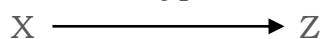


QUIZ: PHYSICAL AND CHEMICAL CHANGES; ELEMENTS AND COMPOUNDS

- Which of the following are chemical changes?
 - Condensation of vapours to liquid
 - Conversion of water to steam
 - Cutting of iron rod
 - Burning of candle wax.
 - Combustion of LPG in the burner.
 - (i), (ii) & (v)
 - (i), (ii) & (iii)
 - (iv) & (v)
 - (iii) and (iv)
- In the conversion of $X \longrightarrow Y \longrightarrow Z$, following processes were carried out.
 - Crystallization of X
 - Hydrogenation of X
 - Hydrolysis of Y
 - Use of separating funnel to get pure ZWhich of these involve physical changes?
 - (i) & (iv)
 - (ii) & (iii)
 - (i) & (iii)
 - (ii) & (iv)
- Which of the following is an element?
 - Carbon disulphide
 - Carbon monoxide
 - Carbon dioxide
 - Carbon
- Which one of the following sets of general properties is exhibited by non-metals?
 - Good conductor, non-lustrous, malleable

- (b) Poor conductor, lustrous, non-ductile
- (c) Poor conductor, brittle, non-sonorous
- (d) Malleable, ductile, good conductor

5. Given below is a hypothetical reaction;



X could be separated into two substances X_1 & X_2 by magnetic separation. The product Z comprising of both X_1 & X_2 does not show the properties of X_1 & X_2 but shows entirely a new set of properties. The species X_1 & X_2 cannot be converted, further into simpler species by simple procedures.

Which of the following is/are correct about X_1 , X_2 , X & Z?

- (i) X is a compound consisting of X_1 & X_2 .
 - (ii) X is a mixture consisting of two elements X_1 & X_2 .
 - (iii) Z is a mixture of two compounds X_1 & X_2 .
 - (iv) Z is a compound consisting of two elements X_1 & X_2 .
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- (a) (i)& (iv)
 - (b) (ii) & (iii)
 - (c) (ii) & (iv)
 - (d) (i) & (iii)

Answers:

1. (c)

Explanation:

- (a) The changes at (i) & (ii) do not involve the formation of any new chemical substance. These are physical changes. In (v): on combustion, LPG produces carbon dioxide and water. Thus it is a chemical change.
- (b) (i), (ii), and (iii) are all physical changes as no new substance is formed in these changes.
- (c) Correct. The changes (iv) & (v) involve the formation of carbon dioxide and water. These are therefore, chemical changes.
- (d) In (iii), no new substance is formed. It is therefore a physical change. The changes (iv) & (v) involve the formation of new substances and are therefore chemical changes.
Hence answer (c) is correct.

2. (a)

Options:

- (a) Correct. The process (i) & (iv) are purification techniques and no new substance is formed. Thus both these are physical changes.
- (b) Both (ii) & (iii) are chemical changes due to the formation of new substances.
- (c) (i) is a physical change and (iii) is a chemical change.
- (d) (ii) is a chemical change leading to the formation of new substance.(iv) is a separation technique in which the original identity of the components is retained.

Explanation: (ii) & (iii) involve the formation of new substances. Therefore these are chemical changes. (i) & (iv) do not involve the formation of any new substance and therefore these are physical changes.

3. (d)

Options:

- (a) The compound consists of two elements, carbon and sulphur. Therefore, it is a compound & not an element.
- (b) Carbon monoxide consists of two elements, carbon and oxygen. Therefore, it is a compound and not an element.
- (c) Carbon dioxide consists of carbon and oxygen and is a compound and not an element.
- (d) Correct. Carbon consists of only one type of atoms i.e. carbon atom. Thus, it is an element.

Explanation: Of the four substances, those at a, b and c can be broken into simpler species. But carbon at d, cannot be broken into simpler species.

4. (c)

Options:

- (a) Non-metals in general are poor conductors and non-malleable
- (b) Non-metals in general are non-lustrous
- (c) Correct.
- (d) Nonmetals are non-malleable, non-ductile and poor conductors.

Note for the teacher: Similar questions may be framed for metals & non-metals by listing their different properties.

5. (c)

Options:

- (a) X is mixture consisting of X_1 and X_2 . As X_1 and X_2 cannot be converted into simpler substances, therefore X_1 & X_2 are elements. Z is a compound as it shows a new set of properties.
- (b) X is a mixture of elements X_1 and X_2 as it can be easily separated by magnetic separation. Z is a compound formed from X_1 and X_2 as it shows new set of properties and not the properties of X_1 and X_2 .
- (c) Correct (as given in questions)
- (d) (i) X is a mixture of elements X_1 and X_2 as it can be separated into X_1 and X_2 by magnetic separation.
(iii) Z is not a mixture but a compound constituted of X_1 and X_2 as it does not show the properties of X_1 and X_2 but shows entirely a new set of properties.

Explanation: The fact that X_1 & X_2 cannot be converted further into simpler substances shows that both of these are elements. As X could be separated by a simple method of magnetic separation into its constituents, it is therefore a mixture. The product Z consists of X_1 & X_2 & has entirely new set of properties. Hence it is a compound of X_1 & X_2 .