
Answer all the questions below then check your answers.

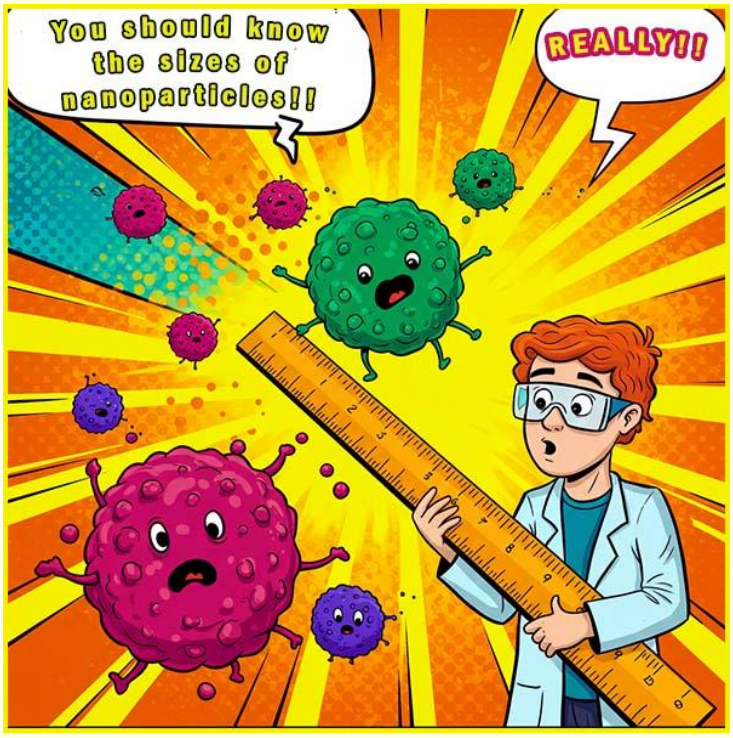
1. What is the size range that defines the field of nanochemistry?

a) 1-100 micrometres

b) 1-100 millimetres

c) 1-100 nanometres

d) 1-100 picometres




2. What unit of measurement is equal to one billionth of a metre?

3. True or False:

Nanoparticles generally exhibit the same properties as the larger, bulk materials of the same substance.

4. Fill in the Blank to complete the sentence below:

Particulate Matter (PM) is categorised by its _____, often referred to as $PM_{10}$ and $PM_{2.5}$.


5. What is one example of a source of $PM_{10}$ particles?

6. Why are $PM_{2.5}$ particles considered more of a health concern than $PM_{10}$ particles?

a) They are more visible in the air.

b) They can penetrate more deeply into the lungs.

c) They are produced by natural sources only.

d) They have a larger diameter.

7. What is the typical size range of platinum nanoparticles used in catalytic converters?

8. True or False:

The large surface area to volume ratio of nanoparticles can lead to increased reactivity.

Fill in the Blank to complete the sentence:

9. The _____ barrier in the brain is one biological barrier that nanoparticles may potentially cross and cause damage to brain cells.

10. What is one potential environmental concern associated with the release of nanoparticles with antibacterial properties into water systems?

## Answers

1. What is the size range that defines the field of nanochemistry?

a) 1-100 micrometres b) 1-100 millimetres

c) 1-100 nanometres d) 1-100 picometres

Answer: c) 1-100 nanometres

2. What unit of measurement is equal to one billionth of a metre?

Answer: A nanometre (nm).

3. True or False:

Nanoparticles generally exhibit the same properties as the larger, bulk materials of the same substance.

Answer: False; nanoparticles have different properties from bulk materials due to their large surface area to volume ratio.

4. Fill in the Blank to complete the sentence below:

Particulate Matter (PM) is categorised by its _____, often referred to as $PM_{10}$ and $PM_{2.5}$.

Answer: size

5. What is one example of a source of $PM_{10}$ particles?

Answer: Crushing or grinding operations (e.g., construction sites, quarrying), household dust, road dust, field dust, pollen, or mould spores.

6. Why are $PM_{2.5}$ particles considered more of a health concern than $PM_{10}$ particles?

a) They are more visible in the air.

b) They can penetrate more deeply into the lungs.

c) They are produced by natural sources only.

d) They have a larger diameter.

Answer: b) They can penetrate more deeply into the lungs.

7. What is the typical size range of platinum nanoparticles used in catalytic converters?

Answer: 2 to 10 nanometres.

8. True or False:

The large surface area to volume ratio of nanoparticles can lead to increased reactivity.

Answer: true

Fill in the Blank to complete the sentence:

9. The _____ barrier in the brain is one biological barrier that nanoparticles may potentially cross and cause damage to brain cells.

Answer: blood

10. What is one potential environmental concern associated with the release of nanoparticles with antibacterial properties into water systems?

Answer: They can kill bacteria in many ecosystems and even kill essential bacteria in sewage treatment works.