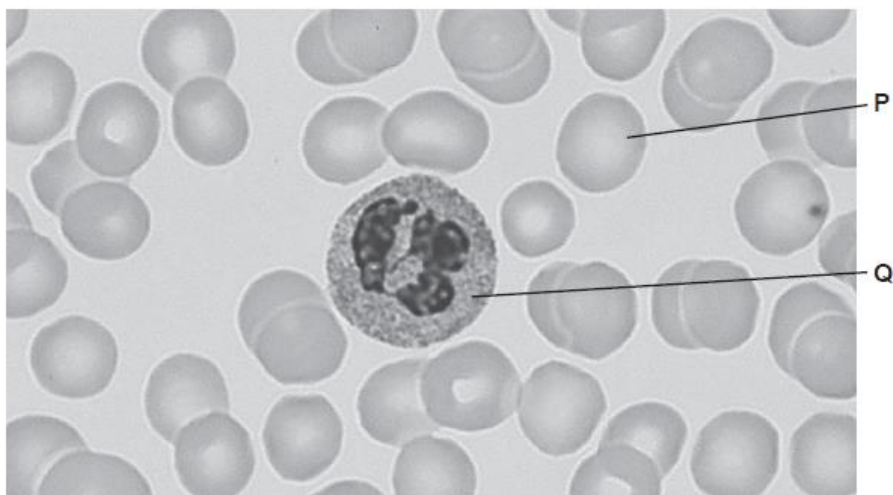
	<b>P</b>	<b>Q</b>
<b>A</b>	neutrophil	erythrocyte
<b>B</b>	erythrocyte	epithelial cell
<b>C</b>	erythrocyte	neutrophil
<b>D</b>	epithelial cell	erythrocyte

Your answer

**C**

**[1]**

- 9 The image below shows a micrograph of two different types of blood cell.



Both of the cell types **P** and **Q** develop from haematopoietic stem cells in the bone marrow.

Which of the following statements, **A** to **D**, correctly describes haematopoietic stem cells?

- A** They are neither pluripotent nor multipotent.
- B** They are pluripotent but not multipotent.
- C** They are both pluripotent and multipotent.
- D** They are multipotent but not pluripotent.

Your answer

**D**

[1]

- 10 Which of the following statements, **A** to **D**, correctly explains why meristems can differentiate into xylem vessels in plant stems?

- A** Meristems are living and unspecialised.
- B** Meristems are living and specialised.
- C** Xylem vessels are dead and specialised.
- D** Xylem vessels are dead and unspecialised.

Your answer

**A**

[1]

**11** Collagen is found in tendons. Tendons attach muscles to bones.

Which of the following lists of properties, **A** to **D**, makes collagen suitable for this role?

**A** strong, inflexible, insoluble

**B** strong, flexible, soluble

**C** strong, inflexible, soluble

**D** strong, flexible, insoluble

Your answer

**D**

**[1]**

**Total Marks for Question Set 23: 11**

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