

O Level Pure Chemistry MCQs

Atmosphere Test 3.0

Q1

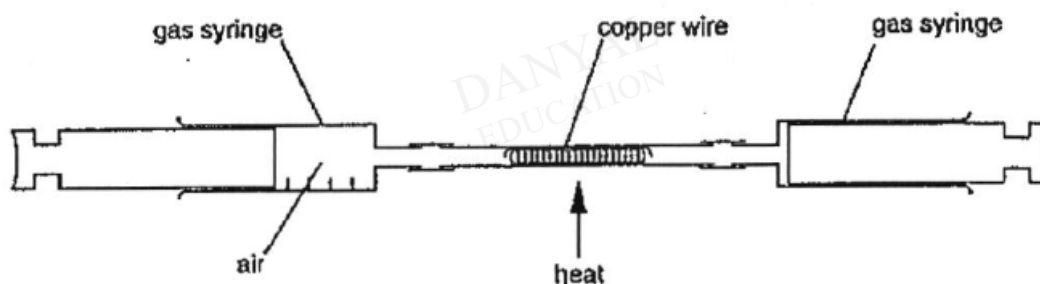
Which pollutants can be removed from the car exhaust by a catalytic converter?

- I carbon monoxide
- II oxide of nitrogen
- III unburnt hydrocarbon
- IV sulfur dioxide

- | | | | |
|---|---------------|---|------------------|
| A | I and II | B | II and III |
| C | I, II and III | D | all of the above |

Q2

A student prepares the following experimental set-up to determine the percentage of oxygen in air. Air is passed over the heated copper wire until there is no further decrease in volume.



Which of the following precautions must be taken before recording the initial and final volume of air in the gas syringe?

- A all the copper should be reacted
- B both syringes should contain the same volume of gas
- C the tube containing copper wire should be removed
- D the measurements should all be taken at the same temperature

Q3

Which of the following gases **cannot** be removed from the exhaust gases of a petrol powered car by its catalytic converter?

- A carbon dioxide
- B carbon monoxide
- C hydrocarbons
- D nitrogen dioxide

Q4

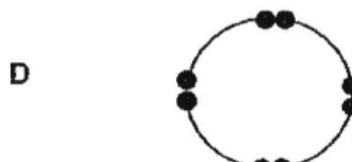
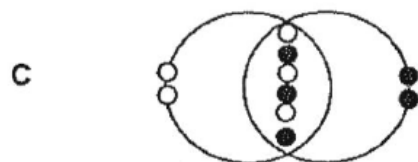
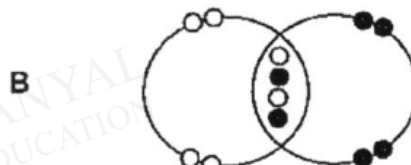
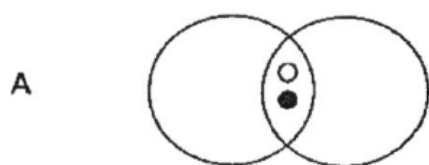
The depletion of the ozone layer in the upper atmosphere reduces the Earth's natural protection against harmful ultraviolet radiation.

Which of the following compounds would cause the most depletion of the ozone layer?

- A CCl_3F
- B CF_4
- C CO_2
- D SO_2

Q5

Which of the following 'dot-and-cross' diagrams represents a gas that is not present in dry, clean air? (Only the valence electrons are drawn)



Q6

Which of the following gases cannot be removed from the exhaust gas of petrol powered car by its catalytic converter?

- A carbon dioxide
- B carbon monoxide
- C hydrocarbon
- D nitrogen dioxide

Q7

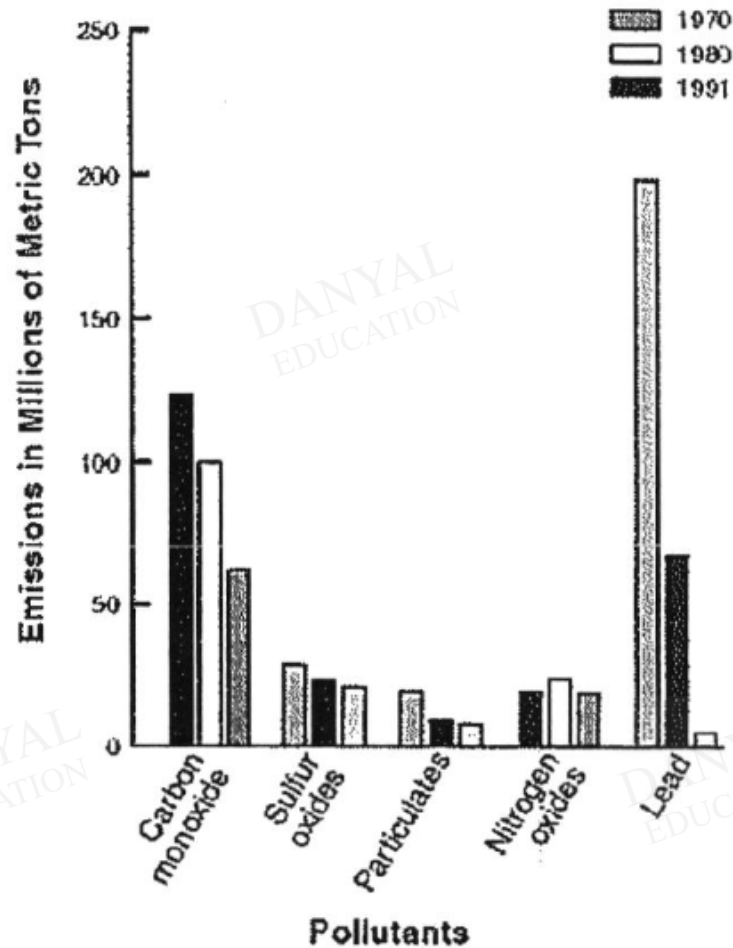
The global atmospheric concentration of carbon dioxide has increased in the last 200 years. What could be causing this change?

- I: emissions from motor vehicles
- II: photosynthesis
- III: power stations using oil

- A I and II only
- B I and III only
- C II and III only
- D I, II and III

Q8

Emissions of Air Pollutants, 1970 - 1991



According to the graph, which air pollutant decreased the most from 1970 to 1991?

- A carbon monoxide
- B lead
- C nitrogen oxides
- D sulfur oxides

Q9

Chlorofluorocarbons breakdown in the presence of ultraviolet radiation to form chlorine radicals (atoms) which cause ozone depletion. An American scientist suggested that depletion of the ozone layer could be prevented by aluminium rods suspended below helium balloons. The rods would be electrically charged and would transfer electrons to the chlorine radicals which form particles X.

Which of the following statements is true?

- A Particle X is a chlorine molecule.
- B Particle X is stable as it has an octet structure.
- C Particle X is more reactive than chlorine radicals.
- D Particle X converts oxygen back to ozone.

Q10

One way of reducing the amount of pollutants released into the atmosphere is by using a new type of engine called the "lean burn" engine which operates at a lower temperature and with a higher percentage of air mixed with the fuel.

The following data shows the composition of exhaust gases emitted from cars when the two different engines were used.

	Percentage of gas in exhaust sample		
	Carbon dioxide	Carbon monoxide	Oxides of nitrogen
Normal engine with catalytic converter	10	4.5	0.2
"Lean burn" engine with catalytic converter	14	Less than 0.1	Less than 0.1

Which of the following statements is true of "lean burn" engines?

- A The higher percentage of air leads to a higher production of oxides of nitrogen.
- B The higher percentage of air leads to more complete combustion of fuel.
- C The lower operating temperature of the engines causes less carbon monoxide to form.
- D The lower operating temperature of the engines increases the chances of nitrogen gas reacting with oxygen gas.

Answers

Atmosphere Test 3.0

Q1 C

Q2 D

Q3 A

Q4 A

Q5 A

Q6 A

Q7 B

Q8 B

Q9 B

Q10 B

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