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CHEMISTRY

BOOKS - OMEGA PUBLICATION

THE P-BLOCK ELEMENTS

Questions

1. Give the general electronic configuration of group 13 elements.

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2. 'Is boric acid a protonic acid ? Explain.

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3. Gallium has unexpectdly less atomic radius than that of Al. Explain why ?

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4. Name five plants and their parts that we eat?

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5. What is back bonding ?

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6. Why boron does not form B^{3+} ion ?

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7. Why boron does not normally form ionic compounds ?

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8. Why boron mainly forms covalent compound ? Explain.

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9. What happens when boron is heated in air ?

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10. How group 13 elements react with halogens ?

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11. Boron trifluoride can easily reacts with NH_3. Explain why?

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12. BF_3 acts as a Lewis acid. Why ?

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13. How can you explain higher stability of BCl_3 as compared to $TICI_3$.

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14. Why does ammonia act as a lewis base?

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15. Boron is unable to form BF_6^{3-} ion. Explain.

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16. Write the iupac name and symbol of the element with atomic number 107.

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17. Complete the following reaction : $Na_2B_4O_7.10H_2O \xrightarrow{\Delta} ?$

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18. Orthoboric acid is

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19. What happens when orthoboric acid is heated above 370 K?

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20. Give the structure of boric acid.

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21. Why boric acid is considered as weak acid? .

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22. Explain the nature of boric acid as a Lewis acid in water.

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23. 'Is boric acid a protonic acid ? Explain.

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24. The number of electrons in Ca2+ is .....

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25. Is H_3BO_3 a tribasic acid ?

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26. What are boranes ?

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27. How diborane is prepared ?

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28. Write the iupac name and symbol of the element with atomic number 119.

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29. Write the symbol and electronic configuration of element with atomic number 3.

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30. How is borazine prepared ?

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31. What is borazine ?

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32. Explain what happens when borax is heated ?

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33. Write the symbol and electronic configuration of element with atomic number 11.

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34. Account for the fact that Aluminium chloride exists as a dimer.

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35. Anhydrous $AlCI_3$ is covalent in nature but hydrated $AlCl_3$ is ionic. Explain.

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36. Explain inert pair effect with example.

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37. Give the general chemical reactivity of group 14 elements with oxygen.

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38. What is catenation ? How this property varies down the group ?

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39. Write the symbol and electronic configuration of element with atomic number 19.

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40. Write the symbol and electronic configuration of element with atomic number 37.

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41. How is the structure of graphite?

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42. Why diamond is hard while graphite is soft ?

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43. Draw the lewis dot structure of the following molecules : methyl alcohol (CH_3OH)

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44. Why is graphite a good conductor of electricity?

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45. Give the different methods of preparation of carbon monoxide.

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46. Write the chemical composition of water gas.

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47. How is water gas prepared ?

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48. How is producer gas prepared ?

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49. What are fullerenes? How are they prepared ?

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50. How is excessive content of CO_2 responsible for global warming ?

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51. What happens when CO is heated with :

(i) ZnO (ii) Fe_2O_3 ?

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52. What are the effects of carbon monoxide?

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53. Account for the toxic nature of CO.

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54. Give the preparation of carbon dioxide.

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55. What is dry ice ?

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56. What is the commercial name of dry ice ?

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57. Give the structure of CO_2 molecule.

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58. What is carborundum ?

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59. Draw and discuss the structure of SiO_2

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60. CO_2 is gas but SiO_2 is solid at room temperature. Why?

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61. CCl_4 is not hydrolysed but $SiCl_4$ can be hydrolysed with water. Why ?

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62. Explain $PbCl_2$ is more stable than $PbCl_4$

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63. Compare the behaviour of BCl_3 and CCl_4, with water.

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64. Deficiency of which vitamin cause the disease- night blindness?

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65. $[SiF_6]^{-2}$ is known , but $[CF_6]^{-2}$ not formed . Explain.

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66. What are silicones ? How are they prepared ?

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67. What are silicates? Give their structure.

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68. Name two sugar producing plants?

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69. Name the two man made silicates.

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70. What are zeolites ? Write their general formula.

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71. What are the uses of zeolites ?

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Multiple Choice Questions Mcqs

1. Which of the following configuration is characteristic of group 13- elements ?

A. ns^2np^1

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

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

D. ns^2n^3.

Answer: A

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2. Which of the following element has the highest melting point ?

A. Aluminium

B. Gallium

C. Boron

D. Thallium

Answer: C

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3. The element which shows least metallic character

A. indium

B. boron

C. aluminium

D. gallium

Answer: C

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4. Group 13 elements show

A. $+1,\ +2$ and $+3$ oxidation states

B. both $+1$ and $+3$ oxidation states

C. only $+3$ oxidation state

D. only $+1$ oxidation state.

Answer: B

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5. The LE, among the group 13 members follows as

A. $B > Al > Ga > \text{In} > TC$

B. $B > AL > Ga > \text{In} < Te$

C. $B > Al < Ga > \text{In} < Te$

D. $B > Al > Ga > In > Te$

Answer: C

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6. The power of halides of.Boron to act as Lewis acids decreases in the order

A. $BF > BCl_3 > BBr_3$

B. $BBr_3 > BCl_3BF_3$

C. $BCl > BF_3 > BBr_3$

D. $BCl_3BBr_3BF_3$

Answer: B

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7. Which of the following is most acidic?

A. $B(OH)_3$

B. $Al(OH)_3$

C. $Ga(OH)_3$

D. $Tl(OH)_3$

Answer: A

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8. Compounds of Boron with hydrogen are known as

A. diboranes ,

B. boracids

C. boranes

D. borazoles

Answer: C

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9. The first ionisation energy of silicon is lower than that of

A. carbon

B. potassium

C. calcium

D. aluminium

Answer: A

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10. The stability of +2 oxidation state of Pb can be explained on the basis of

A. electronic configuration

B. resonance

C. inert pair effect

D. catenation

Answer: C

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11. Name the three products each provided by plants and animals?

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12. Halide that is not hydrolysed

A. $SiCl_4$

B. SiF_6

C. CCl_4

D. $PbCl_4$

Answer: C

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13. name three edible parts of plant?

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14. What is food?

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15. Define the term- Herbivores?

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16. What are carnivores?

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17. What are omnivores?

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18. Make a flow chart of preparation of honey?

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19. ATP molecule is:

A. B-Cl bond is more polar than N - Cl bond

B. N-Cl bond is more covlent that B - Cl bond

C. Nitrogen atom is smaller than boron atom

D. BCl_3 has no lone pair but NCl_3 has a lone pair of electrons .

Answer: D

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20. Explain the preparation of ghee with the help of flow chart?

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21. Give two examples of omnivorous animals?

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22. Which animal food we get from water resources?

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23. Inorganic graphite is.

A. $B_3N_3H_6$

B. B_3N_3

C. SIC

D. $Fe(CO)_5$

Answer: B

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24. CCl_4 is used as a fire extinguisher because

A. its m.p. is high

B. it forms covalent bond

C. its b.p. is low

D. it gives incombustible vapours

Answer: D

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25. Name a vitamin required for good eyesight and a mineral that helps to keep the bones healthy?

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26. Name two foods rich in fat?

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27. Amongst the following compounds, identify which are insoluble, partially soluble and highly soluble in water: chloroform

A. BlC_3

B. $AlCl_3$

C. $CHCl_2$

D. CO_2

Answer: B

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28. What is carborundum ?

A. calcium carbide

B. boron carbide

C. aluminium carbide

D. silicon carbide

Answer: A

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