ENGLAND GCSE COMBINED SCIENCE OCR TWENTY FIRST CENTURY HIGHER · 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 swimming pool is heated. What happens to the water particles?**

- A they disappear
- B they get smaller
- C they move faster
- D they stop moving

Understand It with Pulse | Flag a mistake

2 **A hot air balloon is filled with hot air. Why does it rise?**

- A hot air is heavier than cold air
- B hot air is colder
- C hot air has no mass
- D hot air is less dense

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3 **A thermometer measures temperature in degrees Celsius. What is the freezing point of water on this scale?**

- A 32
- B 100
- C 0
- D 10

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4 **Glass marbles are shaken in a tray. What does this model?**

- A particles gaining energy
- B particles disappearing completely
- C particles bonding together
- D particles freezing into place

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5 **A cup of coffee is hot. How is energy transferred to the air?**

A by condensation on the cold cup

B by conduction and convection

C by evaporation only, from the top

D by radiation only, from the surface

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6 **Hardcover books have mass. What is mass measured in?**

A watts

B joules

C kilograms

D newtons, the unit of force

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

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

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8 **What is irradiation?**

- A exposure to radiation
- B contamination with a source
- C a type of decay
- D a type of fission

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9 **Why is iodine-131 used to treat the thyroid gland?**

A it goes to the thyroid

B it stops all radiation

C it makes the thyroid grow

D it is absorbed by the bones

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10 **A sample has a half-life of 5 days. What percentage of the sample is left after 15 days?**

A 24%

B 6%

C 88%

D 12%

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11 **A sample starts with 8000 counts per minute. After one half-life, what is the count rate?**

- A 16000
- B 2000
- C 4000
- D 8000

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12 **An atom has a mass number of 16 and an atomic number of 8. How many neutrons does it have?**

- A 7
- B 10
- C 9
- D 8

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

- A to stop skin contamination
- B to make them visible
- C to block all radiation completely
- D to keep them warm

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14 **A sample has an activity of 1600 counts per minute. After 2 half-lives, what is its activity?**

- A 800
- B 200
- C 1600
- D 400

Understand It with Pulse | Flag a mistake

15 **A radioactive sample has an activity of 1600 Bq. What is its activity after 2 half-lives?**

- A 400 Bq
- B 1600 Bq
- C 800 Bq
- D 200 Bq

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

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

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

A so it can be reused

B it decays quickly

C so it stays in the body for years

D so it is cheaper to make

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

A 94%

B 3%

C 6%

D 12%

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19 **Why is contamination by a radioactive source more dangerous than irradiation?**

- **A** contamination cannot be measured
- **B** it keeps irradiating from inside
- **C** the source stops working at once, so it is safe
- **D** irradiation is always fatal

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20 **A sample has an activity of 1600 counts per minute. After 3 half-lives, what is its activity?**

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

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21 **What is nuclear fission?**

A removing electrons from atoms

B joining small nuclei together

C splitting a large nucleus

D adding electrons to atoms

Understand It with Pulse | Flag a mistake

22 **Why are gamma rays used to sterilise medical equipment?**

A they kill bacteria

B they heat the equipment up

C they make the equipment radioactive

D they make the equipment stronger

Understand It with Pulse | Flag a mistake

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

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

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

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

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25

A sample's activity halves every 100 years. After 200 years, what fraction of the original activity remains?

A 1/4

B 1/2

C 1/8

D 1

Understand It with Pulse

Flag a mistake

ANSWER KEY

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

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