![OCR - Oxford Cambridge and RSA]

# GCSE Biology A (Gateway)

**J247/04 Biology A** B4-B6 and B7 (Higher Tier)

# Question Set 26

Multiple Choice Questions

B6: Global Challenges

**1**    Different diseases are caused by different pathogens.

Which row in the table shows the type of pathogen that causes each disease?

| | HIV/AIDS | Tobacco Mosaic Disease |
|---|---|---|
| **A** | virus | virus |
| **B** | bacterium | virus |
| **C** | bacterium | fungus |
| **D** | virus | fungus |

Your answer    A    [1]

**2**    Which of these examples of human defence mechanisms against disease is non-specific?

**A**    antibodies in the blood system

**B**    memory cells

**C**    hydrochloric acid in the stomach

**D**    Lymphocytes

Your answer    C    [1]

**3**    New medicines are tested before they can be used. There are people that

object to some forms of testing.

Which form of testing is likely to cause the **least** objection?

**A**    animal testing

**B**    computer simulation testing

**C**    human tissue testing

**D**    microbial testing

Your answer    D    [1]

**4**    Eva investigates the number of daisy plants growing on the school playing field.

She uses a quadrat to count the number of daisy plants growing in different areas of the field.

The table shows her results.

| quadrat | number of daisy plants |
|---------|------------------------|
| 1 | 8 |
| 2 | 2 |
| 3 | 7 |
| 4 | 5 |

Each quadrat has an area of $0.25m^2$.

The school playing field has an area of $15000m^2$.

Estimate the population of daisy plants growing on the school field.

**A**   682

**B**   82500

**C**   330000

**D**   1320000

Your answer       C

[1]

**5**    Palm oil is used in the manufacture of biscuits, crisps, cereals and many other processed foods.

Palm oil production has a negative effect on the environment. Which statement identifies a **negative** effect of palm oil production?

**A**   Palm oil plantations are found in countries with tropical rainforest.

**B**   Palm oil production has increased due to the demand for more processed food.

**C**   Palm oil plantations support a low biodiversity.

**D**   Palm oil production provides jobs for the local community.
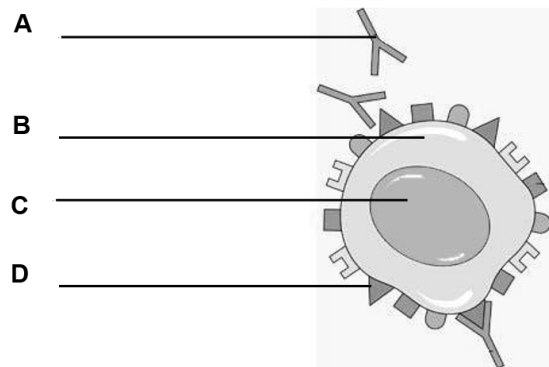
Your answer       C

[1]

**6**   Monoclonal antibodies can be used to treat some kinds of cancer. Look at the diagram of a cancer cell.

It is being treated using monoclonal antibodies.

Which label, **A, B, C or D**, shows the monoclonal antibodies?

A _____

B _____

C _____

D _____

Your answer    A

[1]

**7**   Stem cells are used in treating some medical conditions because they:

**A**   are unspecialised

**B**   bind to and immobilise pathogens

**C**   destroy cancer cells

**D**   differentiate into many different types of cell.

Your answer    D

[1]

**8**   Scientists have tested the genes of a number of people who have diabetes.

They have found that there are about four different versions of a gene that can cause diabetes.

Why might this discovery be important?

**A**   Diabetes cannot be treated at the current time.

**B**   Different patients with diabetes can be given different drugs.

**C**   All types of diabetes can be treated by changing the diet.

**D**   Glucagon injections will be able to treat these four types of diabetes.

Your answer    B

[1]

**9**   Bacteria are used in genetic engineering.

A plasmid is used to transfer the required DNA into the bacterium.

What is the term used to describe role of the plasmid in this technology?

  **A**   enzyme

  **B**   host

  **C**   transgenic

  **D**   Vector

    Your answer    D                                                    **[1]**

**10**   Some plants have been genetically engineered so that they grow larger.

Each cell of the plant has a new gene inserted so that it produces a different protein. What does genetic engineering do to the plant?

  **A**   It changes the phenotype and the genotype.

  **B**   It changes the genotype but not the phenotype.

  **C**   It changes the phenotype but not the genotype.

  **D**   It changes neither the genotype nor the phenotype.

    Your answer    A

                                                                        **[1]**

**11**   Which is a **chemical** defence of plants?

  **A**   Antimicrobial substances

  **B**   Cell walls

  **C**   Leaf cuticles

  **D**   Thorns

    Your answer    A                                                    **[1]**

**12** Which is the **most** effective treatment for HIV?

   **A** Antibiotics

   **B** Antigens

   **C** Antiseptics

   **D** Antivirals

   Your answer     D

**[1]**

**13** Heart disease kills thousands of people in Britain every year.

Why is it difficult to decide why a person gets heart disease?

   **A** Heart disease is caused by the interaction of many factors.

   **B** It is not possible to measure any of the risk factors.

   **C** Many microorganisms cause heart disease.

   **D** There is no genetic link to heart disease.

   Your answer     A

**[1]**

**14** Which of these is an adaptation of white blood cells?

   **A** The ability to make clotting enzymes.

   **B** They can change their shape to pass out of capillaries.

   **C** They can synthesise antibiotics.

   **D** They lack a nucleus.

   Your answer     B

**[1]**

**15** The table shows changes in the forest cover in some continents of the world.

| Continent | Total forest cover (millions of hectares) | | |
|---|---|---|---|
| | **1990** | **2000** | **2005** |
| Africa | 699 | 656 | 635 |
| Asia | 574 | 567 | 572 |
| Europe | 989 | 998 | 1001 |
| South America | 891 | 853 | 832 |

What is the approximate percentage decrease in the area of South America covered by forest between **1990** and **2005**?

A    0.9%

B    1.1%

C    6.6%

D    7.1%

Your answer       $C$    [1]

**16** A scientist is estimating the number of rabbits in a field.

He has eight different estimates, 12, 12, 13, 15, 17, 19, 22 and 26.

Which is the median value for his estimates?

A   8

B   12

C   16

D   17

Your answer       $C$

[1]

**17** Which of these is used to **cut DNA molecules** in genetic engineering?

A   Ligase enzymes

B   Plasmids

C   Restriction enzymes

D   Sticky ends

Your answer       $C$

[1]

**18**     Which is an advantage of growing crop plants by hydroponics?

    **A**    The plants can be grown where there is poor soil.

    **B**    The plants can support themselves more securely.

    **C**    The plants do not require minerals.

    **D**    The plants require less sunlight.

    Your answer    A    **[1]**

**19**     Females aged between 12 and 13 are offered a vaccination for the human papilloma virus (HPV).

Which statement describes the reason for offering this vaccine?

    **A**    Contracting HPV greatly increases the risk of developing AIDS.

    **B**    Having the vaccination will prevent cervical cancer.

    **C**    HPV can be treated with antibiotics but cervical cancer cannot.

    **D**    HPV has been linked to about 70% of cases of cervical cancer.

    Your answer    B    **[1]**

**20**     Look at the bacterial cell that causes disease in humans.



0.0008 mm
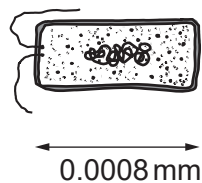
The human eye can see objects 0.1 mm in size.

What **minimum** magnification will be needed before the eye can see this bacterial cell?

    **A**    12.5×

    **B**    125×

    **C**    1250×

    **D**    12500×    **[1]**

    Your answer    B

**21**     A student estimates the number of snails in a pond.

Part of his method involves collecting snails and marking them.

What is the name of the method that he is using?

    **A**   Aseptic technique

    **B**   Capture-recapture

    **C**   Percentage increase

    **D**   Scaling-up

    Your answer     B     **[1]**

**22**     Many human diseases are caused by risk factors.

Food and drink can be major risk factors.

Which disease does **not** have food or drink as a major risk factor?

    **A**   Type 1 diabetes

    **B**   Cirrhosis of the liver

    **C**   Type 2 diabetes

    **D**   Cardiovascular disease

    Your answer     A

    **[1]**

**23** A student places an antibiotic disc onto the surface of agar that is covered in bacteria.

She calculates the area around the disc that is free from bacteria.
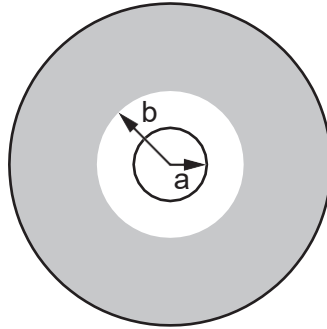


Which formula should she use?

    **A**    $2\pi b^2 - 2\pi a^2$

    **B**    $\pi b^2 + \pi a^2$

    **C**    $\pi b^2 - \pi a^2$

    **D**    $\pi(b - a)^2$

Your answer    C

[1]

**24** Which row on the table is correct for HIV?

| | Destroyed by antibiotics | Causes cervical cancer | Sexually transmitted |
|---|---|---|---|
| **A** | ✓ | X | X |
| **B** | X | X | ✓ |
| **C** | X | ✓ | ✓ |
| **D** | ✓ | ✓ | ✓ |

Your answer    B

[1]

**25** Which of these is an example of ecotourism?

    **A**    Setting up monkey parks in the UK.

    **B**    Allowing people to sponsor endangered animals.

    **C**    Encouraging people to view animals in their natural environment.

    **D**    Educating children about the benefits of conservation.

Your answer    C

[1]

**26**     Which is a definition of cancer?

   **A**     An infection of foreign cells which divide uncontrollably.

   **B**     Body cells that divide uncontrollably many times.

   **C**     Body cells that lose the ability to divide and make stem cells.

   **D**     Pathogens that grow and divide unchecked.

   Your answer        B                                                              **[1]**

**27**     What does a vaccine contain that protects a person from infection?

   **A**     Antibiotics that will attach to antigens.

   **B**     Antigens that will stimulate antibody production.

   **C**     Antibiotics that kill pathogens.

   **D**     Antivirals that destroy viruses.

   Your answer        B                                                              **[1]**

**28**     Which of these is a feature of an **artificial** classification system?

   **A**     It shows evolutionary links between organisms.

   **B**     It can be based on similarities in DNA.

   **C**     It may compare the amino acids in proteins.

   **D**     It uses a single difference or similarity between organisms.

   Your answer        D

                                                                                      **[1]**

**29**     New drugs are tested using preclinical trials.

   Which statement describes a preclinical trial?

   **A**   One group of volunteers are given a placebo, another group the drug.

   **B**   The drug is tested on human cells.

   **C**   Volunteers are given a placebo only.

   **D**   Volunteers are given the new drug.

   Your answer        B

                                                                                      **[1]**

# Total Marks for Question Set 26: 29