



CHEMISTRY

BOOKS - VGS BRILLIANT CHEMISTRY (TELUGU ENGLISH)

CLASSIFICATION OF ELEMENTS -THE PERIODIC TABLE

Textual Lesson Part Improve Your Learning Conceptual Understanding

1. What are the limitations of mendeleeff's periodic table ?

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2. Define the mordern periodic law . Discuss the construction of the long form of the periodic table .

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3. Explain how the elements are classified into s, p, d and f-block elements in the periodic table and give the advantage of this kind of classification.



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4. Given below is the electronic configuration of elements A, B, C, D.

A) $1s^2 2s^2$

B) $1s^2 2s^2 2p^6 3s^2$

C) $1s^2 2s^2 2p^6 3s^2 3p^3$

D) $1s^2 2s^2 2p^6$

1. Which are the elements coming within the same period?

2. Which are the ones coming within the same group?

3. Which are the noble gas elements?

4. To which group and period does the element 'C' belong?



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5. Given below is the electronic configuration of elements A, B, C, D: (A)

$1s^2 2s^2$, (B) $1s^2 2s^2 2p^6 3s^2$, (C) $1s^2 2s^2 2p^6 3s^2 3p^3$, (D) $1s^2 2s^2 2p^6$, Which are

the elements coming within the same period?



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6. Given below is the electronic configuration of elements A,B,C,D: (A) $1s^2 2s^2$, (B) $1s^2 2s^2 2p^6 3s^2$, (C) $1s^2 2s^2 2p^6 3s^2 3p^3$, (D) $1s^2 2s^2 2p^6$, Which are the ones coming within the same group?

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7. Which are the noble gas elements ?

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8. To which group and period does the element 'c' belong ?

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9. Write down the characteristics of the elements having atomic number

17 .

Electronic configuration _____

period number _____

Group number _____

Element family _____

No . Of valence electrons _____

valency _____

metal or non - metal _____



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10. Elements in a group generally possess similar properties , but elements along a period have different properties .How do you explain this statement ?



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11. Complete the following table using the periodic table.

Period number	Filling up orbitals (subshells)	Maximum number of electrons, filled in all the sub shells.	Total no. of elements in the period
1	1s	2	2
2	2s, 2p	8	8
3	3s, 3p	8	8
4	4s, 3d, 4p	18	18
5	5s, 4d, 5p	18	18
6	6s, 4f, 5d, 6p	32	32
7	7s, 5f, 6d, 7p	32	Incomplete

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12. Complete the following table using the periodic table .

Period number	Total no. of elements	Elements		Total no. of elements in			
		From	To	s-block	p-block	d-block	f-block
1							
2							
3							
4							
5							
6							
7							

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13. The electronic configuration of the elements X , Y , and Z are given below .

a) X=2 b) Y= 2,6 c) Z= 2,8 ,2

which element belongs to second period ?



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14. The electronic configuration of the elements X , Y , and Z are given below .

a) X=2 b) Y= 2,6 c) Z= 2,8 ,2

which element belongs to second period ?



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15. The electronic configuration of the elements X , Y , and Z are given below .

a) X=2 b) Y= 2,6 c) Z= 2,8 ,2

Which element belongs to 18th group ?



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16. Identify the element that has the larger atomic radius in each pair of the following and mark it with a symbol .

(i) Mg or Ca (ii) Li or Cs (iii) N or P (iv) B or Al



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17. How does metallic character change when we move
Down a group ?



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18. How does metallic character change when we move
Across a period ?



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19. Why was the basis is classificatons of elements changed from the atomic mass to the atomic number ?

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20. What is a periodic property? How the following properties vary in a group and in a period? Explain

(a) Atomic radius.

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21. What Is a periodic property ? How do the following properties change in a group and period ? Explain .

Ionization enery

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22. What is a periodic property? How do the following properties change in a group and period? Explain.

Electron affinity

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23. What is a periodic property? How do the following properties vary in a group and in a period? Explain

(b) EN.

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24. Explain the ionization energy order in the following sets of elements:

Na, Al, Cl

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25. Explain the ionization energy order in the following sets of elements :

Li, Be, B

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26. Explain the ionization energy order in the following sets of elements :

C, N, O

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27. Explain the ionization energy order in the following sets of elements :

F, Ne, Na

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28. Explain the ionization energy order in the following sets of elements :

Be, Mg, Ca





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Textual Lesson Part Improve Your Learning Asking Questions And Making Hypothesis

1. Name two elements that you would expect to have chemical properties similar to Mg . What is the basis for your choice ?



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2. Using the periodic table , predict the formula of compound formed between element X group 13 and another element Y of group 16 .



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3. An element X belongs to 3rd period and Group 2 of the periodic table . State (a) The no . Of valence electrons (b) The valency (c) Whether it is metal or a non- metal

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4. An element has atomic number 19. where would you expect this element in the periodic table and Why ?

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Textual Lesson Part Improve Your Learning Information Skills And Projects

1. Collect information regarding metallic character of elements of IA group and prepare report to support the idea of metallic character increases in a group as we move from top to bottom .

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Textual Lesson Part Improve Your Learning Appreciation And Aesthetic Sence Values

1. Without knowing the electronic configurations of the above of the atoms of elements Mendeleeff still Could arrange the elements nearly close to the arrangements in the modern periodic table . How can you appreciate this ?

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Textual Lesson Part Improve Your Learning Application To Daily Life Concern To Biodiversity

1. Comment on the position of hydrogen in periodic table .

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Fill In The Blanks

1. Lithium _____ and potassium consitute a Dobereiner's Triad.

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2. _____ was the basis of the classifications proposed By Dobereiner , Newlands and Mendeleeff .

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3. Noble gases Belong to _____ group of periodic table .

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4. The incomplete period of the modern periodic table is _____.

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5. The element at the bottom of a group would be expected to show _____ metallic charcter than the element at the top .

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Multiple Choice Questions

1. Number of elements present in period - 2 of the long form periodic table _____

- A. 2
- B. 8
- C. 18
- D. 32

Answer: B



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2. Nitrogen ($Z=7$) is the element of Group V of periodic table . Which of the follow

A. 9

B. 14

C. 15

D. 17

Answer: C

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3. Electronic configuration of an atom is 2,8,7, . To which of the following elements would it be chemically similar ?

A. Nitrogen (Z=7)

B. Fluorine (z=9)

C. Phosphorous (Z=15)

D. Argon (z=18)

Answer: B

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4. Which of the following is the most active metal ?

- A. Lithium
- B. Sodium
- C. Potassium
- D. rubidium

Answer: D

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Try These

1. Newlands proposed the law of octaves . Mendeleeff suggested eight groups for elements in his table . How do you explain these observations in terms of modern periodic classification ?



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2. State the number of valence electrons , the group number and the period number of each element given in the following table :

Element	Valence electrons	Group number	Period number
Sulphur			
Oxygen			
Magnesium			
Hydrogen			
Fluorine			
Aluminium			



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3. State whether the following elements belong to a Group (G) , Period (P) neither Group nor period (N) .

Elements	Group	Period	Neither Group nor period
Li, C, O			
Mg, Ca, Ba			
Br, Cl, F			
C, S, Br			
Al, Si, Cl			
Li, Na, K			
C, N, O			
K, Ca, Br			



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4. S- block and p - block elements except 18 th group elements are sometimes called as 'Representative elements based on their abundant availability in the nature . Is it justified ? Why ?

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5. Identify the elements that has the lower ionization energy in each pair of the following and mark it with a symbol .

(i) Mg or Na (ii) Li or O (iii) Br or F (iv) K or Br

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6. In period 2 element X is to the right of element Y . Then , find which of the element have :

Low nuclear charge

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7. In period 2 element X is to the right of element Y . Then , find which of the element have :

Low atomic size

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8. In period 2 element X is to the right of element Y . Then , find which of the element have :

High ionization energy

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9. In period 2 element X is to the right of element Y . Then , find which of the element have :

High electronegativity

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10. In period 2 element X is to the right of element Y . Then , find which of the element have :

More metallic character

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11. On the basis of atomic numbers predict to which block the elements with atomic number 9 , 37 , 46 and 64 belongs to ?

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12. Aluminium does not react with water at room temperature but reacts with both dil . HCl and NaOH solutions . Verify these statements experimentally . Write your observation with chemical equation , From these observations , can we conclude that Al is a metalloid ?

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13. Collect the information about reactivity of VIIA group elements (noble gases) from internet or from your school library and prepare a report in their special character when compared to other elements of periodic table .

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14. How do you appreciate the role of electronic configuration of the atoms of elements in periodic classification ?

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15. How do the positions of elements in the periodic table help you to predict its chemical properties ? Explain with an example .

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1. Observe the following table and Fill it .

Group	Elements and their Atomic weight			Arithmetic mean
				1 st and 3 rd elements Atomic weight
A	Lithium (Li) 7.0	Sodium (Na) 23.0	Potassium (K) 39.0	$\frac{7.0 + 39.0}{2} = 23.0 = 23$
B	Calcium (Ca) 40.0	Strontium(Sr) 87.5	Barium (Ba) 137.0	$\frac{40 + 137}{2} = 88.5 \approx 87.5$
C	Chlorine (Cl) 35.5	Bromine (Br) 80.0	Iodine (I) 127.0	$\frac{35.5 + 127.0}{2} = 81.25$ ≈ 80
D	Sulphur (S) 32.0	Selenium (Se) 78.0	Tellurium (Te) 125.0	$\frac{32 + 125}{2} = 78.5 \approx 78$
E	Manganese(Mn) 55.0	Chromium(Cr) 52.0	Iron (Fe) 56.0	$\frac{55.0 + 56.0}{2} = 55.5 \approx 52$

Observations :

Can you establish the same relationship with the set of elements given in the remaining rows ?

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2. Observe the following table and Fill it .

Group	Elements and their Atomic weight			Arithmetic mean of 1 st and 3 rd elements Atomic weight
A	Lithium (Li) 7.0	Sodium (Na) 23.0	Potassium (K) 39.0	$\frac{7.0 + 39.0}{2} = 23.0 = 23$
B	Calcium (Ca) 40.0	Strontium(Sr) 87.5	Barium (Ba) 137.0	$\frac{40 + 137}{2} = 88.5 \approx 87.5$
C	Chlorine (Cl) 35.5	Bromine (Br) 80.0	Iodine (I) 127.0	$\frac{35.5 + 127.0}{2} = 81.25 \approx 80$
D	Sulphur (S) 32.0	Selenium (Se) 78.0	Tellurium (Te) 125.0	$\frac{32 + 125}{2} = 78.5 \approx 78$
E	Manganese(Mn) 55.0	Chromium(Cr) 52.0	Iron (Fe) 56.0	$\frac{55.0 + 56.0}{2} = 55.5 \approx 52$

Observations :

Find average atomic weights of the first and third elements in each row and compare it with the atomic weight of the middle element.



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3. Observe the following table and Fill it .

Group	Elements and their Atomic weight			Arithmetic mean of 1 st and 3 rd elements Atomic weight
A	Lithium (Li) 7.0	Sodium (Na) 23.0	Potassium (K) 39.0	$\frac{7.0 + 39.0}{2} = 23.0 = 23$
B	Calcium (Ca) 40.0	Strontium(Sr) 87.5	Barium (Ba) 137.0	$\frac{40 + 137}{2} = 88.5 \approx 87.5$
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E	Manganese(Mn) 55.0	Chromium(Cr) 52.0	Iron (Fe) 56.0	$\frac{55.0 + 56.0}{2} = 55.5 \approx 52$

Observations :

What do you observe ?



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4. Some main group elements of s - block and p - block have family names what are they? .



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5. Some main group elements of s-block and p-block have family names as given in the following table. Observe the long form of a periodic table and complete the table with proper information.

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6. Find out the valencies of first 20 elements :

Atomic number	Name of element	Symbol	Valency	Atomic number	Name of element	Symbol	Valency
1	Hydrogen	H	1	11	Sodium	Na	1
2	Helium	He	0	12	Magnesium	Mg	2
3	Lithium	Li	1	13	Aluminium	Al	3
4	Beryllium	Be	2	14	Silicon	Si	4
5	Boron	B	3	15	Phosphorous	P	3
6	Carbon	C	4	16	Sulphur	S	2
7	Nitrogen	N	3	17	Chlorine	Cl	1
8	Oxygen	O	2	18	Argon	Ar	0
9	Fluorine	F	1	19	Potassium	K	1
10	Neon	Ne	0	20	Calcium	Ca	2

How does the valency vary in a period on going from left to right ?

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7. How does the valency vary on going down a group ?

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Think And Discuss 1 Mark Questions

1. What relation about elements did dobereiner want to establish ?

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2. The densities of calcium (Ca) and barium (Ba) are 1.55 and 3.51 g cm^{-3} respectively based on Dobereiner's law of triads, can you give the approximate density of strontium (Sr) ?

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3. All alkali metals are solids but hydrogen is a gas with diatomic molecules. Do you justify the inclusion of hydrogen in first group with alkali metals ?

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4. IF lanthanides and actinides are inserted within the table . Imagine how the table would be ?

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Think And Discuss 2 Mark Questions

1. Do you know why Newlands proposed the law of octaves ? Explain your answer in terms of the modern structure of the atom .

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2. Why did Mendeleeff had to leave certain blank spaces in his periodic table ? What is your explanation for this ?

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3. What is your understanding about Ea_2O_3 , EsO_2 ?

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4. Second ionization energy of an element is higher than its first ionization energy . Why ?

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5. The calculated electron gain enthalpy values for alkaline earth metals and noble gases are positive . How can you explain this ?

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Think And Discuss 4 Mark Questions

1. Do you think Newland's law of octaves is correct ? Justify .

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2. Why are lanthanides and Actinides are placed separately at the bottom of the periodic table ?

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3. The second period element , for example , for example 'F' has less electron gain enthalpy than the third period element of the same group of example 'Cl' . Why ?

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Questions Given In The Lesson 1 Mark Questions

1. What is atomic number ?

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2. DO the atom of an element and its ion have same size ?

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3. Which one in each of the following pairs is larger in size ?

(a)

Na, Al (b) Na, Mg^{+2} (c) S^{2-}, Cl^{-} (d) Fe^{2+}, Fe^{3+} (e) C^{4-}

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Questions Given In The Lesson 2 Mark Questions

1. Which one between Na and Na^{+} would have more size ?

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2. Which one between Cl and Cl^{-} would have more size ? Why ?

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Creative Questions For New Model Examination Section I

1. The most and the least electronegative element pairs among the following is :

- A. Oxygen Fluorine
- B. Fluorine , oxygen
- C. Fluorine , cesium
- D. Carbon , Fluorine

Answer: C

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2. An element or any substance that cannot be decomposed into a further simple substance by a physical or chemical or chemical change .

Who defined it ?

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3. Give one example to Dobereiner's Triads .

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4. Who classified elements as triads ?

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5. Guess the atomic weight of middle element if the atomic weights of first and last elements are 7 and 39 respectively according to Law of triads.

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6. Who classified elements first ?



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7. who proposed law of traids ?



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8. Who proposed the law of octaves ?



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9. Who classified elements by its atomic numbers first time ?



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10. Whose periodical classification is similar to repetition of musical notes ?

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11. Who tried to classify the elements in terms of their common valency ?

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12. "The law states that the physical and chemical properties of the elements are periodic functions of their atomic weights".

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13. Which property of an element taken for classification of elements by Mendeleev ?

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14. How many groups are there in mendeleev 's peridic table ?

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15. How many periods are there in the mendeleev 's periodic table ?

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16. Who was left the blanks in his periodic table for some undiscover elements ?

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17. Write similar elements to eka-boron , eka aluminum and eka - sillicon.

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18. "The placement of elements in Mendeleev 's periodic table helped in correcting the atomic masses of some elements".Give example to those elements.



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19. Equivalent weight \times valency =



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20. The anomalous series of elements of mendeleev's periodic table is

A. Be-In- Au

B. Te-I

C. Both 'A' and 'B'

D.

Answer: B



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21. Name of the 101th element.



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22. What is called by the number of positive charges in an atom ?



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23. The arrangement of elements eliminated the problem of anomalous series of Mendeleev's periodic table. What is the arrangement ?



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24. Who classified elements according to their atomic numbers ?



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25. z' indicates

- A. Number of protons in an atom .
- B. Number of electrons in a neutral atom .
- C. Both A and B
- D.

Answer: C



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26. Which property of an element is basis in the construction of modern periodic table ?



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27. How many periods and groups are there in the modern periodic table ?



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28. Match it ,

- | | |
|--------------------|-----------|
| 1) Vertical column | a) group |
| 2) Horizontal row | b) period |



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29. Match it

- | | |
|---------------|-----------------|
| a) s-subshell | 1) 6 electrons |
| b) p-subshell | 2) 2 electrons |
| c) d-subshell | 3) 14 electrons |
| d) f-subshell | 4) 10 electrons |

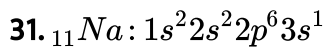


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30. How many blocks are there in modern periodic table ?



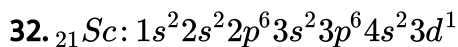
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this element belongs to which block ?



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Scandium belongs to which block ?



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33. What is the general outersheell electronic configuration of alkali metals ?



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34. What is general outershell electronic configuration of Halogen family elements

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Family	Outermost shell configuration
1) Alkali metal	a) ns^1
2) Alkali earth metal	b) ns^2
3) Boron	c) $ns^2 np^1$
4) Carbon	d) $ns^2 np^2$
5) Nitrogen	e) $ns^2 np^3$
6) Chalcogen	f) $ns^2 np^4$
7) Halogen	g) $ns^2 np^5$
8) Noble gas	h) $ns^2 np^6$

35.

match the above

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36. Which statement is wrong ?

A. The horizontal rows are called periods .

B. Periods are represented by arabic numerals .

C. All elements in a period have same properties

D.

Answer: C

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37. How many elements are there in first period in the periodic table ?

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38. which block elements are called Lanthanoids / actinoids ?

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39. match it

a) ${}_{58}Ce - {}_{71}Lu$ i) Actinoids

b) ${}_{90}Th - {}_{103}Lr$ ii) Lanthanoids

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40. Which block elements are called as transition metals ?

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41. Which block elements are called the inner transition elements ?

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42. Give two example to semi conductors?

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43. Which block contains metals only ?

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44. TO which group Lanthanoids and actinides belongs ?

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45. Who did experiments to calculate the number of positive charges (protons) in the the atom by analysing the X - ray patters ?

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46. A: Elements along a period possess different chemical properties .

R: The electronic confuration of valence shell of any two elements in a period is not same .

- A. A' and 'R' are correct and 'R' is correct reason for 'A'
- B. A' and 'R' are correct but 'R' is not a correct reason for 'A'
- C. A' is correct but 'R' is wrong .
- D. A' is wrong but 'R' is correct

Answer: A

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47. Which property of an element is called as combining power of it ?

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48. In NaH , what is the valency of 'Na' ?

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49. In CaO , what is the valency of 'Ca' ?

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50. What is the valency of an element if that element is in the group V or above ?

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51. What are the valencies of 1st and last elements of every period in the periodic table ?

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52. How does the valency vary on going down a group ?

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53. Which property of an element is defined as the distance from the centre of the nucleus of the atom to its outermost shell ?

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54. By which units atomic radius is measured ?



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55. 1 pm is how many metres ?



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56. Match it .

- a) Cu (i) metallic radius
- b) Cl (ii) covalent radius



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57. How is property of atomic radius is change from top bothom in a group of the periodic table as we go down ?



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58. Pick the correct reason to increasing atomic radius when we go down in a group

- A. More shells are required to accommodate more number of electrons .
- B. The distance between the nucleus and the outer shell of the atom decreases .
- C. Both 'a' and 'b'
- D.

Answer: A



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59. How does atomic radius of an element vary across a period from left to right ?



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60. In periods , while going left to right atomic radii of the elements decreases , because _____

- 1) The distance between nucleus and other shell increases.
- 2) the nuclear attraction on the outer shell electrons increases.

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61. Atomic radii of some elements in the periodic table are as given below . 152 pm , 186 pm , 231 pm , 244 pm , Do these elements belong to group or period ?

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62. Which one between Na and Na^+ would have more size ?

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63. what is the outer most electronic condfiguration of Na^+ ?

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64. Which one between Cl and Cl^- would have more size ?

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65. which of the following is correct ?

A. Size of cation lt its neutral atom

B. size of anion gt its neutral atom.

C. a and b

D. None

Answer: C

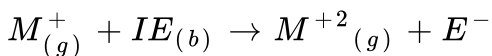
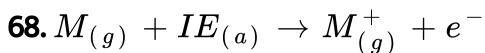
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66. which one has less attraction of nucleus Cl^- or Cl ?

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67. What is the energy which is used to remove an electron from its outer most orbit ?

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from the date which IE is called as second as second ionisation energy ?

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69. Which is more . $IE_{(a)}$ (or) $IE_{(b)}$?

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70. Ionization energy is not depending on

- A. Nuclear charge
- B. Shielding effect
- C. Atomic radius
- D. none

Answer: D



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71. Between ${}_{11}\text{Na}$ and ${}_{17}\text{Cl}$, which one has more ionization energy ?



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72. Between ${}_{11}\text{Na}$ and ${}_{17}\text{Cl}$, which one has more nuclear charge ?



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73. Write in descending order of penetration power of the given orbitals .

$4s, 4P, 4d, 4F$

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74. In between 'Be' and 'B', which one has less ionisation energy ?

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75. A : $1s^2 2s^2 2p^4$

B : $1s^2 2s^2 2p^3$ which one has more ionization energy ?

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76. In which units ionizations energy can be expressed ?

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77. Which of the following statement is wrong ?

A. More the nuclear change more the IE ?

B. More the screening effect more the IE

C. More the atomic radius more the IE .

D. b and C

Answer: D

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78. What is the energy , which is liberated when an electron is added to a uni- negative ion of the element ?

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79. While going left to right in a period in the periodic table , how does ionisation energy change ?

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80. How does ionisation energy change when we go down in a group ?

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81. Electron gain enthalpy values

- A. Decreases as we go down in a group .
- B. increases as we go down in a group
- C. decreases as we go left ot right in a period .
- D.

Answer: A

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Group	Energy (in kJ mol^{-1})
82. VII A	F(-328) ; Cl (-349) ; Br (-325)

what does negative sign indicate ?

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83. Which of the above element shows more electron affinity value ?

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84. What is the property of an element , in which atom can attract electrons towards it - self when it is bounded to the other atom ?

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85. Write the formula of electronegativity proposed by miliken ?



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86. Who assigned electronegativity values for elements on the basis of bond energies ?



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87. Match the electronegativity values .

- | | |
|-------|--------|
| 1) F | a) 4.0 |
| 2) Cl | b) 2.8 |
| 3) Br | c) 2.5 |
| 4) I | d) 3.0 |



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88. which is the most electronegative element ?



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89. which stable element shows least electronegativity ?



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90. In compounds , they generally show a tendency to remain as positive ion what is the property ?



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91. give example to good electropositive elements .



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92. A) Non -metals are generally more electronegative

R) Electronegativity increases as atomic radius decreases .

A. A and R are true R. supports A .

B. A and R are true , R does not support A

C. A' is true but 'R' is wrong

D. A' is wrong but 'R' is true

Answer: A

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93. 1) 3rd period : *Na, Mg, Al, Si, P, S, cl*

2) Metallic character decreases while non - metallic character increases as we move along a period .

From the above data ,

1. Identify metals .

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94. Identify non- metals .



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95. Identify metalloids .



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96. Write any two properties which are decreased from top to bottom in a group ?



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97. Write any two properties which are decreased from left to right in a period ?



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98. $A: 1S^2 2S^2$

$B: 1s^2 2s^2 2p^6 3^2$

To which period element 'A' Belngs ?

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99. $A: 1S^2 2S^2$

$B: 1s^2 2s^2 2p^6 3^2$

To which group element 'B ' belongs ?

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100. $A: 1S^2 2S^2$

$B: 1s^2 2s^2 2p^6 3^2$

what is the valency of 'B' ?

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101. Guess and write any one element would it be chemically similar to the element with 2,8,7 configuration .

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102. An element X belongs to 3rd period and Group 2 of the periodic table . State (a) The no . Of valence electrons (b) The valency (c) Whether it is metal or a non- metal

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103. Guess the element which is surrounded by oxygen , chlorine phosphorus and selenium .

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104. Name two elements that you would expect to have chemical properties similar to Mg . What is the basis for your choice ?



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105. Write the most active metal in the 1st group .



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Creative Questions For New Model Examination Section Ii

1. Which atom is bigger in size , Ne or Ar ? Why ?



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2. A and B are two elements . The compound formed with A and B is A_2B . What are the valencies of A and B .



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3. Write modern periodic law .

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4. Define Moseley's periodic law .

 [Watch Video Solution](#)

5. Define Moseley's periodic law .

 [Watch Video Solution](#)

6. Which group elements are called Carbon family ?

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7. A teacher asked to give an example for Dobereiner's triad. Ramu wrote them as '*Li, Na, Mg*'. In these, identify which element does not belong to this triad?

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8. Define Moseley's periodic law.

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Creative Questions For New Model Examination Section II Conceptual Understanding

1. Define 'element' according to Boyle.

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2. State law of triads .

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3. What are the limitations of Dobereiner's law to triads ?

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4. State the law of octaves .

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5. what are the limitations for Newlands' law of octaves ?

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6. State the periodic law proposed by mendeleeff.



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7. What are the limitations of mendeleeff's periodic table ?



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8. Write modern periodic law .



[Watch Video Solution](#)

9. Which elements are called lanthanides ?



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10. Which elements are called actinides ?



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11. How the elements are called as metals and non- metals based on their electronic configuration ?

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12. What are metalloids ?

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13. Define valency .

 [Watch Video Solution](#)

14. Write a note on

(a) Atomic radius.

 [Watch Video Solution](#)

15. Write a note on

(b) Metallic radius.



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16. Write a note on

(c) Covalent radius.



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17. How does atomic radius vary in a period and in a group? How do you explain the variation?



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18. Define Ionization energy .



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19. How does the ionization energy vary in a group and a period ?

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20. Define ionisation enthalpy and electron affinity.

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21. How does the electron gain enthalpy values vary in a group and a period ?

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22. What is electronegativity?

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23. What is Mulliken's proposal about electronegativity ?

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24. How does it vary in a group and in a period ?

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25. How do metallic and non-metallic characters vary in a group and period ?

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26. How many elements are present in the 5th period of the long form periodic table ? Give a possible reason .

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27. What do you mean by screening effect ?

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28. What is meant by first ionization energy ?

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29. What is meant by second ionization energy ?

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30. What do you mean by element family ?

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31. Give the outer orbits general electronic configuration of the following types of elements a) Noble gases b) Representative elements c) Transition

elements d) inner transition elements.

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32. Chlorine bromine , iodine are Dobereiner's triads .How do you justify ?

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33. Why are lanthanides and actinides placed separately at the bottom of the periodic table ?

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34. Second ionization energy of an element is higher than its first ionization energy Why ?

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35. Why do inert gases have zero valency value ?

 [Watch Video Solution](#)

36. Formation of cation is endothermic where formation of anion is exothermic justify .

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37. There is an element It is high stable but it does not contain 's' electros . Guess it .

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38. Guess the element lies in between Lithium (7) and potassium (39) in one traid .

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39. Guess the element which lies in the Halogen group and its electrons are occupied K,L,M - shells only .

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40. Arrange the elements of 2^{nd} period in the increasing order of their 1^{st} ionization energies . What is your observation ?

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41. Z' element belongs to (second) 2^{nd} group in the periodical table , Write the formula of oxide of it .

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42. DO the atom of an element and its ion have same value ?

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43. Which one between Na and Na^+ would have more size ?

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Creative Questions For New Model Examination Section Ii Information Skills And Projects

1. Group 17 elements and their atomic sizes are as given below .

$F(64)$, $cl(99)$, $Br(114)$, $I(133)$

write a note on it.

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2. Penetration power towards nucleus of various orbitals are

$4s > 4p > 4d > 4f$. which one has more penetration power between

${}_{12}Mg$ and ${}_{13}Al$?



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3. $A: 1s^2 2s^2 2p^4$, $B: 1s^2 2s^2 2p^3$

which one has more stability ? Why ?



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4. B,C,N ,F Ne are given , write the missing element .



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Creative Questions For New Model Examination Section II Application To Daily Life Concern To Biodiversity

1. ${}^7_{14}\text{N}$ is given . Calculate the number of protons m neutrons and electrons in Nitrogen .



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2. In a periodic table , where do you find the Gold , Silver and copper ?

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3. Why do we use He , Ne , Ar , etc , gases in decorative lamps ?

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Creative Questions For New Model Examination Section Iii

1. An element has atomic number 17. Where would you expect this element in the periodic table ? Why .

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2. How do you appreciate the special nature of inert gases ?

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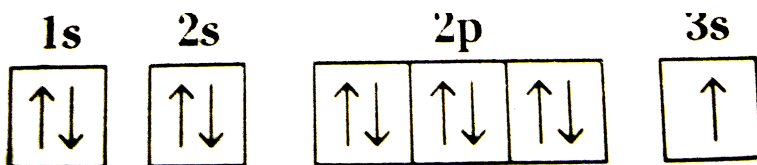
3. The Atomic number of an element is 35 where would you expect the position of this element in the periodic table ? Why ?

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4. Why were Dobereiner , Newlands and Mendeleeff not 100 % successful in their classification of elements ? Why is the modern table table relatively a better classification ? Predict the reason .

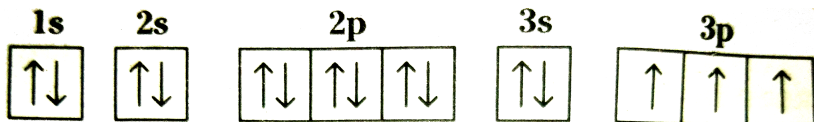
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5. Observe the electronic condigurations given below and write the group and period numbers of those elements .



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6. Observe the electronic configurations given below and write the group and period numbers of those elements .



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7. Observe the information provided in the table and answer the questions given below it. What are the s-block elements in the table?

Element	Na	C	Ca	P	Ti	Ni
Atomic Number	11	6	20	15	22	28

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8. Observe the information provided in the table and answer the questions given below it ,

Element	Na	C	Ca	P	Ti	Ni
Atomic Number	11	6	20	15	22	28

What are the 'p' block and 'd' block elements in the table ?

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9. Imagine , which one in each of the following pairs is large in size relatively with other ? Explain .

(X) Na,Al

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10. Imagine , which one in each of the following pairs is large in size relatively with other ? Explain .

(Y) Na , Mg^{+2}

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Creative Questions For New Model Examination Section Iii Conceptual Understanding

1. Explain the limitation of Mendeleev's periodic table .

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2. Give reason for the need of classification of element .

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3. Explain the salient features and achievements of the Mendeleev's periodic table.

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4. Define ionization energy. Explain on which the ionization energy depends on .



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Creative Questions For New Model Examination Section Iii Asking Questions And Making Hypothesis

1. Omkar wants to place the potassium in a blank periodic table . Help him to find the position of the element by asking some questions to him . Prepare the questions position of the element by asking some questions to him . prepare the questions .



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2. Jhansi explained the concept of valency by asking some questions to Kranthi what would be those questions ?



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3. Do you think Newland's law of octaves is correct ? Justify .



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4. Why Mendeleev has to leave certain blank spaces in his periodic table ?



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5. The second period element 'F' has electron gain enthalpy than the third period elements of same group 'Cl'. Why ?



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6. An element has atomic number 19. Where would you expect this element in the periodic table and why ?



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7. x,y and z are the elements of a Dobereiner 's triad .If the atomic mass of 'x' is 7 and that of 'z' is 39. what should be the atomic mass of the 'y' ?

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Creative Questions For New Model Examination Section Iii Information Skills And Projects

	1s	2s	2p	3s	3p
Na	2	2	6	1	
Al	2	2	6	2	1

1.

1) what is the valency of Na ?

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	1s	2s	2p	3s	3p
Na	2	2	6	1	
Al	2	2	6	2	1

2.

2) Which one belongs to 3rd period, Na or Al or both ?

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Group '1' or IA

Na

Rb

Cs

Fr

3. Group '13' or IIIA

B

Al

Ga

In

Tl

-

1) What is the valence shell configuration of Alkali metal family and Boron family ?

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Group '1' or IA

Li

Na

K

Rb

Cs

Fr

4. Group '13' or IIIA

B

Al

Ga

In

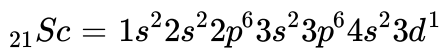
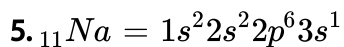
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2) Which family belongs to p- block ?

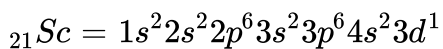
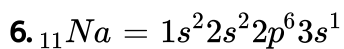
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Write the group and periods of the given elements.

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Which one can form cation easily? Why?

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7. 3rd period : Na - Mg -Al - Si -P -S -Cl .

Classify them into metals , non -metals and metalloids .

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8. How does metallic character change when we move

Across a period ?

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9. Referring the part of periodic table given below answer the questions that follow.

Li	Be	B	C	N	O	F
Na	Mg	Al	Si	P	S	Cl

what happens to the atomic size if moved from left to right ? Support your answer .

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10. What changes do you observe in the metallic properties of the elements when moved from left to right?

Li	Be	B	C	N	O	F
Na	Mg	Al	Si	P	S	Cl



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Creative Questions For New Model Examination Section Iii Appreciation And Aesthetic Sense Values

1. How do you appreciate John Newlands for his classification of elements ?



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Creative Questions For New Model Examination Section Iii Application To Daily Life Concern To Biodiversity

1. Ramu kept a chart in his home for studying the properties of elements. What would be that chart ?
What is its use ?



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1. Elements of one short period of the periodic Table are given below in the order from left to right .

Li, Be, B, C, n, F, Ne

Answer the following :

To which period , do these elements belong ?

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2. Elements of one short period of the periodic Table are given below in the order from left to right .

Li, Be, B, C, n, F, Ne

Answer the following :

one element of this period is missing . Which is the missing element and where it should be placed ?

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3. Elements of one short period of the periodic Table are given below in the order from left to right .

Li, Be, B, C, n, F, Ne

Answer the following :

which of the above elements belong to the family of halogens ? What is its electronegativity value ?

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4. How does metallic character change when we move

Across a period ?

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5. Define Ionization energy .

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6. Define Ionization energy .

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7. Write the factors that influence ionization energy and Explain any three of them .

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8. Two elements X and Y belong to Groups 1 and 2 respectively in the same period of the periodic Table .Compare these elements with respect to :

Number of electrons in their outermost orbit .

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9. Two elements X and Y belong to Groups 1 and 2 respectively in the same period of the periodic Table .Compare these elements with respect to :

Their atomic size and their valancies .

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10. Two elements X and Y belong to Groups 1 and 2 respectively in the same period of the periodic Table .Compare these elements with respect to :

their ionisation energy and metallic character .

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11. Two elements X and Y belong to Groups 1 and 2 respectively in the same period of the periodic Table .Compare these elements with respect to :

Formula of their chlorides and sulphates .

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12. In the table given below names of some elements of families are given .Based on this fill the information in the empty boxes .

S.No.	Name of the Element family	Elements		Valency shell configuration	Valency electrons	Valency
		From	To			
1	Alkali metal family	Li	Fr			
2	Alkali earth metal family	Be	Ra			
3	Carbon family	C	Pb			
4	Halogen family	F	At			

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13. What are the factors which influence electromagnetic energy '?

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14. How are the elements arranged into groups and periods in the modern periodic Table ? Elements in a group posses similar properties ,

but elements in a period do not show similarities in their properties . Why ?

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15.

Groups	Names elements (Atomic numbers)							
Periods	I A	II A	III A	IV A	V A	VI A	VII A	VIII A
II	Li (3)	Be (4)	B (5)	C (6)	N (7)	O (8)	F (9)	Ne (10)
III	Na (11)	Mg (12)	Al (13)	Si (14)	P (15)	S (16)	Cl (17)	Ar (18)
IV	K (19)	Ca (20)	Ga (21)	Ge (32)	As (33)	Se (34)	Br (35)	Kr (36)

Answer the following from the above information .

Which element possesses the higher atomic radius in the above table ?

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16.

Periods \ Groups	Names elements (Atomic numbers)							
	I A	II A	III A	IV A	V A	VI A	VII A	VIII A
II	Li (3)	Be (4)	B (5)	C (6)	N (7)	O (8)	F (9)	Ne (10)
III	Na (11)	Mg (12)	Al (13)	Si (14)	P (15)	S (16)	Cl (17)	Ar (18)
IV	K (19)	Ca (20)	Ga (21)	Ge (32)	As (33)	Se (34)	Br (35)	Kr (36)

Answer the following from the above information .

Mention two pair of element which forms ionic bond .

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17.

Periods \ Groups	Names elements (Atomic numbers)							
	I A	II A	III A	IV A	V A	VI A	VII A	VIII A
II	Li (3)	Be (4)	B (5)	C (6)	N (7)	O (8)	F (9)	Ne (10)
III	Na (11)	Mg (12)	Al (13)	Si (14)	P (15)	S (16)	Cl (17)	Ar (18)
IV	K (19)	Ca (20)	Ga (21)	Ge (32)	As (33)	Se (34)	Br (35)	Kr (36)

Answer the following from the above information .

Name the two elements having valency 2.

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18.

Groups \ Periods	Names elements (Atomic numbers)							
	I A	II A	III A	IV A	V A	VI A	VII A	VIII A
II	Li (3)	Be (4)	B (5)	C (6)	N (7)	O (8)	F (9)	Ne (10)
III	Na (11)	Mg (12)	Al (13)	Si (14)	P (15)	S (16)	Cl (17)	Ar (18)
IV	K (19)	Ca (20)	Ga (21)	Ge (32)	As (33)	Se (34)	Br (35)	Kr (36)

Answer the following from the above information .

Which element has electrons configuration of $1s^2 2s^2 2p^4$

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19. Observe the information and answer the following questions

Name of the Element	Atomic Number	Electronic Configuration
Sodium	11	[Ne] $3s^1$
Magnesium	12	[Ne] $3s^2$
Potassium	19	[Ar] $4s^1$
Calcium	20	[Ar] $4s^2$

What is valency of Magnesium ?

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20. Observe the information and answer the following questions

Name of the Element	Atomic Number	Electronic Configuration
Sodium	11	[Ne] 3s ¹
Magnesium	12	[Ne] 3s ²
Potassium	19	[Ar] 4s ¹
Calcium	20	[Ar] 4s ²

which

element has more electro-positivity ?

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21. Observe the information and answer the following questions

Name of the Element	Atomic Number	Electronic Configuration
Sodium	11	[Ne] 3s ¹
Magnesium	12	[Ne] 3s ²
Potassium	19	[Ar] 4s ¹
Calcium	20	[Ar] 4s ²

write the

elements which belongs to (third) 3rd period .

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22. Observe the information and answer the following questions

Name of the Element	Atomic Number	Electronic Configuration
Sodium	11	[Ne] 3s ¹
Magnesium	12	[Ne] 3s ²
Potassium	19	[Ar] 4s ¹
Calcium	20	[Ar] 4s ²

Write the elements which belongs to 1st Group .

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23. Explain the significance of three quantum numbers in predicting the position of an electron in an electron in an atom .

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24. Answer the following question based on the values of the atomic radii of the elements of one of the periods in modern periodic table

Li(152), *Be*(111), *B*, (88), *C*(77), *N*(74), *o*(66) and *F*(64)

What is the trend of atomic radii of given elements ?



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25. Answer the following question based on the values of the atomic radii of the elements of one of the periods in modern periodic table

$Li(152)$, $Be(111)$, $B(88)$, $C(77)$, $N(74)$, $o(66)$ and $F(64)$

In the numerical listing of periods in the modern periodic table , what number was given to above elements ?



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26. Answer the following question based on the values of the atomic radii of the elements of one of the periods in modern periodic table

$Li(152)$, $Be(111)$, $B(88)$, $C(77)$, $N(74)$, $o(66)$ and $F(64)$

Mention the unit of atomic radius .



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27. Answer the following question based on the values of the atomic radii of the elements of one of the periods in modern periodic table

$Li(152)$, $Be(111)$, $B(88)$, $C(77)$, $N(74)$, $o(66)$ and $F(64)$

Why the values of atomic radius varied along the period ?

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Creative Questions For New Model Examination Section Iv Asking Questions And Making Hypothesis

1. By asking some questions , explain to your friend Kranthi , how the atomic size of Na^+ is less than Na atom .

Prepare questions.

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2. Srinu : I know the size of Na^+ ion is less than ' Na ' atom In this way .

The size of Cl^- ion is also less than Cl atom .

DO you agree with sriunu ? Justify your answer .

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3. What is the need to classify elements ?

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Creative Questions For New Model Examination Section Iv Information Skills And Projects

1. ${}_{56}C$, ${}_{7}N$, ${}_{8}O$, ${}_{9}Fe$, ${}_{10}Ne$ are in a period in the periodic table .

Which one is more stable ? Why ?

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2. ${}_{56}C$, ${}_{7}N$, ${}_{8}O$, ${}_{9}Fe$, ${}_{10}Ne$ are in a period in the periodic table .

Classify them into blocks .



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3. ${}_{6}C$, ${}_{7}N$, ${}_{8}O$, ${}_{9}F$, ${}_{10}Ne$ are in a period in the periodic table .

what are the valencies of the given elements ?



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4. ${}_{5}B$, ${}_{6}C$, ${}_{7}N$, ${}_{8}O$, ${}_{9}F$, ${}_{10}Ne$ are in a period in the periodic table .

write the decreasing order of the atomic size of the given elements .



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5. Group : Be - Mg -Ca -Sr -Ba -Ra

Period : Na -Mg -Al - Si - S -Ci -Ar

Write the order of increasing or decreasing in the given boxes .

S.No.	Property	Group	Period
1.	Atomic radius		
2.	Ionisation energy		
3.	Metallic nature		
4.	Electronegativity		

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6. Write the elements in the ascending order of their atomic radii

2nd period elements	B	Be	O	N	Li	C
Atomic radii	88	111	66	74	152	77

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7. Some elements belonging to second period of periodic table , and their atomic radii are given below .Observe them and write answers .

2 nd period elements	B	Be	O	N	Li	C
Atomic radii	88	111	66	74	152	77

Which of the 2nd period elements closer to the configuration of inert gas

?

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8. Some elements belonging to second period of periodic table , and their atomic radii are given below .Observe them and write answers .

2 nd period elements	B	Be	O	N	Li	C
Atomic radii	88	111	66	74	152	77

which is the outermost orbit of all these elements ?

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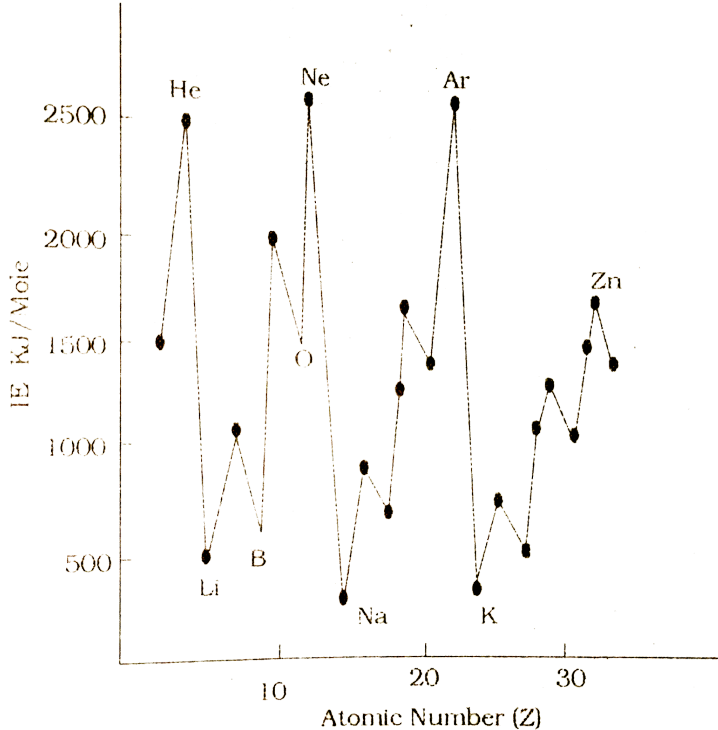
9. Some elements belonging to second period of periodic table , and their atomic radii are given below .Observe them and write answers .

2 nd period elements	B	Be	O	N	Li	C
Atomic radii	88	111	66	74	152	77

Which elements atomic size bigger. Beryllium or Carbon ? Why ?

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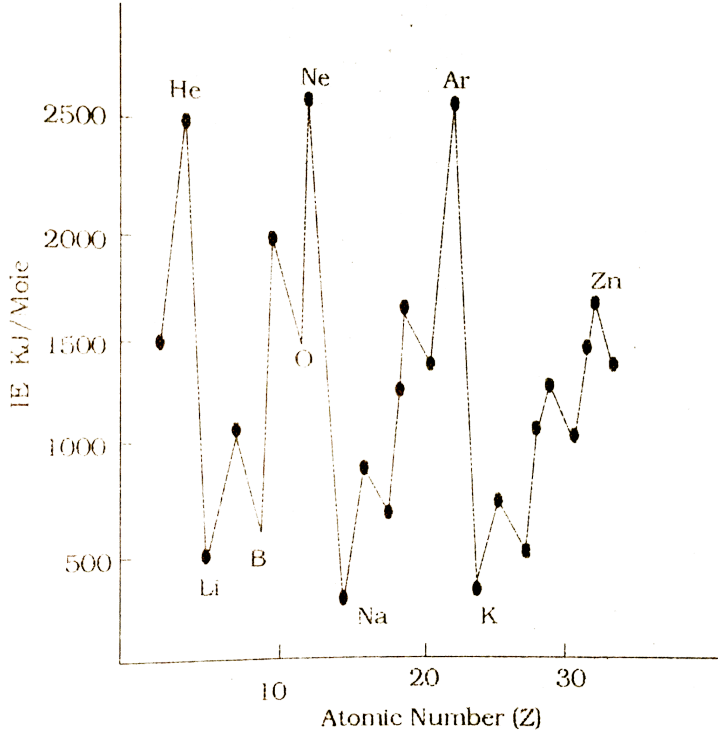
10. Ionization Potential curve is the graph of atomic number versus ionisation energy in KJ / mole . The IP curve is given for elements upto Z = 30 .



Why is there a sudden decreasing in the ionization energy from He to Li ?

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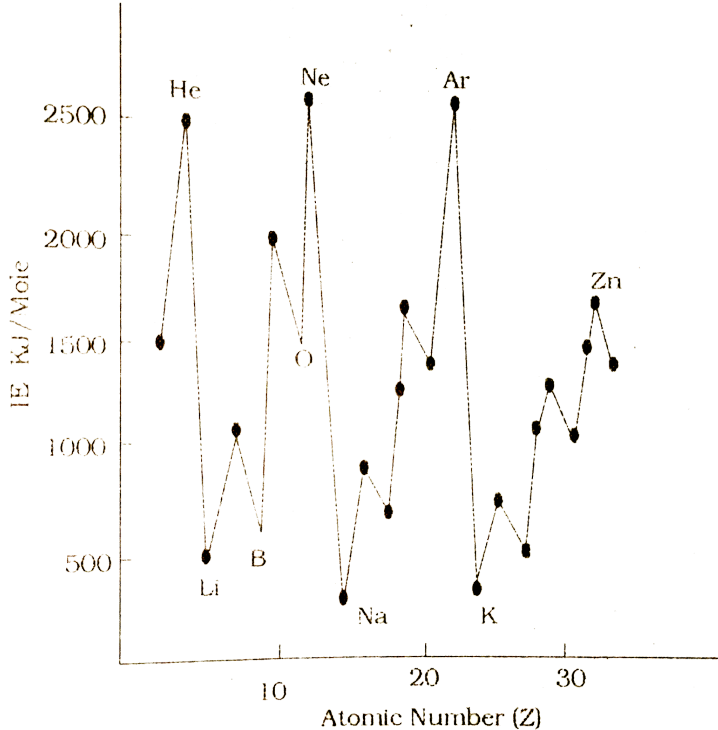
11. Ionization Potential curve is the graph of atomic number versus ionisation energy in kJ / mole . The IP curve is given for elements upto $Z = 30$.



Why is there a sudden decreasing in the ionization energy from He to Li ?

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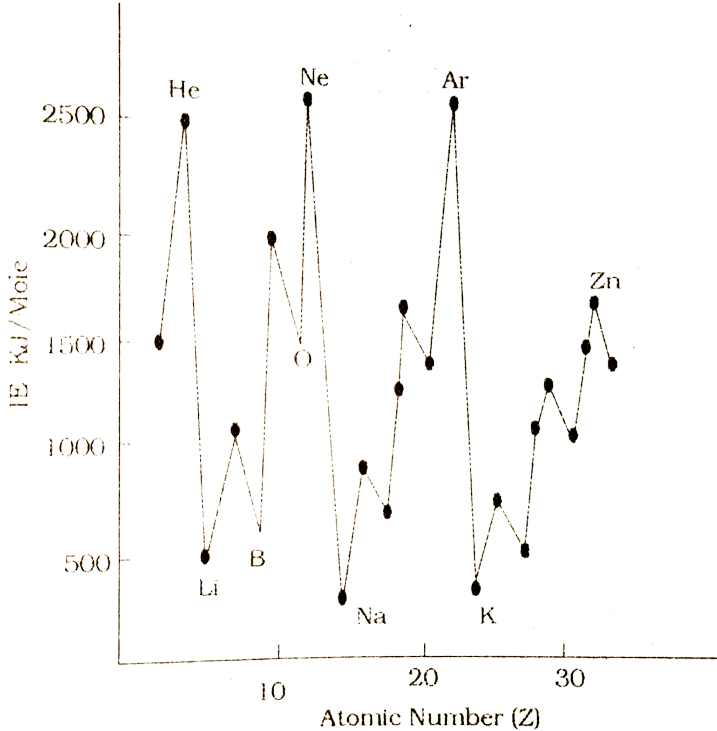
12. Ionization Potential curve is the graph of atomic number versus ionisation energy in kJ / mole . The IP curve is given for elements upto $Z = 30$.



Why is there a sudden decreasing in the ionization energy from He to Li ?

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13. Ionization Potential curve is the graph of atomic number versus ionisation energy in kJ / mole . The IP curve is given for elements upto $Z = 30$.



Why is there a sudden decreasing in the ionization energy from He to Li ?

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14. The electrons configuration of atom A is 2,8,6

What is the atomic number of element A ?

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15. The electrons configuration of atom A is 2,8,6

stable whether the atomic size of element A is bigger or smaller than the atom having atomic number 14 . Why ?

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16. The electrons configuration of atom A is 2,8,6

Which of the elements exhibits similarity in chemical properties as elements A O(8) ,C (6) ,N (7) ,AR (18) .Why ?

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17. The electrons configuration of atom A is 2,8,6

How the element is formed inert gas configuration ?

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18.

Group →	1	2	13	14	15	16	17	18
Period ↓								
3	X	A	B	C	D	E		
4	Y							
5	Z							

Refer the above part periodic table and answer the following questions

Element with has least atomic size .

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19.

Group →	1	2	13	14	15	16	17	18
Period ↓								
3	X	A	B	C	D	E		
4	Y							
5	Z							

Refer the above part periodic table and answer the following questions

Write the electronic congiration of the elements B and E .

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Group →	1	2	13	14	15	16	17	18
Period ↓								
3	X	A	B	C	D	E		
4	Y							
5	Z							

20.

Refer the above part periodic table and answer the following questions

Identify the elements that have similar physical and chemical properties as the element Y .

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Group →	1	2	13	14	15	16	17	18
Period ↓								
3	X	A	B	C	D	E		
4	Y							
5	Z							

21.

Refer the above part periodic table and answer the following questions

Which element has least I.P.E value ?

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1. How do you appreciate Mendeleeff for his great contribution in the preparation of modern periodic table ?

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2. How do you appreciate Moseley as a successful scientist in the classification of elements ?

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3. Whose experiments led to prepare the long periodic table ? How do you appreciate him ?

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4. " Atomic number is more fundamental characteristic of an element than atomic weight " . How this statement of Moseley led to prepare the

periodic table ?

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5. How do you appreciate Dobereiner for his efforts in the classification of elements ?

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Creative Questions For New Model Examination Section Iv Application To Daily Life Concern To Biodiversity

1. Common salt is the common ingredient in every food item .

what are the elements in the common salt ?

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2. Common salt is the common ingredient in every food item .

What are the positions of the elements in the periodic table ?

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3. Common salt is the common ingredient in every food item .

Write the metallic characteristics of those elements .

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4. Common salt is the common ingredient in every food item .

What are the valencies of these two elements?

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