

BioMedical Admissions Test (BMAT)

Section 2: Chemistry

Questions by Topic

C17 - Air and Water

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C17: Air and Water - Question by Topic

(Mark Scheme and explanations at the end)

- 1 Which of the following gases forms the third largest percentage in dry air?
- A Oxygen
 - B Nitrogen
 - C Argon
 - D Carbon Dioxide
 - E None of the above
- 2 Which of the following is not a cause of methane production?
- A Rice fields
 - B Landfills
 - C Cattle farming
 - D Deforestation
- 3 The following statements are each regarding greenhouse gases.
- Which of the following statements are true?
- 1 Carbon dioxide is produced by faulty gas boilers.
 - 2 Carbon monoxide can dissolve into seas when water temperature rises.
 - 3 Oxides of nitrogen are the only source of acid rain.
- A 1 only
 - B 2 only
 - C 3 only
 - D 1 and 2 only
 - E 1 and 3 only
 - F 2 and 3 only
 - G None of the statements





4 Which of the following describes the additions to drinking water?

	Atom/ion	Purpose	Atom/ion	Purpose
A	F_2	Kill pathogens	Cl^-	Improve dental health.
B	F^-	Kill pathogens	Cl_2	Improve dental health
C	Cl_2	Kill pathogens	F^-	Improve dental health
D	Cl^-	Kill pathogens	F_2	Improve dental health

5 Which of the following is true about the separation of air?

- A Releasing the pressure causes the liquids to heat up.
- B Nitrogen has a higher boiling point than oxygen.
- C Separated oxygen has useful industrial applications.
- D Gaseous nitrogen is used to cool sperm in hospitals.
- E Liquid nitrogen is used in sealed food preservation.





Answers and Explanations

- 1 **C is the answer.** Argon forms the third largest component of air.

Nitrogen forms the largest percentage of air – 78.1%

Oxygen forms 20.9%

Argon forms 0.9%

Carbon dioxide forms 0.04%

- 2 **D is the answer.**

Deforestation is a cause of CO₂ increasing rather than methane production.

A to C each causes the production of methane.

- 3 **G is the answer.** None of the statements are true.

Statement 1 is false because faulty boilers produce CO not CO₂

Statement 2 is false because rising sea temperatures cause an increase in the adsorption of CO₂ not CO.

Statement 3 is false as sulfur dioxide is another cause of acid rain.

- 4 **C is the answer**

Chlorine is added to prevent bacterial growth and fluoride ions are added to prevent teeth decay.

A is incorrect as it gets both the ion/atom state and the purpose wrong.

B is incorrect because it gets the purpose wrong.

D is incorrect because it gets the ion/atom state wrong.

- 5 **C is the answer** - Oxygen can be used industrially to purify iron.

A is incorrect because this is a key cooling step in the fractional distillation of air, causing the gases to condense.

B is incorrect as nitrogen boils off first, showing it must have a lower boiling point than oxygen.

D is incorrect as this is a use of liquid nitrogen.

E is incorrect as this is a use of gaseous nitrogen.

