



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

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**TWENTY FIRST CENTURY SCIENCE (CORE)**

**0608/01**

Paper 1 Multiple Choice

**May/June 2012**

**1 hour**

Additional Materials:      Multiple Choice Answer Sheet  
   Soft clean eraser  
   Soft pencil (type B or HB is recommended)

\* 4 3 3 1 4 4 4 8 0 0 1 \*

**READ THESE INSTRUCTIONS FIRST**

Write in soft pencil.  
Do not use staples, paper clips, highlighters, glue or correction fluid.  
Write your name, Centre number and candidate number on the Answer Sheet in the spaces provided unless this has been done for you.

There are **forty** questions on this paper. Answer **all** questions. For each question there are four possible answers **A, B, C** and **D**.  
Choose the **one** you consider correct and record your choice in **soft pencil** on the separate Answer Sheet.

**Read the instructions on the Answer Sheet very carefully.**

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.  
Any rough working should be done in this booklet.  
You may use a calculator.

This document consists of **15** printed pages and **1** blank page.



1 In which of the following are the instructions found for how an organism develops?

- A antibody
- B antibiotic
- C cell wall
- D cell nucleus

2 Children inherit chromosomes from their parents.

Which statement best explains how these chromosomes are inherited?

- A Girls inherit their chromosomes from their mother and boys from their father.
- B Half of the total number of their chromosomes are inherited from each parent.
- C The number inherited from each parent varies in each child.
- D Very few chromosomes are inherited as children make their own new chromosomes.

The following information should be used for questions 3 and 4.

Scientists are planning to inject stem cells into the eyes of blind patients to try and replace sensitive cells that are damaged.

Four people have different views on this idea.



Penny

I know that it would be good to cure these blind people but we cannot justify killing embryos to get the stem cells.



Shireen

I think that these operations are too expensive. The money can be better spent elsewhere.



Don

I don't like the idea of killing embryos but, if it helps blind people see, it must be worthwhile.



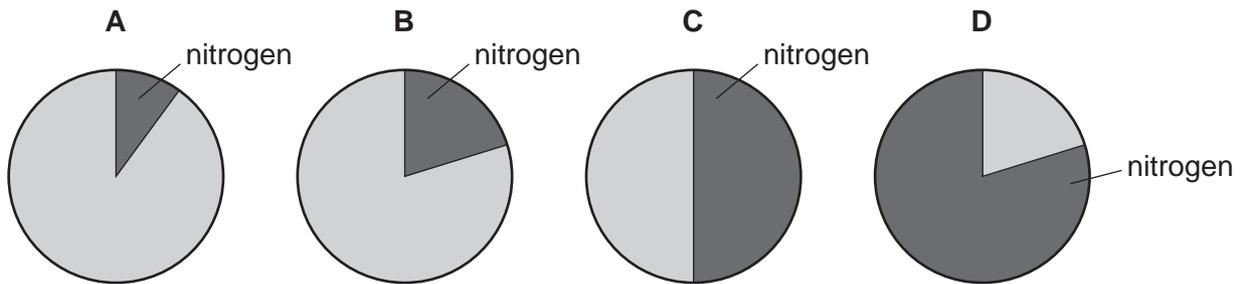
Carol

I think that this technique needs more testing. The doctors may just be wasting their time.

- 3 Which people are worried about whether it is morally right to use this technique?
- A Penny and Don
  - B Penny and Carol
  - C Penny, Don and Shireen
  - D Shireen and Carol
- 4 Which person thinks that certain actions are never justified because they are unnatural or wrong?
- A Carol
  - B Don
  - C Penny
  - D Shireen

- 5 Differences between clones are likely to be due to
- A both genetic and environmental factors.
  - B environmental factors only.
  - C genetic factors only.
  - D neither environmental or genetic factors.

- 6 Which pie chart shows the proportion of nitrogen in air?



- 7 Carbon monoxide has the formula CO.  
Carbon dioxide has the formula CO<sub>2</sub>.  
Water has the formula H<sub>2</sub>O.  
Nitrogen dioxide has the formula NO<sub>2</sub>.

Which row is correct?

	carbon monoxide	carbon dioxide	water	nitrogen dioxide
A				
B				
C				
D				

8 Carbon dioxide is put into the atmosphere by burning fossil fuels.

Carbon dioxide is also removed from the atmosphere.

How is carbon dioxide removed from the atmosphere?

- A It is an unstable gas and it breaks down in sunlight.
- B It is used in photosynthesis and it dissolves in sea water.
- C It is used in respiration by both animals and plants.
- D It is broken down by bacteria and it reacts with oxygen.

9 Which steps would result in lowering an individual's contribution to carbon dioxide levels in the atmosphere?

1. cycling to work rather than taking their car
2. fitting a catalytic converter to their car
3. insulating the hot water tank in their house
4. leaving their television on standby at night

- A 1 and 2      B 1 and 3      C 1, 2 and 3      D 3 and 4

10 What is the source of the Sun's energy?

- A combustion of hydrogen
- B fission of hydrogen
- C fusion of helium
- D fusion of hydrogen

11 Which astronomical object is the oldest?

- A the Earth
- B the solar system
- C the Sun
- D the Universe

**12** Scientists use parallax to study stars.

What information about stars does this give them?

- A** age of star
- B** brightness of star
- C** distance from Earth
- D** size of star

**13** Which statement about the Sun, stars and galaxies is correct?

- A** A galaxy is a star in the Sun.
- B** A galaxy is the Sun in a star.
- C** A star is a galaxy in the Sun.
- D** The Sun is a star in a galaxy.

**14** Wegener's theory of continental drift was based on comparisons between different continents.

Which comparison did Wegener use as evidence for his theory?

- A** comparing records on stone tablets in different continents
- B** comparing rivers in different continents
- C** comparing rock types in different continents
- D** comparing the climate in different continents

**15** The more overweight you are, the more likely you are to suffer from heart disease.

This is called a correlation.

Which of the following is the factor in this correlation?

- A** both weight and heart disease
- B** exercise
- C** heart disease
- D** weight

16 Wendy did some homework. She wrote about how our bodies protect us from disease.

Wendy made one mistake. This is what she wrote.

- 1 When our bodies get invaded by dangerous bacteria, white cells in our blood destroy them.
- 2 They can do this in different ways.
- 3 White cells engulf and digest the bacteria.
- 4 They can also produce a chemical called a vaccine that kills the bacteria.

Which sentence in Wendy's homework contains the mistake?

- A sentence 1
- B sentence 2
- C sentence 3
- D sentence 4

17 Steve is trying to grow bacteria in a dish placed inside a warm oven (incubator).

Which factor is most likely to affect how quickly the bacteria grow?

- A the shape of the dish
- B the temperature of the oven (incubator)
- C the time of day
- D whether the dish is made from glass or plastic

18 New vaccines against influenza need to be developed each year.

Which row of diagrams of the influenza virus best explains this fact?

	2008	2009	2010	2011
<b>A</b>				
<b>B</b>				
<b>C</b>				
<b>D</b>				

19 Which factor that can cause heart disease is **not** a lifestyle factor?

- A eating fatty foods
- B inheriting a faulty gene
- C lack of exercise
- D smoking cigarettes

20 Sandwich bags can be made from poly(ethene) or paper. The bags have different Life Cycle Assessments.

Which statement explains why the Life Cycle Assessment is different for each type of bag?

- A Poly(ethene) bags are more transparent than paper bags.
- B Paper bags are not waterproof.
- C The bags are made from different raw materials.
- D The bags are not the same size.

21 A plastic was evaluated for use as an insulator on a wire used inside an oven.

Which property of the plastic makes it **unsuitable** for this use?

- A flexible
- B high strength when under tension
- C low density
- D low melting point

22 The petrochemical industry refines crude oil. Which product is made **by refining** crude oil?

- A cotton
- B fuels
- C PVC
- D wool

23 Some waste polymers are buried in landfill sites. Some waste polymers are incinerated.

Which statement gives an advantage of incinerating waste polymers rather than burying them in landfill sites?

- A Energy from burning polymers can be used to make electricity.
- B Incinerating polymers gives off carbon dioxide.
- C Incinerating polymers is carried out at a very high temperature.
- D Polymers in landfill sites do not give off any harmful gases.

The following information should be used for questions **24**, **25** and **26**.

Some people use ultraviolet sunbeds to tan their skin. Ultraviolet radiation can be hazardous.

### Boy burned by sunbed

A boy has severe burn blisters on his face after he used a tanning salon's ultraviolet sunbed for a total of 21 minutes in one day.

The maximum safe tanning time recommended by the salon is 6 minutes.

His mum said: "His lips swelled up and he couldn't swallow. He is quite vain and worries about his looks. I am afraid he will develop cancer when he is older."



**24** Which correlation is suggested by the article?

- A** The longer the exposure to ultraviolet the greater the chance of burns.
- B** The older you are the more vain you are.
- C** The younger you are the more likely you are to get cancer.
- D** Younger people use sunbeds for longer.

**25** Why is ultraviolet radiation hazardous?

- A** It causes people to get a tan.
- B** It is absorbed by the atmosphere.
- C** It is an ionising radiation.
- D** It is invisible to the human eye.

**26** A letter to the newspaper said:

**'This just shows how dangerous sunbeds are. We should ban all sunbeds.'**

This is not a good scientific conclusion. What best explains why it is **not** good science?

- A** It was written for a newspaper.
- B** People would not be able to get a tan.
- C** This is only one individual case.
- D** We don't know the qualifications of the person who wrote the letter.

27 Which sentence concerning electromagnetic radiation is fully correct?

- A The ozone layer in the atmosphere absorbs mainly microwave radiation.
- B The metal door screen on a microwave oven absorbs mainly ultraviolet radiation.
- C Sun-screen on the skin absorbs mainly ultraviolet radiation.
- D Carbon dioxide in the Earth's atmosphere absorbs mainly microwave radiation.

28 The planet Venus is closer than the Earth to the Sun. Venus' average temperature is around 480 °C, compared to the Earth's of about 15 °C.

One reason for this is the radiation arriving from the Sun.

Why does more energy arrive at Venus?

- A More photons arrive at Venus than at the Earth.
- B Intensity of electromagnetic radiation increases with distance from the Sun.
- C Photons lose energy as they travel away from the Sun.
- D Venus is covered in clouds all the time, which reflect light.

29 Maintaining biodiversity is important.

What is the best definition of biodiversity?

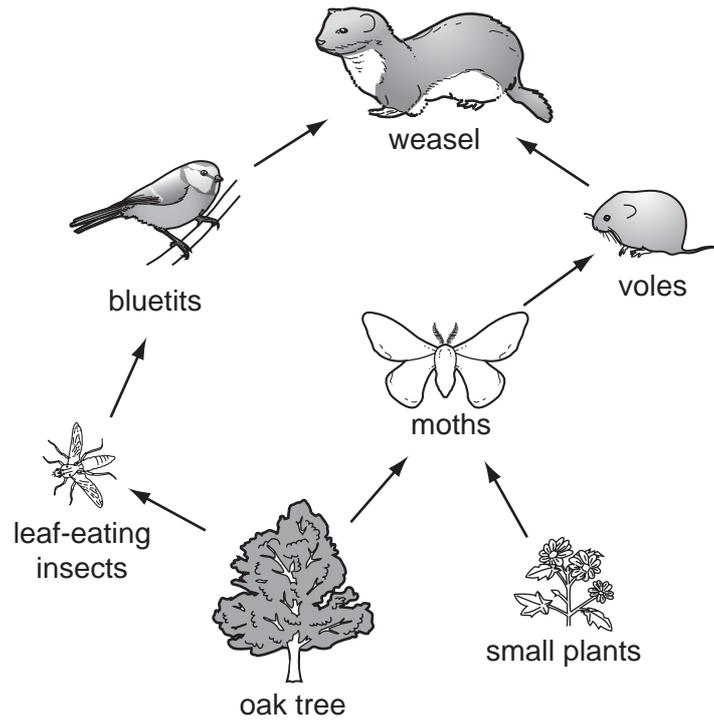
- A an organism that has lots of different varieties
- B an organism that is found in different environments
- C lots of different environments
- D lots of different types of organism in the same environment

30 As humans evolved their brains became larger.

What was a consequence of this?

- A They had a better chance of survival.
- B They did not need to evolve any further.
- C They needed to eat less food.
- D They had to walk upright.

31 The diagram shows a food web.



A farmer sprays his field with insecticide.

It reduces the population of moths.

What immediate effect will this have on the numbers of small plants?

- A decrease and then increase
- B decrease
- C increase
- D no effect

32 Natural selection involves the following processes.

1. survival
2. competition
3. variation
4. reproduction

What is the correct order of these processes in natural selection?

- A 1, 2, 4, 3
- B 2, 3, 4, 1
- C 3, 1, 2, 4
- D 3, 2, 1, 4

33 Which substance does **not** contain nitrogen?

- A amino acids
- B glucose
- C manure
- D protein

The following information is used for questions 34 and 35.

Four people who grow vegetables are talking about the disadvantage of using animal waste as fertiliser.



Andy

Animal waste is not free because of the cost of collection and transport.



Ben

Vegetables grown using animal waste may cause diseases because of bacteria in the waste.



Carol

Animal waste does not always contain the right amounts of the elements that plants need for growth.



Dee

It is difficult to collect enough animal waste to fertilise my large vegetable garden.

**34** Who is talking about the availability of animal waste to use as a fertiliser?

- A Andy
- B Ben
- C Carol
- D Dee

**35** Who is talking about a risk of using animal waste as a fertiliser?

- A Andy
- B Ben
- C Carol
- D Dee

36 Which row shows a correct sequence of changes involved in excretion?

<b>A</b>	excess amino acids are broken down in the kidneys	the liver removes urea from the blood	urine is excreted
<b>B</b>	the liver breaks down urea to form amino acids	the kidneys remove amino acids from the blood	urine is excreted
<b>C</b>	the kidneys remove amino acids from the blood	the liver converts amino acids to urea	urine is excreted
<b>D</b>	excess amino acids are broken down in the liver	the kidneys remove urea from the blood	urine is excreted

37 Which is a harmful chemical produced by mould that can contaminate crops during storage?

- A** aflatoxin in nuts and cereals
- B** antioxidants in mushrooms
- C** gluten in wheat
- D** hydrocyanic acid toxin in uncooked cassava

38 The diagram shows a label from a packet of biscuits.



Why are preservatives added to food?

- A** They enhance the flavour and colour of food.
- B** They mix oil and water together so that they do not separate.
- C** They prevent harmful microbes from growing in the food.
- D** They stop fats in the food from reacting with oxygen in the air.

39 Why is electricity called a secondary energy source?

- A** It can only be used for seconds at a time.
- B** It is always produced from another energy source.
- C** It is less important than other energy sources.
- D** It was the second energy source discovered.

40 A power station produces radioactive waste.

This hot waste is cooled under water until it becomes less active and can be sent for long-term storage.

What type of waste has to be cooled under water until it is less active?

- A non-radioactive waste
- B low level radioactive waste
- C intermediate level radioactive waste
- D high level radioactive waste

