

CHEMISTRY

NCERT - NCERT CHEMISTRY(ENGLISH)

PERIODIC CLASSIFICATION OF ELEMENTS

Exercise

1. Did Döbereiner's triads also exist in the columns of Newlands' Octaves? Compare and

find out.



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2. What were the limitations of Döbereiner's classification?



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3. What were the limitations of Newlands' Law of Octaves?



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4. Use Mendeléev's Periodic Table to predict the formulae for the oxides of the following elements:

K, C, Al, Si, Ba.



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5. Besides gallium, which other elements have since been discovered that were left by Mendeléev in his Periodic Table? (any two)



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6. What were the criteria used by Mendeléeiev in creating his Periodic Table?



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7. Why do you think the noble gases are placed in a separate group?



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8. How could the Modern Periodic Table remove various anomalies of Mendeléeév's Periodic Table?



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9. Name two elements you would expect to show chemical reactions similar to magnesium. What is the basis for your choice?



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10. Name

(a) three elements that have a single electron in their outermost shells.

(b) two elements that have two electrons in their outermost shells.

(c) three elements with filled outermost shells.



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11. (a) Lithium, sodium, potassium are all metals that react with water to liberate

hydrogen gas. Is there any similarity in the atoms of these elements?

(b) Helium is an unreactive gas and neon is a gas of extremely low reactivity. What, if anything, do their atoms have in common?



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12. In the Modern Periodic Table, which are the metals among the first ten elements?



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13. By considering their position in the Periodic Table, which one of the following elements would you expect to have maximum metallic characteristic?

Ga Ge As Se Be



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14. Which of the following statements is not a correct statement about the trends when going from left to right across the periods of periodic Table.

A. The elements become less metallic in nature.

B. The number of valence electrons increases.

C. The atoms lose their electrons more easily.

D. The oxides become more acidic.

Answer:



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15. Element X forms a chloride with the formula XCl_2 , which is a solid with a high melting point. X would most likely be in the same group of the Periodic Table as

A. Na

B. Mg

C. Al

D. Si

Answer:



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16. Which element has

(a) two shells, both of which are completely filled with electrons?

(b) the electronic configuration 2, 8, 2?

(c) a total of three shells, with four electrons in its valence shell?

(d) a total of two shells, with three electrons in its valence shell?

(e) twice as many electrons in its second shell as in its first shell?



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17. (a) What property do all elements in the same column of the Periodic Table as boron have in common?

(b) What property do all elements in the same column of the Periodic Table as fluorine have in common?



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18. An atom has electronic configuration 2, 8, 7.

(a) What is the atomic number of this element?

(b) To which of the following elements would it be chemically similar? (Atomic numbers are given in parentheses.)

N(7) F(9) P(15) Ar(18)



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19. The position of three elements A, B and C in the Periodic Table are shown below –

*Group*16 *Group*17

— —

— *A*

— —

B *C*



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20. Nitrogen (atomic number 7) and phosphorus (atomic number 15) belong to group 15 of the Periodic Table. Write the electronic configuration of these two

elements. Which of these will be more electronegative? Why?



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21. How does the electronic configuration of an atom relate to its position in the Modern Periodic Table?



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22. In the Modern Periodic Table, calcium (atomic number 20) is surrounded by elements with atomic numbers 12, 19, 21 and 38. Which of these have physical and chemical properties resembling calcium?



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23. Compare and contrast the arrangement of elements in MendeléeV's Periodic Table and the Modern Periodic Table.





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