ENGLAND GCSE PHYSICS OCR TWENTY FIRST CENTURY HIGHER · UNIT 5 · 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 to let Brett know so he can fix it.

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

- A below normal
- B above normal
- C impossible to tell
- D exactly normal

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 has no mass
- C hot air is colder
- D hot air is less dense

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3 **A swimming pool is filled with water. What is the density of water?**

- A about 1 kilogram per cubic metre
- B about 100 kilograms per cubic metre, roughly
- C about 1000 kilograms per cubic metre
- D about 10 kilograms per cubic metre

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

- A watts
- B newtons, the unit of force
- C joules
- D kilograms

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5 **Glass marbles in a tray are used as a model for particles in a solid. What do the marbles show?**

- A particles move freely through space
- B particles are far apart from each other
- C particles vibrate in fixed positions
- D particles flow past each other easily

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6 **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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7 **A sample has a half-life of 5 days. What percentage of the sample is left after 15 days?**

- A 6%
- B 24%
- C 88%
- D 12%

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8 **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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9 **A sample has an activity of 3200 counts per minute. After 3 half-lives, what is its activity?**

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

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10 **Where does fusion happen naturally?**

- A in the Sun
- B in a power station
- C in the Earth
- D in the Moon

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

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

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12 **What does background radiation come from?**

- A mobile phones only
- B power stations only, nowhere else
- C rocks, air, space, medicine
- D the Sun only

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

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

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14 **What conditions are needed for nuclear fusion?**

- A very low temperature, near freezing
- B high temperature and pressure
- C darkness and cold
- D no pressure at all

Understand It with Pulse | Flag a mistake

15 **Where does nuclear fusion happen naturally?**

A in power stations

B in the Earth

C in the Moon

D in the Sun

Understand It with Pulse | Flag a mistake

16 **Why is nuclear fission used to generate electricity?**

A it needs no shielding

B lots of energy from little fuel

C it works without any fuel at all, for ever

D it produces no waste at all

Understand It with Pulse | Flag a mistake

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

A it makes a loud sound when it sees smoke

B smoke stops its alpha particles

C it glows when there is smoke

D it detects heat

Understand It with Pulse | Flag a mistake

18 **In alpha decay, what happens to the atomic number of the nucleus?**

A it falls by 4

B it rises by 2

C it stays the same

D it falls by 2

Understand It with Pulse | Flag a mistake

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

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

Understand It with Pulse | Flag a mistake

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

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

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

A 13

B 12

C 11

D 14

Understand It with Pulse | Flag a mistake

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

A 200

B 400

C 800

D 100

Understand It with Pulse | Flag a mistake

23 **What is nuclear fission?**

- A joining small nuclei together
- B splitting a large nucleus
- C removing electrons from atoms
- D adding electrons to atoms

Understand It with Pulse | Flag a mistake

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

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

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

A irradiation means the source is inside the body

B the source is on the body

C there is no difference

D contamination only affects plants

Understand It with Pulse | Flag a mistake

ANSWER KEY

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

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