

Unit 6 Matter as particles

A Multiple-choice questions

1. D
2. A
3. A
4. B
5. D
6. C
7. B
8. B
9. C
10. B

B True or false questions

1. T
2. T
3. F
4. T
5. T

C Fill-in-the-blanks

1. states
2. freezing
3. element
4. density
5. expands

D Short questions

1. In winter, the air temperature is lower. Therefore, the air becomes denser.
There are more collisions of air particles on the ground, producing higher air pressure.
2. Gas: argon
Liquid: mercury
Solid: carbon, nickel
3. There are spaces between the water particles and alcohol particles. Water particles
and alcohol particles can go into these spaces. Therefore the volume of mixing
50
cm³ of water and 50 cm³ of alcohol is less than 100 cm³.
4. The swim bladder should be filled with more gas. When it is filled with more
gas, the density of the fish is lower. Therefore, it can float on the water surface.
5. The box expands because there are more air particles inside the box,
producing greater air pressure than the outside.

E Long questions

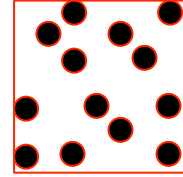
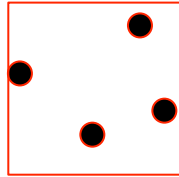
1.

a 40 °C

b 40 °C

c C

d



2.

a percentage of expansion of the metal strip = $2 \text{ mm} / 100 \text{ mm} \times 100\% = 2\%$

b When the metal strip is being heated, the particles of the metal get more energy and they can vibrate more vigorously. The spaces between them become larger, so the metal strip expands.

c C

d B

3.

a The air inside the balloon is hot, so its density is lower than the surrounding air. As a result, the balloon floats in the air.

b The atmospheric pressure is decreasing when the balloon gets higher and higher.

c The density of the air is decreasing with increasing altitude. At a certain level, the density of the air becomes lower than the density of the balloon, so the balloon stops rising at this level.