ENGLAND GCSE COMBINED SCIENCE OCR TWENTY FIRST CENTURY FOUNDATION · UNIT 17 · 25 QUESTIONS

Radioactive Materials — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button so it can be fixed.

1 **A thermometer shows a patient's temperature is 39 degrees Celsius. Is this above or below normal body temperature?**

A above normal

B impossible to tell

C exactly normal

D below normal

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2 **Glass marbles are used to model atoms. What is a limitation of the model?**

A marbles are much bigger than atoms

B marbles cannot be counted accurately at all

C marbles are the wrong colour for atoms

D marbles are too small to see properly

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3 **A cup of coffee cools down. Energy is transferred to the surroundings. What type of change is this?**

A a chemical change

B an energy transfer

C a neutralisation

D a reversible reaction

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4 **A swimming pool holds water. Why does a person float in the pool?**

- A their density is close to water
- B the water pushes them down
- C they are heavier than water and sink
- D they are made of air

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5 **A hot air balloon rises because the air inside it is less dense than the air outside. What happens to the density of air when it is heated?**

- A it becomes zero
- B it stays the same
- C it increases
- D it decreases

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6 **Hardcover books are stacked on a table. What force pulls them down?**

- A gravity
- B friction
- C tension
- D air resistance

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7 **Why is a short half-life source chosen for a medical tracer?**

- A it decays quickly
- B so it is cheaper to make
- C so it stays in the body for years
- D so it can be reused

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8 **An atom has a mass number of 12 and an atomic number of 6. How many neutrons does it have?**

A 6

B 5

C 7

D 8

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9 **A radioactive sample has an activity of 800 Bq. What is its activity after 2 half-lives?**

A 400 Bq

B 200 Bq

C 800 Bq

D 100 Bq

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10 **A sample has a half-life of 5 days. What percentage of the sample is left after 20 days?**

- A 12%
- B 3%
- C 6%
- D 94%

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11 **A sample has an activity of 3200 counts per minute. After 2 half-lives, what is its activity?**

- A 3200
- B 800
- C 400
- D 1600

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12 **A sample has a half-life of 5 days. After 15 days, what fraction remains?**

- A 1/4
- B 1/2
- C 1/16
- D 1/8

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13 **A sample's activity halves every 10 years. After 20 years, what fraction of the original activity remains?**

- A 1/2
- B 1/4
- C 1
- D 1/8

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14 **What is nuclear fission?**

A removing electrons from atoms

B adding electrons to atoms

C splitting a large nucleus

D joining small nuclei together

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15 **Why do workers handling radioactive sources wear protective clothing?**

A to keep them warm

B to block all radiation completely

C to make them visible

D to stop skin contamination

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16 **Why is americium-241 used in smoke alarms?**

A it detects heat

B smoke stops its alpha particles

C it makes a loud sound when it sees smoke

D it glows when there is smoke

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17 **An atom has a mass number of 23 and an atomic number of 11. How many neutrons does it have?**

A 13

B 14

C 12

D 11

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18 **A sample has an activity of 800 counts per minute. After 2 half-lives, what is its activity?**

- A 100
- B 200
- C 800
- D 400

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19 **What happens to the activity of a sample over time?**

- A it stays the same
- B it falls
- C it falls then rises
- D it rises

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20 **A sample's activity halves every 5 years. After 10 years, what fraction of the original activity remains?**

- A 1
- B 1/4
- C 1/8
- D 1/2

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21 **What is nuclear fusion?**

- A joining small nuclei
- B splitting a large nucleus
- C removing electrons
- D adding electrons

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22 **What is the difference between irradiation and contamination?**

- A there is no difference
- B irradiation means the source is inside the body
- C contamination only affects plants
- D the source is on the body

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23 **Why is carbon-14 used to date old objects?**

- A it never decays
- B it lasts thousands of years
- C it is found in all rocks
- D it glows in the dark, like a watch

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24 **A radioactive sample has an activity of 400 Bq. What is its activity after 2 half-lives?**

- **A** 400 Bq
- **B** 100 Bq
- **C** 50 Bq
- **D** 200 Bq

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25 **A sample has a half-life of 5 days. What percentage of the sample is left after 10 days?**

- **A** 50%
- **B** 12%
- **C** 75%
- **D** 25%

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ANSWER KEY

1.	A	**10.**	C	**19.**	B
2.	A	**11.**	B	**20.**	B
3.	B	**12.**	D	**21.**	A
4.	A	**13.**	B	**22.**	D
5.	D	**14.**	C	**23.**	B
6.	A	**15.**	D	**24.**	B
7.	A	**16.**	B	**25.**	D
8.	A	**17.**	C		
9.	B	**18.**	B		

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