CHEMISTRY

BOOKS - KUMAR PRAKASHAN KENDRA CHEMISTRY (GUJRATI ENGLISH)

CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES

Section A Try Your Self 2

1. Given name, atomic number, electronic configuration of third period and 12^{th} group.

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Section A 1

1. What would be the IUPAC name and symbol for the element with atomic number 120 ?

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Section A 2

1. How would you justify the presence of 18 elements in the 5^{th} period of the periodic table?

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Section A 3

1. The elements $Z = 117$ and 120 have not yet been discovered. In which family / group would you place these elements and also give the electronic configuration in each case.

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Section A 4

1. Write the atomic number of the element present in the third and seventeenth group of the periodic table.

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Section A 5

1. Considering the atomic number and position in the periodic table, arrange the following elements in the increasing order of metallic character : Si, Be, Mg, Na, P.

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Section A 6

1. Which of the following species will have the largest and the smallest size ?

Mg, Mg^{2+}, Al, Al^{3+}

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Section A 7

1. The first ionization enthalpy $(\Delta_i H)$ values of the third period elements, Na, Mg and Si are respectively 496, 737 and 786 kJ mol^{-1}. Predict whether the first $\Delta_i H$ value for Al will be more close to 575 or 760 kJ mol^{-1} ?

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Section A 8

1. Which of the following will have the most negative electron gain enthalpy and which the least negative ?

P, S, CI, F.

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Section A 9

1. Using the Periodic Table, predict the formulas of compounds which might be formed by the following pairs of elements, (a) silicon and bromine (b) aluminium and sulphur.

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Section A 10

1. Are the oxidation state and covalency of Al in $\left[AlCl(H_2O)_5\right]^{2+}$ same ?

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Section A 11

1. Show by a chemical reaction with water that Na_2O is a basic oxide and Cl_2O_7 is an acidic oxide.

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Section A

1. What is the important of Periodic table ? OR What is Periodic table according to Glenn T-Seaborg?

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Section A

1. Why do we need to classify elements ?

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2. Mention brirf the contribution of scientist in Periodic table.

OR

Write a note on Genesis of Peridodic table.

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3. Explain the "Law of Triads" with examples ?

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4. Explain Contribution of Newland in periodic table.

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5. Explain Law of Octaves given by Newland.

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6. Important contribution of Mendeleev's periodic table.

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7. Explain Modern Periodic Law and The present form of the periodic table.

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8. Modern Periodic table is depend on Atomic number, Explain with table.

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9. Explain Nomenclature of elements having atomic number more than 100.

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10. Derive name of element having 106 atomic number.

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11. Explain electronic configuration of period in periodic table.

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12. Third period contain 8 elements. Fourth period contain 18 elements. Seven period contain 32 elements.

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13. Explain Groupwise electronic configuration.

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14. What is similarities in elements for the same groups ?

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15. Give name of element, symbol & electronic configuration of 1^{st} group.

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16. In terms of period & group where would you locate the element with Z = 114.

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17. Given name , symbol , Atomic numbers of the elements of 1 to 7 period of last and first elements.

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18. Why do elements in the same group have similar physical and chemical properties?

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19. Which and how many groups present in periodic table ? Explain the factors which depends upon it.

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20. Which elements are exception in classification of periodic table.

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21. Discuss about place of He and H.

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22. Write a note on s-block elements of periodic table.

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23. Write a note on p-block elements of periodic table.

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24. What is p-block element ? Discuss gases element and metallic properties of p-block elements.

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25. Explain d-block elements of periodic table.

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26. What is d-block elements and transition elements ? Explain characteristic of d-block elements.

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27. Explain f-block elements of period in detail.

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28. What is f-block elements ? Give is characteristics.

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29. Explain about metals, non-metals and metalloids.

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30. Explain reactivities of physical and chemical trends of elements of group and period.

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31. Use the periodic table to answer the following questions.

(a) Identify an element with five electrons in the outer subshell.

(b) Identify an element that would tend to lose two electrons.

(c) Identify an element that would tend to gain two electrons.

(d) Identify the group having metal, non metal, liquid as well as gas at the room temperature.

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

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33. Explain measurement methods of atomic radius.

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34. What is the way to measure estimated volume of on individual atom?

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35. Explain Covalent radius and ionic radius with an examples.

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36. What does atomic radius and ionic radius really mean to you?

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37. Explain why cation are smaller and anions larger in radii than their parent atoms?

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38. What do you understand by isoelectronic species ? Name a species that will be isoelectronic with each of the following atoms or ions.

$(i) F^{-} \quad (ii) Ar \quad (iii) Mg^{2+} \quad (v) Rb^{+}$

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39. Consider the following species :

$N^{3-}, O^{2-}, F^{-}, Na^{+}, Mg^{2+}, Al^{3+}$

(a) What is common in them ?

(b) Arrange them in the order of increasing ionic radii.

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40. Describe the theory associated with the radius of an atom as it

(a) Gains an electron

(b) Loses an electron

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41. Arrange decreasing order of $K^+, Cl^-, S^{2-}, Ca^{2+}$ with explanation.

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42. Among the second period elements the actual ionization enthalpies are in the order

$Li < B < Be < C < O < N < F < Ne.$

Explain why

(i) Be has higher $\Delta_i H$ and B

(ii) O has lower $\Delta_i H$ than N and F than N and F ?

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43. Discuss value of first ionisation enthalpy in same period and why?

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44. Explain order of ionisation enthalpy of alkali metal when we go top to bottom.

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45. Explain when we go top to bottom in same group what change is observed in ionisation enthalpy ?

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46. What are the various factors due to which the ionization enthalpy of the main group elements tends to decrease down a group ?

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47. Explain shielding effect with example. Also explain 2s - 2p approach in group and period.

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48. What is order of first second and third ionisation enthalpy? Why?

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49. How would you explain the fact that the first ionization enthalpy of sodium is lower than that of magnesium but its second ionization enthalpy is higher than that of magnesium ?

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50. Energy of an electron in the ground state of the hydrogen atom is $-2.18 \times 10^{-18} J$. Calculate the ionization enthalpy of atomic hydrogen in terms of $Jmol^{-1}$.

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51. The first ionization enthalpy values $\left(\text{ in kJ mol } ^{-1} \right)$ of group 13 elements are:

Element	B	Al	Ga	In	Tl
Ionization Enthalpy	801	577	579	558	589

How would you explain this deviation from the general trend ?

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52. Write periodicity of ionization enthalpy of 1 to 60 elements of periodic table.

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53. What is the significance of the terms-'isolated gaseous atom' and 'ground state' while defining the ionization enthalpy and electron gain enthalpy?

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54. Would you expect the first ionization enthalpies for two isotopes of the same element to be the same or different ?

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55. What is electron gain enthalpy $\left(\Delta_{eg}H\right)$? When its value becomes positive and negative ?

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56. Explain electrogain enthalpy value of elements of 17^{th} group.

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57. Explain value of electron gain enthalpy of noble gases.

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58. Explain periodicity of element of electron gain enthalpy in periodic table.

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59. Explain changes of value of electron gain enthalpy of periods and groups.

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60. Would you expect the second electron gain enthalpy of O as positive, more negative or less negative than the first ? Justify your answer.

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61. The first $(\Delta_i H_1)$ and the second $(\Delta_i H_2)$ ionization enthalpies $\left(\text{in kJ mol}^{-1}\right)$ and the $(\Delta_{eg} H)$ electron gain enthalpy $\left(\text{in kJ mol}^{-1}\right)$ of a few elements are given below :

Elements	$\Delta_i H_1$	$\Delta_i H_2$	$\Delta_{eg} H$
I	520	7300	−60
II	419	3051	−48
III	1681	3374	−328
IV	1008	1846	−295
V	2372	5251	+48
VI	738	1451	−40

Which of the above elements is likely to be :

(a) the least reactive element.

(b) the most reactive metal.

(c) the most reactive non-metal.

(d) the least reactive non-metal.

(e) the metal which can form a stable binary halide of the formula MX_2 , (X = halogen).

(f) the metal which can form a predominantly stable covalent halide of the formula MX (X = halogen)?

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62. What is the basic difference the terms electron gain enthalpy and electronegativity ?

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63. How would you react to the statement that the electronegativity of N on Pauling scale is 3.0 in all the nitrogen compounds?

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64. What is electronegativity ? Explain periodicity in periodic table.

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65. Represent different type of periodic properties in periodic table.

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66. What are the major differences between metals and non-metals ?

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67. The increasing order of reactivity among group-1 elements is $Li < Na < K < Rb < Cs$ whereas that among group 17 elements is $F > CI > Br > I$.

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68. Predict the formulas of the stable binary compounds that would be formed by the combination of the following pairs of elements.

(a) Lithium and oxygen

(b) Magnesium and nitrogen

(c) Aluminium and iodine

(d) Silicon and oxygen

(e) Phosphorus and fluorine

(f) Element 71 and fluorine

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69. What is valency ? Explain.

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70. Explain periodicity of valence or oxidation states and explain Na_2O and OF_2.

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71. Give periodic trends in valence of elements of oxides and hydrides.

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72. Which elements of group shows anamolous behaviour. Explain with examples.

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73. What is different between elements of first group and other group is s and p-block? Why?

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74. Explain original properties of an elements and its reactivity trends in periodic table.

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75. Explain original properties and its reactivity trends in periodic table.

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Section B

1. Give the name of elements, symbol and atomic number which one obtained for the name of the scientists Glenn T Seaborg, Mendeleev and Ruther Ford.

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2. What is the basic theme of organisation in the periodic table ?

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3. Which important property did Mendeleev use to classify the elements in his periodic table and did he stick to that?

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4. What is the basic difference in approach between the Mendeleev's Periodic Law and the Modern Periodic Law ?

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5. Which awards were given to Newland and Seaborg for their contribution or work?

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6. Which elements were discovered by scientist Ramsen and Glenn T Seaborg?

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7. Li, Na, K are Dobereiner triads. If the atomic weight are 7 and 39 respectively then what would be the atomic weight of Na ?

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8. State the name of scientists who contributed in discovery of periodic table and its rules.

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9. What is vertical columns and horizontal rows known as in periodic table ? What does it signifies ?

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10. How many series and groups present in Mendelev's periodic table ?

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11. Which elements were arranged based upon their properties by Mendeleev ?

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12. Which element's position was left empty in periodic table by Mendeleev and what name did he gave ?

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13. On what basis has periodic table made by Mendeleev?

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14. Which information was not found before Mendeleev published periodic table ?

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15. How many elements are present in 1 to 7 periods?

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16. How is the name given to the elements whose atomic number is more than 100 ?

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17. Give the name and symbol of the element having atomic number 103.

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18. Give the name and symbol of the element having atomic number 118.

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19. How is an electron identified in an atom ?

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20. What is electronic configuration ?

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21. What is shell ?

View Text Solution

22. Where does electronic configuration takes place in an atom ?

View Text Solution

23. On what basis is the position of an electron in a periodic table is decided ?

View Text Solution

24. What is the maximum number of electrons in a element possible ?

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25. How many elements are possible in first period ?

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26. In 6^{th} period if n = 6 and I = 0, 1, 2, 3, 4 there also why only 32 elements are there in this period ?

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27. In which period, are there the maximum number of artificial radio active elements ?

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28. Which are the transition elements and inner transition elements ?

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29. Which elements are given at the bottom of the periodic table ?

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30. Which elements are known as transition element and inner transition element ?

View Text Solution

31. Write first elements of the period 1 to 7.

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32. Write last element of the period 1 to 7.

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33. How many blocks are present in modern periodic table ?

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34. How many elements are present in s-block ?

View Text Solution

35. Which element are known as reactive elements ?

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36. Write the general outer electronic configuration of s-, po, d- and f- block elements.

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37. Which elements accept $2e^-$ or $1e^-$ and from stable structure like noble gas ?

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38. How can we predict the elements in period, groups and block ?

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39. Identify the block from the following electronic configuration.

(i) $6s^2 4f^3$ $(ii) 3s^2 3p^4$

$(iii) 3s^1$ $(iv) 3d^2 4s^2$

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40. Which of the following electronic configuration belongs to p-block elements ?

(i) $1s^2 2s^2 2p^6 3s^2$ $(ii) 1s^2 2s^2 3p^6 3d^{10} 4s^2$

$(iii) 1s^2 2s^2 2p^5$ $(iv) 1s^2 2s^2 2p^6 3s^2 3p^3$

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41. According to their electronic configuration which of the following elements belongs to some group.

$(i) 1s^2 2s^2$ $(ii) s^2 2s^2 2p^5$

(iii) $1s^2 2s^2 2p^6 3s^2 3p^5$ $(iv) 1s^2 2s^2 2p^6 3s^{10} 4s^1$

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42. The given following elements belongs to which block? Which of this is having the maximum metallic property ?

K, Na, Li, Rb

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43. Assign the position of the element having outer electronic configuration

(i) ns^2np^4 for $n = 3$

(ii) $(n-1)d^2ns^2$ for $n = 4$ and

(iii) $(n-2)f^7(n-1)d^1ns^2$ for $n = 6,$ in the periodic table.

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44. Which element do you think would have been named by

(i) Lawrence Berkeley Laboratory

(ii) Seaborg's group?

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45. Which metal element is not solid ?

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46. Which element has high melting point and boiling point ?

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47. Which elements are semi metals ?

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48. Write electronic configuration of Z = 117 and Z = 120 .

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49. What is unuranium element ?

View Text Solution

50. Which elements properties are almost same ?

View Text Solution

51. Which series, contain radioactive elements ?

View Text Solution

52. How can we obtained as actinoid elements how much quantity ?

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53. How can we measure atomic radius ?

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54. Arrange increasing order of atomic radius of given elements.

(i) O, N, F, B, Be, Li, C br> (ii) P, S, Mg, Na, Al, Si, Cl

(iii) K, Na, Li, Cs, Rb

(iv) Cl, F, I, At, Br

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55. Arrange atomic radius in decreasing order of atomic radius of elements S, O, Na, Li.

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56. What is atomic radius ?

View Text Solution

57. Bond angle of chlorine is 198 pm then calculate atomic radius .

View Text Solution

58. Which contain maximum atomic radius between metal , non - metal and noble gas.

View Text Solution

59. What is difference and similarities between Mg and Mg^{2+}.

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60. Which are having less volume between Mg and Mg^{+2} ?

View Text Solution

61. Which one having less radius between Al and Al^{3+} ? Why?

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62. What is similar between

(i) Na and Na^+ (ii) F and F^-

View Text Solution

63. Arrange Na, Na^+, F, F^- in decreasing order of radius.

View Text Solution

64. Which elements are from the following ? Isoelectric Na, Na^+, F^-, F ?

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65. Which period contain Na and F elements ? What is order of atomic radius?

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66. What is isonisation enthalpy?

View Text Solution

67. What is unit of ionisation enthalpy?

View Text Solution

68. What is second ionisation enthalpy?

View Text Solution

69. What is order of first, second, third ionisation enthalpy of any elements ?

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70. Why third ionisation enthalpy is more than second ionisation enthalpy and why second ionisation enthalpy is more than first ?

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71. Why alkali metal elements are more reactive ?

View Text Solution

72. Which elements contain maximum and minimum ionisation enthalpy in period ?

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73. What is important thing to explain ionisation enthalpy ?

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74. Which factor affecting on ionisation enthalpy?

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75. Which element having more ionisation enthalpy?

(i) Ne or Ar (ii) Cl or F (iii) F or O

(iv) N or O (v) Na or K (vi) Cl or S

(vii) Kr or Xe (viii) P or S

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76. Li (520), Be (899) and $C(1086)kJ\text{mol}^{-1}$ ionisation enthalpy then B contain which are ionisation enthalpy 800 or 900 kJ/mol why ?

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77. Ionisation enthalpy of C (1086), N (1402) and F (1681) kJ mol^{-1} respectively then which one ionisation enthalpy of oxygen 1310 and 1510 kJ mol^{-1}?

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78. What is following reaction is indicated ?

(i) $X_{(g)} \rightarrow X^{+}_{(g)} + e^{-}$

(ii) $X^{+}_{(g)} \rightarrow X^{+}_{(g)} + e^{-}$

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79. Which electron is remove from Be and B during ionisation enthalpy?

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80. Which electrons from 2s and 2p experiencing more electron from centre ?

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81. Which electron from 28 and 2p orbitals experiencing more shielding effect ?

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82. Nitrogen and oxygen having electrons in 2p orbital which electron experiencing more repulsion ? What is effect due to repulsion ?

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83. What is electron gain enthalpy?

View Text Solution

84. Which elements having more positive and more negative electron gain enthalpy?

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85. Which of the following pairs of elements would have a more negative electron gain enthalpy?

(i) O or F (ii) F or Cl

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86. Which elements having highest electron gain enthalpy?

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87. Value of electron gain enthalpy of 16, 17 groups are positive or negative which change is observed ?

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88. Which elements of group shows difficult tendency of value electron gain enthalpy?

View Text Solution

89. If electron is added to group 16, 17 which orbit n = 2 and n = 3 shows less electron electron repulsion ? Why?

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90. What is diagonal relationship?

View Text Solution

91. Which element of group 3 to 13 shows anomalous behaviour ?

View Text Solution

92. Give difference between first element of group and other elements of group ?

View Text Solution

93. What is properties difference between first element of group and other elements of group ?

View Text Solution

94. What is in reactivity in same period in left to right?

View Text Solution

95. Which changes of properties of periods shows reactivity ?

View Text Solution

96. Give types of oxides and examples.

View Text Solution

97. What is amphoteric oxide ?

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98. What is neutral oxide ? Give its example.

View Text Solution

99. Why transition elements are different from group-1 and group-2 of metal ?

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100. What is maximum valency of the first order of elements in period ?

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101. Number of orbitals of their other most orbits are more than 4.

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102. What is position of element contain n = 3 and electronic configuration is ns^2np^4 in periodic table ?

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103. What is formula of compound if elements are given containing ?

(i) Sodium and oxygen

(ii) Aluminium and bromine

(iii) Silicon and oxygen

(iv) Phosphorus and chlorine

(v) 19^{th} element and iodine

(vi) 18^{th} element and oxygen

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Section C Mcqs From Textual Exercise

1. in the modern periodic table, the period indicates the value of :

A. atomic number

B. atomic mass

C. principal quantum number

D. azimuthal quantum number

Answer: c

View Text Solution

2. Which of the following statements related to the modern periodic table is incorrect?

A. The p-block has 6 columns, because a maximum of 6 electrons can occupy all the orbitals in a p-shell.

B. The d-block has 8 columns, because a maximum of 8 electrons can occupy all the orbitals in a d-subshell.

C. Each block contains a number of columns equal to the number of electrons that can occupy that subshell.

D. The block indicates value of azimuthal quantum number (l) for the last subshell that received electrons in building up the electronic configuration.

Answer: b

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3. Anything that influences the valence electrons will affect the chemistry of the element. Which one of the following factors does not affect the valence shell ?

A. Valence principal quantum number (n)

B. Nuclear charge (Z)

C. Nuclear mass

D. Number of core electrons.

Answer: c

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4. The size of isoelectronic species $-F_-$, Ne and Na^+ is affected by

A. nuclear charge (Z)

B. valence principal quantum number (n)

C. electron electron interaction in the outer orbitals

D. none of the factors because their size is the same.

Answer: a

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5. Which one of the following statements is incorrect in relation to ionization enthalpy?

A. Ionization enthalpy increases for each successive electron.

B. The greatest increase in ionization enthalpy is experienced on removal of electron from core noble gas configuration .

C. End of valence electrons is marked by a big jump in ionization enthalpy.

D. Removal of electron from orbitals bearing lower n value is easier than from orbital having higher n value.

Answer: d

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6. Considering the elements B, Al, Mg, and K, the correct order of their metallic character is :

A. $B > Al > Mg > K$

B. $Al > Mg > B > K$

C. $Mg > Al > K > B$

D. $K > Mg > Al > B$

Answer: d

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7. Considering the elements B, C, N, F and Si, the correct order of their non-metallic character is :

A. $B > C > Si > N > F$

B. $Si > C > B > N > F$

C. $F > N > C > B > Si$

D. $F > N > C > Si > B$

Answer: d

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8. Considering the elements E CI, O and N, the correct order of their chemical reactivity in terms of oxidizing property is :

A. $F > Cl > O > N$

B. $F > O > Cl > N$

C. $Cl > F > O > N$

D. $O > F > N > Cl$

Answer: a

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Section C Mcqs From Darpan S Exam Oriented

1. Average atomic mass of Ca and Ba is same as atomic mass of .....

A. Na

B. Br

C. Sr

D. Mg

Answer: c

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2. Which scientist declared, "Properties of elements are periodic with their atomic mass"?

A. Newland

B. Mendeleev

C. Lother Meyer

D. Mosseley

Answer: b

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3. Which elements are present in third period of Mendeleev's periodic table ?

A. Be

B. Mg

C. Sr

D. All

Answer: d

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4. Which period contains two elements in periodic table ?

A. 1

B. 7

C. 5

D. 2

Answer: a

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5. Elements of 6^{th} period are known as

A. Lanthanoid

B. Actinoid

C. Halogen

D. Noble gases

Answer: a

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6. What is the average distance between covalent molecules of two atoms called ?

A. Atomic radius

B. Vaander Waal's

C. Covalent radius

D. Ionic radius

Answer: c

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7. If parent element of $Na^+(X)$ and parent element of $Mg^+(Y)$, then what is true for X and Y ?

A. X is positive element, Y is negative element.

B. X is in first, Y is in second period

C. X is in first group, Y is in second group

D. X is metal, Y is non-metal

Answer: c

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8. If atomic number increases, then the atomic radius of period and the group ..... and ..... respectively.

A. increases, increases

B. increases, decreases

C. decreases, decreases

D. decreases, increases

Answer: d

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9. What is correct order of ionisation enthalpy of Li, Be, B, C of first period and Na, Mg, Al, Si of second period ?

A. $Li < B < Be < C$ and $Na < Al < Mg < Si$

B. $Li < Be < B < C$ and $Na < Mg < Al < Si$

C. $C < Be < B < Li$ and $Si < Mg < Al < Na$

D. None of these

Answer: a

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10. Which element having maximum negative and which element having maximum positive electron gain enthalpy?

A. Cl, Ar

B. F, Ne

C. Cl, Ne

D. F, Ne

Answer: c

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11. Electronegativity is .....

A. Electron gain tendency of metal

B. Capacity to attract electron of covalent bond

C. Electron gain capacity against Li

D. Capacity to attract electron of covalent bond more against Li

Answer: d

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12. What is oxidation number of oxygen in Na_2O_2, Na_2O, OF_2 compounds ?

A. $-2, \ -1, 0$

B. $-1, \ -2, \ +1$

C. $-1, \ -2, \ +2$

D. None of these

Answer: c

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13. Which kind of property shows CO and Al_2O_3 respectively ?

A. neutral and acidic

B. basic and acidic

C. neutral and amphoteric

D. acidic and neutral

Answer: c

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14. Which ion most stable ?

A. Rb^{2+}

B. Ba^{3+}

C. Se^{2-}

D. Sn^{4+}

Answer: c

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15. Which of the following ratio of volume of positive and negative ions are minimum ?

A. CsI

B. LiBr

C. CsF

D. NaCl

Answer: c

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16. Which element is most positive ?

A. $[He]2s^1$

B. $[Ne]3s^1$

C. $[Xe]6s^1$

D. $[Ne]3s^2$

Answer: c

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17. Elements of group-I B and II B are known as...

A. Alkali elements

B. Lanthanoide elements

C. Transition elements

D. Halogen elements

Answer: c

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18. What is atomic number which contain 2 electrons in 4-orbit ?

A. 12

B. 20

C. 30

D. 32

Answer: b

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19. In the following which configuration shows halogen's configuration ?

A. $[Ne]2s^2 2p^4$

B. $[Ar]3s^2 3p^3$

C. $[Kr]4d^{10}5s^2 5p^5$

D. $1s^1$

Answer: c

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20. Electronic configuration of an element is $1s^2 2s^2 2p^6 3s^2 3p^5$ than what is atomic number of element which is situated bottom of this elements group ?

A. 49

B. 25

C. 35

D. 18

Answer: c

View Text Solution

21. From the following which element from 5^{th} period and 17^{th} group ?

A. Te

B. I

C. At

D. Se

Answer: b

View Text Solution

22. Which element containing Uuh series?

A. 104

B. 116

C. 118

D. 12

Answer: b

View Text Solution

23. Which element shown less shield effect ?

A. Group-12, period-4

B. Group-12, period-3

C. Group-12, period-2

D. Group-12, period-5

Answer: c

View Text Solution

24. What is general valency of P, Mg, F?

A. 5, 2, 1

B. 3, 1, 1

C. 5, 3, 1

D. 3, 2, 1

Answer: d

View Text Solution

25. Which element shows less ionisation enthalpy?

A. Noble gases

B. Alkali elements

C. Alkaline earth

D. Halogen elements

Answer: b

View Text Solution

26. Which element having 4 electronegativity ?

A. Li

B. F

C. Cl

D. O

Answer: b

View Text Solution

27. Atomic number of three elements P, Q and R are 20, 38 and 56 elements respectively. Which option is correct?

A. Its ionisation enthalpy is increasing order

B. Q has maximum ionisation enthalpy

C. R has maximum ionisation enthalpy

D. Ionisation enthalpy of Q is in middle between P and R.

Answer: d

View Text Solution

28. Each elements of fourth period .....

A. Contain 4 electron less than octet

B. They have four complete orbits.

C. The have completely four sub shells

D. They have four electrons in outer most orbit

Answer: d

View Text Solution

Section C Mcqs Asked In Competitive Exam

1. Which of the following is the smallest in size?

A. Na^-

B. O^{-2}

C. Na^{+}

D. F^{-}

Answer: c

View Text Solution

2. The most electronegative element.....

A. oxygen

B. chlorine

C. fluorine

D. nitrogen

Answer: c

View Text Solution

3. Samarium-62 is the member of.....

A. s-block element

B. p-block element

C. d-block element

D. f-block element

Answer: d

View Text Solution

4. Which of the ions has largest ionic radius?

A. Be^{2+}

B. Mg^{2+}

C. Ca^{2+}

D. Sr^{2+}

Answer: d

View Text Solution

5. The first ionization potentials in electron volts of nitrogen and oxygen atoms are respectively given by.....

A. $14.6, 13.6$

B. $13.6, 14.6$

C. $13.6, 13.6$

D. $14.6, 14.6$

Answer: a

View Text Solution

6. An element with atomic no.20 will be placed in which period of the periodic table ?

A. 4

B. 3

C. 2

D. 1

Answer: a

View Text Solution

7. Which one is the correct order of the size of the iodine species?

A. $I > I^+ > I^-$

B. $I > I^- > I^+$

C. $I^+ > I^- > I$

D. $I^- > I > I^+$

Answer: d

View Text Solution

8. The electronegativity of the following elements increases in the order.

A. C, N, Si, P

B. N, Si, C, P

C. Si, P, C, N

D. P, Si, N, C

Answer: c

View Text Solution

9. Curium is the member of.....

A. actinide series

B. alkali metals

C. alkaline earth metals

D. lanthanide series

Answer: a

View Text Solution

10. Atomic radii of fluorine and neon (in angstrom units) respectively are given as...

A. $0.72, 1.60$

B. $1.60, 1.60$

C. $0.72, 0.72$

D. none of these

Answer: d

View Text Solution

11. The electronegativity of the following elements increases in the order.

A. C, N, Si, P

B. N, Si, C, P

C. Si, P, C, N

D. P, Si, N, C

Answer: c

View Text Solution

12. The triad of nuclei that is isotonic is.....

A. ${}_{\cdot 6}C^{14}, {}_{\cdot 7}N^{15}, {}_{\cdot 9}F^{17}$

B. ${}_{\cdot 6}C^{12}, {}_{\cdot 7}N^{14}, {}_{\cdot 9}F^{19}$

C. ${}_{\cdot 6}C^{14}, {}_{\cdot 7}N^{14}, {}_{\cdot 9}F^{17}$

D. ${}_{\cdot 6}C^{14}, {}_{\cdot 7}N^{14}, {}_{\cdot 9}F^{19}$

Answer: a

View Text Solution

13. The atomic nucleus always contains.....

A. protons

B. neutrons

C. electrons

D. photons

Answer: a

View Text Solution

14. In the periodic table the element with Z = 24 is placed in the period.

A. 1

B. 2

C. 3

D. 4

Answer: d

View Text Solution

15. Which of the following statement is not true about the long form of periodic table ?

A. It reflects the sequence of filling of electrons in order of sub-energy levels. s, p, d and f.

B. It helps to predict the stable valence states of the elements.

C. It reflects trends in physical and chemical properties of the elements.

D. It helps to predict the reletive ionicity of the bond between any two elements.

Answer: b

View Text Solution

16. The outermost electronic configuration of the element with highest value of electron affinity is .....

A. ns^2np^3

B. ns^2np^5

C. ns^2np^4

D. ns^2np^6

Answer: b

View Text Solution

17. The first ionization enthalpies of Na, Mg, Al and Si are in the order .....

A. $Na < Mg > Al < Si$

B. $Na > Mg > Al > Si$

C. $Na < Mg < Al < Si$

D. $Na > Mg > Al > Si$

Answer: a

View Text Solution

18. Ionisation potential is lowest for

A. Halogens

B. Inert gases

C. alkaline earth metals

D. Alkali metals

Answer: d

View Text Solution

19. Amongst the following elements (whose electronic configurations are given below), the one having the highest ionization enthalpy is ..... .

A. $[Ne]3s^2 3p^1$

B. $[Ne]3s^2 3p^2$

C. $[Ne]3d^{10} 4s^2 4p^3$

D. $[Ne]3s^2 3p^3$

Answer: d

View Text Solution

20. Which one of the following elements has the highest ionization energy.

A. $[He]3s^2 3p^1$

B. $[He]3s^2 3p^2$

C. $[He]3s^2 3p^3$

D. $[Ar]3d^{10} 4s^2 4p^2$

Answer: c

View Text Solution

21. Which one of the following is correct order of increase of size.....

A. $Mg < Na^+ < F^- < Al$

B. $Na^+ < Al < Mg < F^-$

C. $Na^+ < F^- < Al < Mg$

D. $Na^+ < Al > Mg < F^-$

Answer: b

View Text Solution

22. Which of the following transitions involves maximum amount of energy?

A. $M^-_{(g)} \rightarrow M_{(g)}$

B. $M_{(g)} \rightarrow M^-_{(g)}$

C. $M^+_{(g)} \rightarrow M^+_{(g)}$

D. $M^{2+}_{(g)} \rightarrow M^+_{(g)}$

Answer: d

View Text Solution

23. The statement that is not correct for the periodic classification of elements is.....

A. the properties of elements are the periodic functions of their atomic number.

B. non metallic elements are lesser in number than metallic elements.

C. the first ionization energies along period do not vary in a regular manner with increase in atomic no.

D. for transition elements the d-subshells are filled with electrons monotonically with increase in atomic no.

Answer: c

View Text Solution

24. The correct order of decreasing first ionisation energy is.....

A. $C > B > Be > Li$

B. $C > Be > B > Li$

C. $Be > C > B > Li$

D. $Be > Li > B > C$

Answer: b

View Text Solution

25. The element with atomic number 55 belongs to which block of the periodic table ?

A. s-block

B. p-block

C. d-block

D. f-block

Answer: a

View Text Solution

26. Which of the following has largest size

A. Al

B. Al^{+}

C. Al^{+2}

D. Al^{+3}

Answer: a

View Text Solution

27. Which of the following configurations represent atoms of elements having the highest second ionisation energy?

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

B. $1s^2 2s^2 2p^6$

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

D. $1s^2 2s^2 2p^6 3s^2$

Answer: c

View Text Solution

28. The radii of the F, F^-, O and O^{2-} are in the order ....

A. $O^{2-} > O > F^{-} > F$

B. $F^{-} > O^{2-} > F > O$

C. $O^{2-} > F^{-} > F > O$

D. $O^{2-} > F^{-} > O > F$

Answer: d

View Text Solution

29. The ionic radii of N^{3-}, O^{2-}, F^{-} and Na^{+} follow the order.

A. $N^{3-} > O^{2-} > F^{-} > Na^{+}$

B. $N^{3-} > Na^{+} > O^{2-} > F^{-}$

C. $Na^{+} > O^{2-} > N^{3-} > F^{-}$

D. $O^{2-} > F^{-} > Na^{+} > N^{3-}$

Answer: a

View Text Solution

30. Assertion (A) : F atom has less negative electron gain enthalpy than Cl atom.

Reason (R) : Additional electrons are repelled more effectively by 3p-electrons in Cl atom than by 2p-electrons in F atom.

A. Both (A) and (R) are correct and (R) is the correct explanation of the (A).

B. Both (A) and (R) are correct and (R) is not the correct explanation of the (A).

C. (A) is correct and (R) is incorrect.

D. Both (A) and (R) are incorrect.

Answer: c

View Text Solution

31. Which of the following has maximum ionization potential ?

A. Be

B. K

C. Na

D. Mg

Answer: Be

View Text Solution

32. Point out the wrong statement. in a given period of the periodic table, the s-block elements has in general, a lower value of.....

A. Electronegativity

B. Atomic radius

C. Ionization energy

D. Electron affinity

Answer: b

View Text Solution

33. Which one is the correct order of ionic radii of following ions ?

A. $Ti^{4+} < Mn^{7+}$

B. $._{}^{35}Cl < ._{}^{37}Cl$

C. $K^{+} > Cl^{-}$

D. $P^{3+} > P^{5+}$

Answer: d

View Text Solution

34. Which of the following is the smallest cation ?

A. Na^{+}

B. Mg^{2+}

C. Ca^{2+}

D. Al^{3+}

Answer: d

View Text Solution

35. The correct order of radii is.....

A. $N < Be < B$

B. $F^- < O^{2-} < N^{3-}$

C. $Na < Li < K$

D. $Fe^{3+} < Fe^{2+} < Fe^{4+}$

Answer: b

View Text Solution

36. Which one of the following is the correct order of inoic radii ?

A. $Na^+ < Mg^{2+} < Al^{3+} < Si^{4+}$

B. $Al^{3+} < Si^{4+} < Na^+ < Mg^{2+}$

C. $Si^{4+} < Al^{3+} < Mg^{2+} < Na^+$

D. $Mg^{2+} < Na^+ < Si^{4+} < Al^{3+}$

Answer: c

View Text Solution

37. Which of the following sets of atomic number belong to that of alkali metals ?

A. 1, 12, 30, 4, 62

B. $37, 19, 3, 55$

C. $9, 17, 35, 53$

D. $12, 20, 56, 88$

Answer: b

View Text Solution

38. The set representing the correct order of first ionization potential is.....

A. $K > Na > Li$

B. $Be > Mg > Ca$

C. $B > C > N$

D. $Ge > Si > C$

Answer: b

View Text Solution

39. Element with atomic number 56 belong to which block.

A. s

B. p

C. d

D. f

Answer: a

View Text Solution

40. Identify the least stable ion amongst the following.

A. Li^-

B. Be^-

C. B^-

D. C^-

Answer: b

View Text Solution

41. Chloride ion and potassium ion are isoelectronic, then

A. Their sizes are same

B. Cl^- ion is bigger than K^+ ion

C. K^+ ion is relatively bigger than Cl^- ion

D. Their sizes depend on other positive ions and negative ions

Answer: b

View Text Solution

42. The arrangement of decreasing sizes of H^+, H^- and H is.....

A. $H^+ > H > H^-$

B. $H > H^- > H^+$

C. $H^- > H^+ > H$

D. $H^- > H > H^+$

Answer: d

View Text Solution

43. The highly metallic element will have the configuration of....

A. $2, 8, 7$

B. $2, 8, 8, 5$

C. $2, 8, 8, 1$

D. $2, 8, 2$

Answer: c

View Text Solution

44. Number of elements present in 5th period is.....

A. 8

B. 18

C. 32

D. 24

Answer: b

View Text Solution

45. Which group of the periodic table contains only metals

A. IIA

B. IB

C. IA

D. All of these

Answer: d

View Text Solution

46. Which is the correct order of electron gain enthalpy ?

A. $N < O < Cl < Al$

B. $O < N < Al < Cl$

C. $Al < N < O < Cl$

D. $Cl < N < O < Al$

Answer: c

View Text Solution

47. Increasing order of electronegativity of elements P, Bi, S and Cl is

A. $P < Bi < S < Cl$

B. $S < Bi < P < Cl$

C. $Bi < P < S < Cl$

D. $Cl < S < Bi < P$

Answer: c

View Text Solution

48. General electronic configuration of outermost orbit of d-block element is ...

A. $(n-1)d^{1-10}ns^{1-2}$

B. $(n-1)d^{1-10}ns^{2}$

C. $(n-2)d^{1-10}ns^{2}$

D. $nd^{1-10}ns^{1-2}$

Answer: a

View Text Solution

49. For electron affinity of halogen which of the following is correct?

A. $Br > F$

B. $F > Cl$

C. $Br > Cl$

D. $F > I$

Answer: d

View Text Solution

50. The electronic configuration of outermost shell of the most electronegative element is

A. ns^2np^3

B. ns^2np^4

C. ns^2np^5

D. ns^2np^6

Answer: c

View Text Solution

51. Assertion (A) : First ionization enthalpy of nitrogen is lower than that of oxygen.

Reason (R) : Across a period effective nuclear charge decreases

Correct answer is,

A. Both (A) and (R) are correct and (R) is the correct explanation of the (A)

B. Both (A) and (R) are correct and (R) is not the correct explanation of the (A)

C. (A) is correct and (R) is incorrect

D. Both (A) and (R) are incorrect

Answer: d

View Text Solution

52. Among the following transition elements, pick out the element/elements with highest second ionisation energy

A. V(At. No = 23)

B. Cr (At. No =24)

C. Mn (At. No = 29)

D. Zn (At. No = 30)

Answer: b

View Text Solution

53. The first ionisation energy of oxygen is less than that of nitrogen. Which of the following is the correct reason for this observation ?

A. Lasser effective nuclear charge of oxygen than nitrogen.

B. Lasser atomic size of oxygen than nitrogen.

C. Greater inter-electron repulsion between two electrons in the same p orbital counter balances the increase in

effective nuclear charge on moving from nitrogen to oxygen.

D. Greater effective nuclear charge of oxygen than nitrogen.

Answer: c

View Text Solution

54. The correct match of contents in column-I with those in column-II is .....

Column-I	Column-II
(1) He	(a) High (–)ve electron gain enthalpy
(2) Cl	(b) Most electropositive element
(3) Ca	(c) Strongest reducing agent
(4) Li	(d) Highest ionization enthalpy

A. $1-c, 2-a, 3-b, 4-d$

B. $1-d, 2-a, 3-b, 4-c$

C. $1-b, 2-d, 3-a, 4-c$

D. $1-a, 2-b, 3-c, 4-d$

Answer: b

View Text Solution

Section C Mcqs Asked In Jee Neet Aieee

1. Which of the following elements has the highest ionisation energy

A. $[Ne]3s^2 3p^1$

B. $[Ne]3s^2 3p^2$

C. $[Ne]3s^2 3p^3$

D. $[Ar]3d^{10} 4s^2 4p^2$

Answer: c

View Text Solution

2. Which one of the following has largest size?

A. Na

B. Na^{+}

C. Na^{-}

D. None of these

Answer: c

View Text Solution

3. A sudden large jump between the value of second and third ionisation energies of elements would be associated with which of the following electronic configurations ?

A. $1s^2 2s^2 2p^6 3s^1$

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

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

D. $1s^2 2s^2 2p^6 3s^2$

Answer: d

View Text Solution

4. The electronic configuration of Gadolinium (atomic number 64) is.....

A. $[xe]4f^{8}5d^{9}6s^{2}$

B. $[xe]4f^{7}5d^{1}6s^{2}$

C. $[xe]4f^{9}5d^{5}6s^{2}$

D. $[xe]4f^{6}5d^{2}6s^{2}$

Answer: b

View Text Solution

5. The first ionization potential (eV) of Be and B respectively are.....

A. $8.29, 9.32$

B. $9.32, 8.29$

C. $9.32, 9.32$

D. $8.29, 8.29$

Answer: b

View Text Solution

6. Which of the following order for ionization energy is correct?

A. $Be > B > C > N > O$

B. $B < Be < C < O < N$

C. $B < Be < N < C < O$

D. $B < Be < N < C < O$

Answer: b

View Text Solution

7. Which of the following is most electronegative ?

A. carbon

B. silicon

C. lead

D. tin

Answer: a

View Text Solution

8. An element has electronic configuration $1s^2 2s^2 2p^6 3s^2 3p^4$. Predict their period , group and block :

A. Period = 3^{rd}, block = p, group = 16

B. Period = 5^{th}, block = s, group = 1

C. Period = 3^{rd} , block = p, group = 10

D. Period = 4^{th} , block = d, group = 12

Answer: a

View Text Solution

9. The correct order of atomic radii is....

A. $Na < Mg < Al < Si$

B. $Si < Al < Mg < Na$

C. $Na < Al < Si < Mg$

D. $Al < Si < Mg < Na$

Answer: b

View Text Solution

10. The set representing the correct order of first ionisation potential is...

A. $K > Na > Li$

B. $Be > Mg > Ca$

C. $B > C > N$

D. $Ge < Si > C$

Answer: c

View Text Solution

11. All the s-block elements of the periodic table are placed in the groups...

A. IA and IIA

B. IIIA and IVA

C. B sub groups

D. VA and VIIA

Answer: a

View Text Solution

12. If an atom has electronic configuration $1s^2 2s^2, 2p^6 3s^2 3p^6 3d^3 4s^2$ It will be placed in

A. Second group

B. Third group

C. Fifth group

D. Sixth group

Answer: c

View Text Solution

13. The position of the element with electronic configuration $1s^2 2s^2 2p^6 3s^2 3p^6 3d^3 4s^2$ is placed in the group ..... .

A. 3

B. 5

C. 2

D. 11

Answer: b

View Text Solution

14. The order of electron gain enthalpy (with negative sign) of F, Cl, Br and I is...

A. $F < Cl < Br < I$

B. $I < Br < F < Cl$

C. $F < Br < I < Cl$

D. $Br < I < Cl < F$

Answer: b

View Text Solution

15. Which of the following groupings represents collection of isoelectronic species?

(At. No. : Cs = 55, Br = 35)

A. Na^+, Ca^{2+}, Mg^+

B. N^{3-}, F^-, Na^+

C. Be, Al^{3+}, Cl^-

D. Ca^{2+}, Cs^+, Br

Answer: b

View Text Solution

16. According to periodic law of elements the variation in properties of elements is related to their.

A. Nuclear neutron-proton number ratio

B. Atomic masses

C. Nuclear masses

D. Atomic number

Answer: d

View Text Solution

17. Which of the following sets of ions represents the collections of isoelectronic species?

A. $K^+, Ca^{2+}, Sc^{3+}, Cl^-$

B. $Na^+, Mg^{2+}, Al^{3+}, Cl^-$

C. $K^+, Cl^-, Mg^{2+}, Sc^{3+}$

D. $Na^+, Ca^{2+}, Sc^{3+}, F^-$

Answer: a

View Text Solution

18. Which of the following ion has the highest value of ionic radius?

A. Li^+

B. F^-

C. O^{2-}

D. B^+

Answer: c

View Text Solution

19. The formation of the oxide ion $\left(O^{2-}_{(g)}\right)$ require first an exothermic and then an endothermic step as shown below

$O_{(g)} + \bar{e} \rightarrow O^-_{(g)}, \Delta H^0 = -142 \text{ kJ mol}^-$

$O^-_{(g)} + \bar{e} \rightarrow O^{2-}_{(g)}, \Delta H^0 = 844 \text{ kJ mol}^-$

This is because

A. Oxygen is more electronegative.

B. O^- has comparatively larger size than oxygen atom.

C. O^- ion will tend to resists the addition of another electron.

D. Oxygen has high electron affinity .

Answer: c

View Text Solution

20. In which of the following arrangements the order is not according to the property indicated against it?

A. $Al^{3+} < Mg^{2+} < Na^+ < F^-$ - increasing ionic size

B. $B < C < N < O$ - increasing first ion ization enthalpy

C. $I < Br < F < Cl$ - increasing electron gain enthalpy

D. $Li < Na < K < Rb$ - increasing metallic radius

Answer: b

View Text Solution

21. Which one of the following sets of ions represents a collection of isoelectronic species?

A. $Ba^{+2}, Sr^{+2}, K^{+}, Ca^{+2}$

B. $N^{-3}, O^{-2}, F^{-1}, S^{-2}$

C. $Li^{+}, Na^{+}, Mg^{+2}, Ca^{+2}$

D. $K^{+}, Cl^{-1}, Ca^{+2}, Sc^{+3}$

Answer: d

View Text Solution

22. The increasing order of first ionization enthalpies of the elements B, P, S and F (lowest first) is .....

A. $P < S < B < F$

B. $F < S < P < B$

C. $B < S < P < F$

D. $B < P < S < F$

Answer: c

View Text Solution

23. Identify the correct order of the size of the following:

A. $Ca^{2+} < K^{+} < Ar < S^{2-} < Cl^{-}$

B. $Ca^{2+} < K^{+} < Ar < Cl^{-} < S^{2-}$

C. $Ar < Ca^{+} < K^{+} < Cl^{-} < S^{2-}$

D. $Ca^{2+} < Ar < K^{+} < Cl^{-} < S^{2-}$

Answer: b

View Text Solution

24. Which one of the following constitutes a group of the isoelectronic species?

A. $CN^{-1}, N_2, O_2^{-2}, O_2^{-2}$

B. $N_2, O_2^{-1}, NO^{+}, CO$

C. $NO^+, C_2^{-2}, CN^{-1}, N_2$

D. $NO^+, C_2^{-2}, CN^{-1}, N_2$

Answer: d

View Text Solution

25. The set representing the correct order of ionic radii is .....

A. $Li^+ > Be^{2+} > Na^+ > Mg^{2+}$

B. $Na^+ > Li^+ > Mg^{2+} > Be^{2+}$

C. $Li^+ > Na^+ > Mg^{2+} > Be^{2+}$

D. $Mg^{2+} > Be^{2+} > Li^+ > Na^+$

Answer: b

View Text Solution

26. The correct sequence which shows decreasing order of the ionic radii of the elements is.....

A. $Na^{+} > F^{-} > Mg^{+2} > O^{-} > Al^{+3}$

B. $O^{-2} > F^{-} > Na^{+} > Mg^{+2} > Al^{+3}$

C. $Al^{+3} > Mg^{+2} > Na^{+} > F^{-} > O^{-2}$

D. $Na^{+} > Mg^{+2} > Al^{+3} > O^{-2} > F^{-1}$

Answer: b

View Text Solution

27. The increasing order of the ionic radii of the given isoelectronic species is :

A. $Cl^-, Ca^{2+}, K^+, S^{2-}$

B. $S^{2-}, Cl^-, Ca^{2+}, K^+$

C. $Ca^{2+}, K^+, Cl^-, S^{2-}$

D. $K^+, S^{2-}, Ca^{2+}, Cl^-$

Answer: c

View Text Solution

28. Which one of the following represents the correct order of increasing first ionization enthalpy of Ca, Ba, S, Se and Ar ?

A. $Ca < S < Ba < Ase < Ar$

B. $S < Se < Ca < Ba < Ar$

C. $Ba < Ca < Se < S < Ar$

D. $Ca < Ba < S < Se < Ar$

Answer: c

View Text Solution

29. The formation of oxide ion, $O^{2-}_{(g)}$ from oxygen atom require first an exothermic and then an endothermic step as show below :

$O_{(g)} + \bar{€} \rightarrow O^{-}_{(g)}, \Delta_f^{(-)} = -141 kJmol^{-1}$

$O_{(g)} + \bar{€} \rightarrow O^{2-}_{(g)}, \Delta_f^{(-)} = +780 kJmol^{-1}$

The process of formation of O^{2-} in gas phase is unfavourable even though O^{2-} is isoelectronic with neon. It is clue to the fact that,

A. Oxygen is more electronegative.

B. Addition of electron in oxygen results inlarger size of the ion.

C. Electron repulsion overweights the stabilitygained bachieving noble gas configuration.

D. O^- has comparatively size that Oxygen atom.

Answer:

View Text Solution

30. The angular momentum of electron in 'd' orbials is equal to:

A. $\sqrt{2}h$

B. $\sqrt{\frac{2}{3}}$h

C. $0h$

D. $\sqrt{6}h$

Answer: d

View Text Solution

31. The number of d-electrons in $Fe^{2=}(Z=26)$ is not equal to the number p of electrons in which one of the following?

A. p-electrons inCl (Z= 17)

B. d - electrons in Fe (Z = 26)

C. p- electrons in Ne (Z = 10)

D. s - electrons in Mtg (Z = 12)

Answer: a

View Text Solution

32. The species Ar, K^+ and Ca^{2+} contain the same number of electrons. In which order do their radii increase ?

A. $Ca^{2+} < Ar < K^+$

B. $Ca^{2+} < K^+ < Ar$

C. $K^+ < Ar < Ca^{2+}$

D. $Ar < K^+ < Ca^{2+}$

Answer: b

View Text Solution

33. Which of the following atoms has the highest first ionization energy?

A. Sc

B. Rb

C. Na

D. K

Answer: a

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34. In the following reactions, ZnO is respectively acting as a/an.....

(a) $ZnO + Na_2O \rightarrow Na_2ZnO_2$

(b) $ZnO + CO_2 \rightarrow ZnCO_3$

A. base and acid

B. base and base

C. acid and base

D. acid and base

Answer: d

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Section C Mcqs Asked In Board Exam

1. (i) In a period, atomic radius decreases and ionization enthalpy increases with the increase in atomic number of elements.

(ii) Electronegativity increases with increase in atomic radius.

(iii) Metallic properly decreases with decrease in electronegativity.

(iv) Atomic radius generally increases with increase in metallic

property of elements.

If (T) stands for true and (F) for false statement the which-one from following is. true for above statements.

A. TFFT

B. TTFF

C. FTFF

D. TFFT

Answer: a

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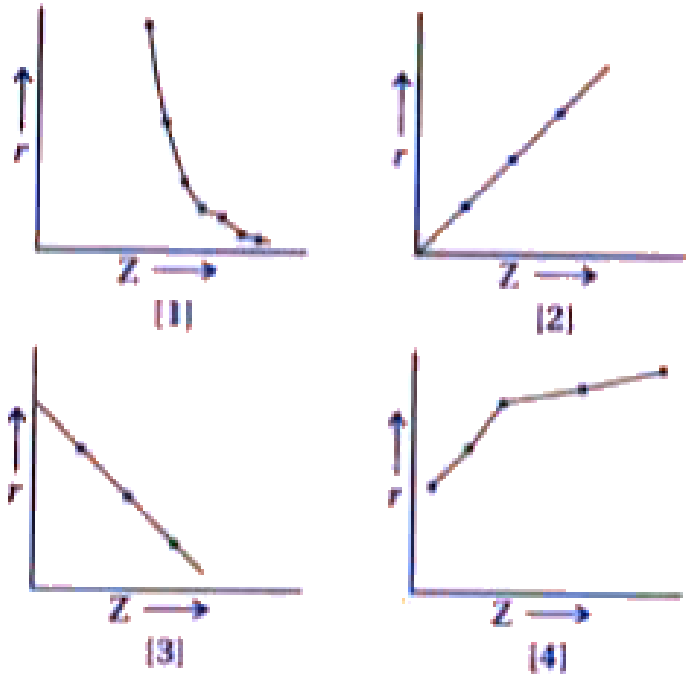
2. The graph of atomic number (Z) Vs atomic radius (r) is shown in figure 1, 2, 3 and 4



Which graph correctly represents the element of 2^{nd} period and 1^{st} group respectively. choose your options from below.

A. 1, 3

B. 1, 4

C. 4, 2

D. 2, 1

Answer: b

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3. In long form of periodic table, an element has electronic configuration $1s^2 2s^2 2p^6 3s^2 3p^3$. Thus what will be the atomic number of element which is just below this element in its group ?

A. 23

B. 16

C. 33

D. 47

Answer: c

View Text Solution

4. Which element is most electropositive and most electronegative respectively ?

A. K, Cl

B. Na. I

C. Cs, F

D. Na. F

Answer: c

View Text Solution

5. The correct order of radius of given ions is :

A. $O^2 > F^-, S^{2-}, Cl^-$

B. $S^{2-} > O^{2-} F^- > Cl^-$

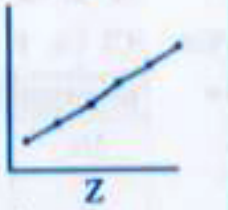
C. $S^{2-} > Cl^{-} > O^{2-} > F^{-}$

D. $S^{2-} > Cl^{-} > O^{2-} > F^{-}$

Answer: d

View Text Solution

6. Periodic properties of 2^{nd} period in Section-I and Section-II is related graph. Select proper option from the following:

Section-I	Section-II
(P) Ionization enthalpy	(1) 
(Q) Atomic volume	(2) 
(R) Positive oxidation state	(3) 
	(4) 

A. $P \rightarrow 1, Q \rightarrow 2, R \rightarrow 3$

B. $P \rightarrow 4, Q \rightarrow 1, R \rightarrow 3$

C. $P \rightarrow 2, Q \rightarrow 3, R \rightarrow 4$

D. $P \rightarrow 4, Q \rightarrow 2, R \rightarrow 3$

Answer: b

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7. Identify the element of group 16th and 4th period.

A. Se

B. As

C. Po

D. Te

Answer: a

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8. Which elements have the electronic configuration ns^2np^4 in their outer most orbit?

A. Inert gases

B. Chalcogens

C. Halogen

D. Inner transition elements

Answer: b

View Text Solution

9. Uup means having atomic number of element is.....

A. 105

B. 113

C. 115

D. 103

Answer: c

View Text Solution

10. The atomic number of Rb is less than that of

A. Na

B. Kr

C. Cs

D. K

Answer: c

View Text Solution

11. Which of the following has the smallest size?

A. Al^{+2}

B. Al^{+}

C. Al^{+3}

D. Al

Answer: c

View Text Solution

12. Which of the following oxide is basic ?

A. Na_2O

B. P_4O_{10}

C. CO_2

D. Al_2O_3

Answer: a

View Text Solution

13. Which of the following have same number of electron in the outer most orbit?

A. Sb, Te

B. N, O

C. As, Bi

D. Pb, Sb

Answer: c

View Text Solution

14. Order of ionization enthlphy in second period of the following is true.

A. $Li < B < Be < N < C$

B. $Li < B < Be < C < C$

C. $Li < Be < B < N < C$

D. $Li < Be < B < C < N$

Answer: b

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15. Select correct option for correct statement T and for false statement F for following statement.

(1) Accepting the electronegativity of Lithium atom as unity, with relative other elements electronegativity is considered.

(2) In fluorine compound oxidation number is $+ve \text{ and } -ve$ both is possible.

(3) In group 14, it gives oxide of MO_2 types

(4) By increasing atomic number in periodic table always metallic character increase.

A. TFTF

B. TFFT

C. FFFT

D. TTTF

Answer: A

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16. Identify the Lanthanide series.

A. $Z = 90 \text{ to } Z = 103$

B. $Z = 58 \text{ to } Z = 71$

C. $Z = 40 \text{ to } Z = 48$

D. $Z = 72 \text{ to } Z = 80$

Answer: b

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17. Which is not suitable for atomic radius?

A. In each period as going from L.H.S. to R.H.S. is decreases.

B. Increases from top to bottom.

C. Increases with increase in positive charge on atom.

D. Increases with increase in principle quantum number.

Answer: c

View Text Solution

18. In which elements has high electronegativity ?

A. Chlorine

B. Oxygen

C. Fluorine

D. Sulphur

Answer: c

View Text Solution

19. In which element's have maximum shielding effect for outermost electron ?

A. Group-13, Period-2

B. Group-13, Period-3

C. Group-13, Period-5

D. Group-13, Period-4

Answer: c

View Text Solution

20. Give the general electron configuration of d-block and f - block elements respectively.

A. $(n-1)d^{1 \text{ to } 10}ns^2$ and $(n-2)f^n.(n-1)d^1ns^2$

B. $(n-1)d^{1 \text{ to } 10}ns^{1-2}$ and $(n-2)f^{n}.(n-1)d^{1}ns^{2}$

C. $(n-1)d^{1 \text{ to } 10}ns^{1-2}$ and $(n-2)f^{n+1}.ns^{2}$

D.

$(n-1)d^{1 \text{ to } 10}ns^{1-2}$ and $(n-2)f^{1-14}.(n-1)d^{0-1}.ns^{2}$

Answer: d

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21. Give atomic number and symbol of Unu and Unb.

A. 101 Md, 102 No

B. 101 Md, 110 Ds

C. 104 RF, 111 Rg

D. 105 Lr, 108 Hs

Answer: a

View Text Solution

22. Which is the actual order of ions with respect to ionic radius?

A. $N^{3-} > O^{2-} > F^{-} > Na^{+}$

B. $N^{3-} > Na^{+} > O^{2-} > F^{-}$

C. $O^{2-} > F^{-} > Na^{+} > N^{3-}$

D. $Na^{+} > O^{2-} > N^{3-} > F^{-}$

Answer: a

View Text Solution

23. What is the actual order of acidicity of following compounds ?

CO_2, CuO, CaO, H_2O

A. $CaO < CuO < H_2O < CO_2$

B. $CuO < CaO < H_2O < CO_2$

C. $H_2O < CO_2 < CuO < CuO$

D. $CaO < H_2O < CuO < CO_2$

Answer: b

View Text Solution

24. Generally valency of N, P, Cl is ..... .

A. 3, 2, 1

B. 1, 2, 3

C. 3, 3, 2

D. 3, 3, 1

Answer: d

View Text Solution

25. The elements of group - 16 and group - 17 are called as ..... and ..... respectively.

A. Halogens, Chalcogens

B. Chalcogens, Alkali

C. Chalcogens, Halogens

D. Halogens, Alkaline

Answer: c

View Text Solution

26. In the periodic table, with the increase in atomic number, the metallic character of an element.....

A. Decreases in a period and increases in a group.

B. Increases in a period and decreases in a group.

C. Increases both in a period and the group.

D. Decreases in a period and the group.

Answer: a

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27. The number of elements classified by Newland was .....

A. 72

B. 61

C. 66

D. 56

Answer: d

View Text Solution

28. Pair of elements having atomic numbers ..... possess same chemical properties.

A. 5, 18

B. 10, 22

C. 6, 20

D. 3, 11

Answer: d

View Text Solution

29. An element having electronic configuration $-[Ar]3d^3 4s^2$ belongs to .....

A. s-block

B. p-block

C. d-block

D. f-block

Answer: c

View Text Solution

30. Which of the following reactions require largest amount of energy?

A. $Ga^{2+}_{(g)} \rightarrow Ga^{3+}_{(g)} + e^-$

B. $Ga_{(g)} \rightarrow Ga^{+}_{(g)} + e^-$

C. $Ga^{+}_{(g)} \rightarrow Ga^{2+}_{(g)} + e^-$

D. All the reactions require same amount of energy.

Answer: a

View Text Solution

31. If M is element of group 2 and X is elements of group 17, then which type of compound will be formed ?

A. MX_2

B. MX

C. M_2X

D. M_2X_3

Answer: a

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32. Elements X, Y and Z have atomic numbers 7,15 and 33 respectively. Which of the following statements is correct?

A. Atomic size of X is greater than that of Y atom.

B. Order of ionic size is $X^- > Y^- > Z^-$

C. Z element has bigger atomic size

D. Atomic size of element X is between atomic sizes of elements Y and Z.

Answer: c

View Text Solution

33. Which graph of Moseley suggests that properties of elements depend upon atomic number?

A. $v^2 \rightarrow Z$

B. $\sqrt{v} \rightarrow Z$

C. $v^2 \rightarrow A$

D. $\sqrt{v} \rightarrow A$

Answer: b

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34. Reactivity towards chemical reactions is very low for elements of group-18 because

A. they have stable electronic configuration in outermost shell.

B. they do not gain or lose electrons.

C. all the orbitals of outermost orbit are completely filled.

D. all of the above

Answer: d

View Text Solution

35. Which is the correct order of ionic radii given below?

A. $Ca^{2+} > K^{+} > Cl^{-} > S^{2-} > P^{3-}$

B. $P^{3-} > S^{2-} > Cl^{-} > Ca^{2+} > K^{+}$

C. $K^{+} > Ca^{2+} > Cl^{-} > S^{2-} > P^{3-}$

D. $P^{3-} > S^{2-} > Cl^{-} > K^{+} > Ca^{2+}$

Answer: d

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36. Choose the correct option :

T stands for True, F stands for False

(A) d-block elements are known as transition metals.

(B) Ionization enthalpy of $Be > B$.

(C) Elements of Group-1 exhibit only +1 oxidation state.

(D) Group 17 contains only gaseous elements

A. TFTF

B. TTTF

C. FTTT

D. TTFF

Answer: b

View Text Solution

37. Electronegativity of which element is one ?

A. H

B. F

C. O

D. Li

Answer: d

View Text Solution

38. Which order is true with reference to size of species?

A. $M^4 < M^{2+} < M$

B. $M < M^{2+} < M^{4+}$

C. $M^{2+} < M < M^{4+}$

D. $M < M^{2+} < M^{4+}$

Answer: a

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39. In modern periodic table, if an element has electronic configuration $1s^2, 2s^2, 2p^6, 3s^2, 3p^4$, then what will be the atomic number of element, which is just below the element in its group ?

A. 18

B. 34

C. 45

D. 24

Answer: b

View Text Solution

40. The elements with highest ionization enthalpy in a period are ..... .

A. Halogens

B. Noble gases

C. Lanthanides

D. Alkaline earth metals

Answer: b

View Text Solution

Section D Section D Solutions Of Ncert Exemplar Problems Multiple Choice Questions Mcqs

1. Consider the isoelectronic species, Na^+, Mg^{2+}, F^- and O^2. The correct order of increasing length of their radii is .....

A. $F^- < O_2^- < Mg^{2+} < Na^+$

B. $Mg^{2-} < Na^{+} < F^{-} < O^{2-}$

C. $O^{2-} < F^{-2} < Na^{+} < Mg^{2+}$

D. $O^{2-} < F^{-} < Mg^{2+} < Na^{+}$

Answer: B

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Section D Solutions Of Ncert Exemplar Problems Multiple Choice Questions Mcqs

1. Which of the following is not an actinoid ?

A. Curium (Z = 96)

B. Californium (Z =98)

C. Uranium (Z = 92)

D. Terbium (Z = 65)

Answer: D

View Text Solution

2. The order of screening effect of electrons of s, p, d and f orbitals of a given shell of an atom on its outer shell electrons is :

A. $s > p > d > f$

B. $f > d > p > s$

C. $p < d < s > f$

D. $f > p > s > d$

Answer: A

View Text Solution

3. The first inoisation enthalpies of Na, Mg AI and Si arein the order :

A. $Na < Mg > Al < Si$

B. $Na > Mg > Al > Si$

C. $Na < Mg < Al < Si$

D. $Na < Mg < Al < Si$

Answer: A

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4. The electronic configuration of gadolinium (Atomic number 64) is

A. $[Xe]4f^{3}5d^{5}6s^{2}$

B. $[Xe]4f^{7}5d^{2}6s^{1}$

C. $[Xe]4f^{7}5d^{1}6s^{2}$

D. $[Xe]4f^{8}5d^{6}6s^{2}$

Answer: C

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5. The statement that is not correct for periodic classification of elements is :

A. The properties of elements are periodic function of their atomic numbers.

B. Non-metallic elements are less in number than metallic elements.

C. For transition elements, the 3d-orbitals are filled with electrons after 3p-orbitals and before 4s-orbitals

D. The first ionisation enthalpies of elements generally increase with increase in atomic number as we go along a period.

Answer: C

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6. Among halogens, the correct order of amount of energy released in electron gain (electron gain enthalpy) is :

A. $F > Ci > Br > I$

B. $F < CI < Br < I$

C. $F < CI > Br > I$

D. $F < CI < Br < I$

Answer: C

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7. The period number in the long form of the periodic table is equal to...

A. magnetic quantum number any element of the period.

B. atomic number of any element of the period.

C. maximum principal quantum number of any element of the period

D. maximum azimuthal quantum number of any element of the period.

Answer: C

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8. The elements in which electrons are progressively filled in 4f-orbital are called

A. actinoids

B. transition elements

C. lanthanoids

D. halogens

Answer: C

View Text Solution

9. Which of the following is the correct order of size of the given species :

A. $I > I^- > I^+$

B. $I^+ > I^- > I$

C. $I > I^+ > I^-$

D. $I^- > I > I^+$

Answer: D

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10. The formation of the oxide ion, $O^{2}_{(g)}$ from oxygen atom requires first an exothermic and then an endothermic step. as shown below:

$$O_{(g)} + e^{-} \rightarrow O_{(g)} \quad \Delta H^{\Theta} = -141 \text{kJmol}^{-1}$$
$$O^{-}_{(g)} + e^{-} \rightarrow O^{2-}_{(g)} \quad \Delta H^{\Theta} = +780 \text{kJ mol}^{-1}$$

Thus, process of formation of O^{2-} in gas phase is unfavourable even though O^{2-} is isoelectronic with neon. It is due to the fact that,

A. oxygen is more electronegative.

B. addition of electron in oxygen results in larger size of the ion.

C. electron repulsion outweighs the stability gained by achieving noble gas configuration.

D. O-ion has comparatively smaller size than oxygen atom.

Answer: C

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11. Comprehension given below is followed by some multiple choice questions. Each question has one correct option. Choose the correct option.

In the modern periodic table, elements are arranged in order of increasing atomic numbers which is related to the electronic configuration. Depending upon the type of orbitals receiving the last electron, the elements in the periodic table have been divided into four blocks, viz, s, p, d and f. The modern periodic table consists of 7 periods and 18 groups. Each period begins with the filling of a new energy shell. In accordance with the Aufbau principle, the seven periods (1 to 7) have 2, 8, 8, 18, 18, 32 and 32 elements respectively. The seventh period is still

incomplete. To avoid the periodic table being too long, the two series of f-block elements, called lanthanoids and actinoids are placed at the bottom of the main body of the periodic table.

(i) The element with atomic number 57 belongs to

A. s-block

B. p-block

C. d-block

D. f-lock

Answer: C

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12. Comprehension given below is followed by some multiple choice questions. Each question has one correct option. Choose

the correct option.

In the modern periodic table, elements are arranged in order of increasing atomic numbers which is related to the electronic configuration. Depending upon the type of orbitals receiving the last electron, the elements in the periodic table have been divided into four blocks, viz, s, p, d and f. The modern periodic table consists of 7 periods and 18 groups. Each period begins with the filling of a new energy shell. In accordance with the Aufbau principle, the seven periods (1 to 7) have 2, 8, 8, 18, 18, 32 and 32 elements respectively. The seventh period is still incomplete. To avoid the periodic table being too long, the two series of f-block elements, called lanthanoids and actinoids are placed at the bottom of the main body of the periodic table.

The last element of the p-block in 6th period is represented by the outermost electronic configuration.

A. $7s^2 7p^6$

B. $5f^{14}6d^{10}7s^{2}7p^{0}$

C. $4f^{14}5d^{10}6s^{2}6p^{6}$

D. $4f^{14}5d^{10}6s^{2}6p^{4}$

Answer: C

View Text Solution

13. Comprehension given below is followed by some multiple choice questions. Each question has one correct option. Choose the correct option.

In the modern periodic table, elements are arranged in order of increasing atomic numbers which is related to the electronic configuration. Depending upon the type of orbitals receiving the last electron, the elements in the periodic table have been divided into four blocks, viz, s, p, d and f. The modern periodic

table consists of 7 periods and 18 groups. Each period begins with the filling of a new energy shell. In accordance with the Aufbau principle, the seven periods (1 to 7) have 2, 8, 8, 18, 18, 32 and 32 elements respectively. The seventh period is still incomplete. To avoid the periodic table being too long, the two series of f-block elements, called lanthanoids and actinoids are placed at the bottom of the main body of the periodic table.

Which of the elements whose atomic numbers are given below, cannot be accommodated in the present set up of the long form of the periodic table ?

A. 107

B. 118

C. 126

D. 102

Answer: C

View Text Solution

14. Comprehension given below is followed by some multiple choice questions. Each question has one correct option. Choose the correct option.

In the modern periodic table, elements are arranged in order of increasing atomic numbers which is related to the electronic configuration. Depending upon the type of orbitals receiving the last electron, the elements in the periodic table have been divided into four blocks, viz, s, p, d and f. The modern periodic table consists of 7 periods and 18 groups. Each period begins with the filling of a new energy shell. In accordance with the Aufbau principle, the seven periods (1 to 7) have 2, 8, 8, 18, 18, 32 and 32 elements respectively. The seventh period is still incomplete. To avoid the periodic table being too long, the two series of f-block elements, called lanthanoids and actinoids are

placed at the bottom of the main body of the periodic table.

The electronic configuration of the element which is just above the element with atomic number 43 in the same group is .....

A. $1s^2 2s^2 2p^6 3s^6 3p^6 3d^5 4s^2$

B. $1s^2 2s^2 2p^6 3s^6 3p^6 3d^5 4s^3$

C. $1s^2 2s^2 2p^6 3s^6 3p^6 3d^6 4s^2$

D. $1s^2 2s^2 2p^6 3s^6 3p^6 3d^7 4s^2$

Answer: A

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15. Comprehension given below is followed by some multiple choice questions. Each question has one correct option. Choose the correct option.

In the modern periodic table, elements are arranged in order of increasing atomic numbers which is related to the electronic configuration. Depending upon the type of orbitals receiving the last electron, the elements in the periodic table have been divided into four blocks, viz, s, p, d and f. The modern periodic table consists of 7 periods and 18 groups. Each period begins with the filling of a new energy shell. In accordance with the Aufbau principle, the seven periods (1 to 7) have 2, 8, 8, 18, 18, 32 and 32 elements respectively. The seventh period is still incomplete. To avoid the periodic table being too long, the two series of f-block elements, called lanthanoids and actinoids are placed at the bottom of the main body of the periodic table.

The elements with atomic numbers 35, 53 and 85 are all .....

A. noble gases

B. halogens

C. heavy metals

D. light metals

Answer: B

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16. Electronic configurations of four elements A, B, C and D are given below:

(A) $1s^2 2s^2 2p^6$ $(B) 1s^2 2s^2 2p^4$

(C) $s^2 2s^2 2p^6 3s^1$ $(D) 1s^2 2s^2 2p^5$

Which of the following is the correct order of increasing tendency to gain electron?

A. $A < C < B < D$

B. $A < B < C < D$

C. $D < B < C < A$

D. $D < A < B < C$

Answer: A

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Section D Solutions Of Ncert Exemplar Problems Mcqs More Than One Options

1. Which of the following elements can show covalency greater than 4 ?

A. Be

B. P

C. S

D. B

Answer: B::C

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2. Those elements impart colour to the flame on heating in it, the atoms of which require low energy for the ionisation (i.e., absorb energy in the visible region of spectrum). The elements of which of the following groups will impart colour to the flame ?

A. 2

B. 13

C. 1

D. 17

Answer: A::C

View Text Solution

3. Which of the following sequences contain atomic numbers of only representative elements ?

A. 3,33,53,87

B. 2,10,22,36

C. 7,17,25,37,48

D. 9,35,51,88

Answer: A::D

View Text Solution

4. Which of the following elements will gain one electron more readily in comparison to other elements of their group?

A. $S_{(g)}$

B. $Na_{(g)}$

C. $O_{(g)}$

D. $CI_{(g)}$

Answer: A::D

View Text Solution

5. Which of the following statements are correct?

A. Helium has the highest first ionisation enthalpy in the periodic table.

B. Chlorine has less negative electron gain enthalpy than fluorine.

C. Mercury and bromine are liquids at room temperature

D. In any period, atomic radius of alkali metal is the highest.

Answer: A::C::D

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6. Which of the following sets contain only isoelectronic ions ?

A. $Zn^{2+}, Ca^{2+}, Ga^{3+}, Al^{3+}$

B. $K^{+}, Ca^{2+}, Sc^{3+}, CL^{-}$

C. $P^{3-}, S^{2}, Cl^{-}, K^{+}$

D. $Ti^{4+}, Ar, Cr^{3+}, V^{5+}$

Answer: B::C

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7. In which of the following options order of arrangement does not agree with the variation of property indicated against it?

A. $Al^{3+} < Mg^{2+} < NA^{+} < F^{-}$ -(increasing ionic size)

B. $B < C < N < O$ (increasing first ionisation enthalpy)

C. $I < Br < CI < F$ (increasing electron gain enthalpy)

D. $Li < Na < K < Rb$ (increasing metallic radius)

Answer: B::C

View Text Solution

8. Which of the following have no unit?

A. Electronegativity

B. Electron gain enthalpy

C. Ionisation enthalpy

D. Metallic character

Answer: A::D

View Text Solution

9. Ionic radii vary in....

A. inverse proportion to the effective nuclear charge.

B. inverse proportion to the square of effective nuclear charge.

C. direct proportion to the screening effect

D. direct proportion to the square of screening effect.

Answer: A::C

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10. An element belongs to 3^{rd} period and group 13 of the periodic table. Which of the following properties will be shown by the element ?

A. Good conductor of electricity

B. Liquid, metallic

C. Solid, metallic

D. Solid, non-metallic

Answer: A::C

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Section D Solutions Of Ncert Exemplar Problems Short Answer Type Questions

1. Explain why the electron gain enthalpy of fluorine is less negative than that of chlorine.

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2. All transition elements are d-block elements, but all d-block elements are not transition elements. Explain.

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3. dentify the group and valency of the element having atomic number 119. Also predict the outermost electronic configuration and write the general formula of its oxide

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4. Among the elements B, AI, C and Si,

(a) which element has the highest first ionisation enthalpy?

(b) which element has the most metallic character ?

Justify your answer in each case.

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5. Write four characteristic properties of p-block elements.

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6. Choose the correct order of atomic radii of fluorine and neon (in pm) out of the options given below and justify your answer.

(i) 72, 160 (ii) 160, 160

(iii) 72, 72 (v) 160 ,72

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7. Illustrate by taking examples of transition elements and non-transition elements that oxidation states of elements are largely based on electronic configuration

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8. Nitrogen has positive electron gain enthalpy whereas oxygen has negative. However, oxygen has lower ionisation enthalpy than nitrogen. Explain.

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9. First member of each group of representative elements (i.e., s and p-block elements) shows anomalous behaviour. Illustrate with two examples.

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10. p-Block elements form acidic, basic and amphoteric oxides. Explain each property by giving two examples and also write the reactions of these oxides with water.

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11. How would you explain the fact that first ionisation enthalpy of sodium is lower than that of magnesium but its second ionisation enthalpy is higher than that of magnesium ?

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12. What do you understand by exothermic reaction and endothermic reaction? Give one example of each type.

View Text Solution

13. Arrange the elements N, P, O and S in the order of -

(i) increasing first ionisation enthalpy.

(ii) increasing non metallic character.

Give reason for the arrangement assigned.

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14. How does the metallic and non metallic character vary on moving from left to right in a period ?

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15. The radius of Na^+ cation is less than that of Na atom. Give reason.

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16. Among alkali metals which element do you expect to be least electronegative and why?

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Section D Solutions Of Ncert Exemplar Problems Matching The Columns

1. Match the correct atomic radius with the element.

Element	Atomic radius (pm)
Be	74
C	88
O	111
B	77
N	66

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2. Match the correct ionisation enthalpies and electron gain enthalpies of the following elements.

Elements		ΔH_1	ΔH_2	$\Delta_{eg}H$
(i) Most reactive non-metal	A.	419	3051	-48
(ii) Most reactive metal	B.	1681	3374	-328
(iii) Least reactive element	C.	738	1451	-40
(iv) Metal forming binary halide	D.	2372	5251	+48

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3. Electronic configuration of some elements is given in Column-I and their electron gain enthalpies are given in Column-II. Match the electronic configuration with electron gain enthalpy.

Column-I Electronic configuration	Column-II Electron gain enthalpy / kJ mol^{-1}
(i) $1s^2\ 2s^2\ sp^6$	(A) –53
(ii) $1s^2\ 2s^2\ 2p^6\ 3s^1$	(B) –328
(iii) $1s^2\ 2s^2\ 2p^5$	(C) –141
(iv) $1s^2\ 2s^2\ 2p^4$	(D) +48

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Section D Solutions Of Ncert Exemplar Problems Assertion And Reason

1. Assertion (A) : Generally, ionisation enthalpy increases from left to right in a period. Reason

(R) : When successive electrons are added to the orbitals in the same principal quantum level, the shielding effect of inner core of electrons does not increase very much to compensate for the increased attraction of the electron to the nucleus.

A. Assertion is correct statement and reason is wrong statement.

B. Assertion and reason both are correct statements and reason is correct explanation of assertion.

C. Assertion and reason both are wrong statements.

D. Assertion is wrong statement and reason is correct statement.

Answer:

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2. Assertion (A) : Boron has a smaller first ionisation enthalpy than beryllium Reason

(R): The penetration of a 2s electron to the nucleus is more than the 2p electron hence 2p electron is more shielded by the inner core of electrons than the 2s electrons.

A. Assertion and reason both are correct statements but reason is not correct explanation for assertion.

B. Assertion is correct statement but reason is wrong statement

C. Assertion and reason both are correct statements and reason is correct explanation for assertion.

D. Assertion and reason both are wrong statements.

Answer:

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3. Assertion (A): Electron gain enthalpy becomes less negative as we go down a group. Reason

(R) : Size of the atom increases on going down the group and the added electron would be farther from the nucleus.

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Section D Solutions Of Ncert Exemplar Problems Long Answer Type Questions

1. Discuss the factors affecting electron gain enthalpy and the trend in its variation in the periodic table.

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2. Define ionisation enthalpy. Discuss the factors affecting ionisation enthalpy of the elements and its trends in the periodic table.

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3. Justify the given statement with suitable examples- "the Properties of the elements are a periodic function of their

atomic numbers".

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4. Write down the outermostelectronic configuration of alkali metals. How Justify their placement in group 1 of the periodic table ?

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5. Write the drawbacks in Mendeleev's periodic table that led to its modification.

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6. In what manner is the long form of periodic table better than Mendeleef's periodic table ? Explain with examples.

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7. Discuss and compare the trend in ionisation enthalpy of the elements of group-1 with those of group-17 elements.

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