



## CHEMISTRY

### BOOKS - CENGAGE CHEMISTRY (ENGLISH)

### P-BLOCK GROUP 18 ELEMENTS - THE INERT GASES

#### Illustration

1. Why are the elements of Group 18 known as noble gases ?



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2. (a) What prompted Bartlett in the discovery of noble gas compounds?

(b) The majority of noble gas compounds are those of xenon. Give reason.

(c) No chemical compound of He is known. Why?



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### Example

1.  $\text{XeF}_2$  has linear structure and not a bent structure, Give reason.



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## Exercises Linked Comprehension

1. Noble gases have completely filled valence shell i.e.  $ns^2np^6$  except He (i.e.). Noble gases are monatomic under normal conditions. The boiling point of the lighter noble gases are due to weak van der Waals forces between the atoms and absence of any intermolecular interactions. Xe reacts with  $F_2$  to give a series of fluorides namely  $XeF_2$ ,  $XeF_4$ ,  $XeF_6$  on complete hydrolysis gives  $XeO_3$ ,

Structure of  $XeF_4$  is

- A. Linear
- B. Square planar
- C. Tetrahedral

## D. Pyramidel

Answer: b



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2. Noble gases have completely filled valence shell i.e.  $ns^2np^6$  except He. Noble gases are monoatomic under normal conditions. Low boiling point of the lighter noble gases are due to weak van der Waals forces between the atoms and absence of any interatomic interactions. Xe reacts with  $F_2$  to give a series of fluorides mainly  $XeF_2$ ,  $XeF_4$ ,  $XeF_6$  on complete hydrolysis gives  $XeF_3$ ,

Oxidation state of Xe in  $XeF_2$  is

A. + 2

B. + 4

C. + 6

D. + 8

**Answer: a**



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3. Noble gases have completely filled valence shell i.e.  $m^2sp^2$  except He (i.e). Noble gases are monatomic under normal conditions. Low boiling point of the lighter noble gases are due to weak van der Waals forces between the atoms and absence of any intermolecular interactions. Xe

reacts with  $F_2$  so give a source of fluorine. Xenon forms compounds like  $XeF_2$ ,  $XeF_4$ ,  $XeF_6$ ,  $XeF_3$  on complete hydrolysis gives  $XeF_2$ ,  $XeF_4$ ,  $XeF_6$ ,  $XeF_3$ .

Argon is used in arc welding due to its

- A. Flammability
- B. zero
- C. Low reactivity with metal
- D. Lower the melting with metal

**Answer: c**



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4. Noble gases have completely filled valence shells i.e.  $m^2sp^2$  except He (i.e.) .Noble gases are monatomic under normal conditions .Low boiling point of the lighter noble gases are due to weak van der Waals forces between the atoms and absence of any intermolecular interactions  $Xe$  reacts with  $F_2$  to give a series of fluorides namely  $XeF_2, XeF_4, XeF_4, XeF_3$  on complete hydrolysis gives  $XeF_3,$

$XeF_4$  and  $XeF_4$  are expected to be

- A. Reducing
- B. Oxidising
- C. Inert
- D. Basic

**Answer: b**



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### Exercises Multiple Correct

1. The noble gases which do not form any clathrate

A. He

B. Ne

C. As

D. Kr

**Answer: a,b**



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2. Which of the following noble gases do not react with function

A. Kr

B. Xe

C. He

D. Ne

**Answer: a,d**



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3. The noble gases found dissolved in spring water are

A. He

B. Ne

C. Kr

D. Ar

**Answer: a,d**



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4.  $XeF_4$  on reaction with  $H_2$  gives

A.  $Xe$

B.  $HF$

C.  $XeF_2$

D.  $XeF_6$

**Answer: a,b**



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5. Which of the following compound cannot be prepared by direct between the constituent element?

A.  $XeF$

B.  $XeO_3$

C.  $XeF_4$



**Answer: b,d**



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**6.** Which of the following names are used for the group 18 elements?

A. Zero group elements

B. Aerogens

C. Noble gases

D. Chalcogens

**Answer: a,b,c**



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7. Which among the following statement is/are correct ?

- A.  $XeF_4$  and  $SbF_3$  combine to form salt
- B.  $He$  and  $Na$  do not form compounds
- C. He has highest boiling point in the group
- D. He diffuses through rubber

Answer: a,b,d



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Exercises Single Correct

1. Which of the following does not react with fluorine?

A. Kr

B. At

C. Xe

D. All of these

**Answer: b**



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2. Which species is not known?

A.  $XeF_6$



**Answer: d**



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**3. Xenon best react with**

A. the most electropositive element

B. the most electrogative element

C. the hydrogen halides

D. non-metals

**Answer: b**



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**4. Radon was discovered by**

A. Dorn

B. Ramsay

C. Rayleigh

D. none of these

**Answer: a**



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5. The noble gas used in the preparation of first noble gas compound was?

A. Xe

B. He

C. Cr

D. Rn

**Answer: a**



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6. Electron affinity for a noble gas is approximately equal to

- A. that of halogens
- B. zero
- C. that of oxygen family
- D. that of nitrogen family

**Answer: b**



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**7. First stable compound of inert gas was prepared by**

- A. Rayleigh and Ramsay
- B. Bartlett
- C. Frankland and Lockyer

D. Cavendish

**Answer: b**



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**8.** Which of the following gas mixture is used by divers for deep sea diving respiration is?

A.  $N_2 + O_2$  mixture

B.  $He + O_2$  mixture

C.  $Ar + O_2$  mixture

D. neon +  $O_2$  mixture

**Answer: b**



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9. Xenon difluoride is

- A. Linear
- B. angular
- C. trigonal
- D. pyramidal

**Answer: a**



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10. The rare gases are

A. monoatomic

B. diatomic

C. triatomic

D. polyatomic

**Answer: a**



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**11. The noble gases which do not form any clathrate**

A. Xe

B. Kr

C. He

D. Ar

**Answer: c**



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**12.** The forces of cohesion in liquid helium are

A. covalent

B. ionic

C. van der waals

D. metallic

**Answer: c**



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13. The lightest, non-inflammable gas is

A.  $H_2$

B.  $He$

C.  $N_2$

D. Ar

**Answer: d**



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14. The inert gas present in atmosphere are

A. He and Ne

B. He, Ne and Ar

C. He, Ne ,Ar and KR

D. He, Ne, Ar, Kr and Xe

**Answer: d**



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**15. percentage of argon in air is about**

A. 10 per cent

B. 0.1 per cent

C. much less then 0.1 per cent

D. 1 per cent

**Answer: d**



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**16.** Inert gases such as helium behave like ideal gases over a wide range of temperature. However, they condense into the solid state at very low temperatures. It indicates that at very low temperature there is a

- A. weak attractive force between the atoms
- B. weak repulsive force between the atoms
- C. strong attractive force between the atoms
- D. strong repulsive attractive between the atoms

**Answer: b**



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**17.** The gas used for inflating the tyres of aeroplanes is :

A.  $H_2$

B.  $He$

C.  $N_2$

D.  $Ar$

**Answer: b**



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**18.** Major credit for the discovery of noble gases is given to

- A. Cavendish
- B. Ramsay
- C. Rayleigh
- D. None of these

**Answer: b**



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**19.** Helium was discovered by

- A. Frank land and Lockyer

B. Rayleigh

C. Ramsay

D. None of these

**Answer: a**



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**20.** Argon was discovered by

A. Cavendish

B. Lavoisier

C. Rayleigh

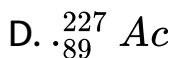
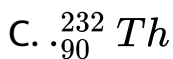
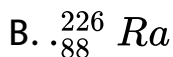
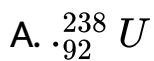
D. Thomson

**Answer: b**



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**21.** A radioactive element  $X$  decays to give two inert gases  
 $X$  is



**Answer: b**



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22. Which gas is filled in element bulbs/tubes?

A.  $O_2$

B.  $N_2$

C.  $Ar$

D.  $He$

**Answer: c**



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23. In colour discharge tubes, which is used?

A. Ne

B. Ar

C. Kr

D. He

**Answer: b**



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**24.** The fluoride which does not exist is

A.  $CF_4$

B.  $SF_6$

C.  $HeF_4$

D.  $XeF_4$

**Answer: c**



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**25. Which shows the least chemical reactivity?**

A. Ammonia

B. Methane

C. Argon

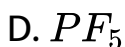
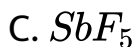
D. Hydrogen sulphide

**Answer: c**



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26. The non-existent species is

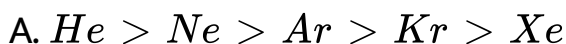


Answer: a



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27. The ease of liquefaction of noble gases decreases in the order



B.  $Xe > Kr > Ar > Ne > He$

C.  $Kr > Xe > He > Ar > Ne$

D.  $Ar > Kr > Xe > He > Ne$

**Answer: b**



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**28.** Compounds formed when the noble gases get entrapped in the cavities of crystal lattices of certain organic and inorganic compounds are known as

A. interstitial compounds

B. Clathrates

C. Hydrates

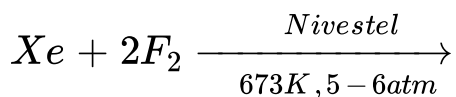
D. Picrates

**Answer: b**



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29. Which compound is prepared by the following reaction



(1:5 volumeratio)

A.  $\text{XeF}_2$

B.  $\text{XeF}_6$

C.  $\text{XeF}_4$

D.  $XeOF_2$

**Answer: c**



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**30.** The two electrons in helium atom

- A. occupy different shells
- B. have different spins
- C. have the same spins
- D. occupy different subshells of the same subshell

**Answer: d**



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**31.** Which is called stranger gas ?

A. Kr

B. Xe

C. He

D. Ne

**Answer: b**



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**32.** Helium gives a characteristic spectrum with

A. orange and red lines

B. orange lines

C. yellow line

D. green line

**Answer: c**



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**33.** Geometry and hybridisation of  $Xe$  in  $XeOF_4$  molecule is

A. square planar  $sp^3d^2$

B. square pyramidal  $sp^3d^2$

C. tetrahedral  $sp^3$

D. None of the above

**Answer: b**



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**34. Who observed helium first on the earth?**

A. Lothar meyer

B. Ramsay

C. Sheele

D. Rutherford

**Answer: b**



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**35.** The noble gas which behaves abnormally in liquid state is

A. Xe

B. Ne

C. He

D. Ar

**Answer: c**



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36. Noble gases do not occur in ....

A. nature

B. ores

C. atmosphere

D. sea water

**Answer: d**



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37.  $XeF_4$  exists as .... Under ordinary atmospheric conditions

A. solid

B. liquid

C. gas

D. none of these

**Answer: a**



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**38.** In order to prevent the hot metal filament from getting burnt, when the electric current is switched on, the bulb is filled with

A.  $CH_4$

B. an inert gas

C.  $CO_2$

D.  $CI_2$

**Answer: b**



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**39.** Radon is a noble gas , its radioactivity is used in the treatment of

A. typhoid

B. cancer

C. caught and cold

D. thyroid

Answer: b



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40. The idea which prompted Bartlett to prepare first ever compound of noble gas was

A. high bond energy of  $Xe - F$

B. low bond energy of  $F - F$  in  $F_2$

C. ionisation energies of  $O_2$  and xenon were almost similar

D. none of the above

**Answer: c**



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**41. Which of the following has zero valency?**

A. Be

B. Se

C. Li

D. Ar

**Answer: d**



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42. Helium is used in gas balloons instead of hydrogen because

- A. it is higher than  $H_2$
- B. it is none-combustible
- C. it is more abundant than  $H_2$
- D. its linkage can be detected easily

**Answer: b**



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43. A helium atom on losing an electron becomes

- A.  $\alpha$  — particle

B. hydrogen atom

C. positively charged helium ion

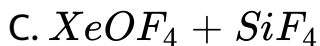
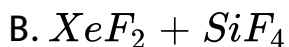
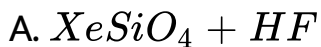
D. negatively charged helium ion

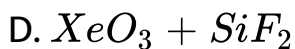
**Answer: c**



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**44.** What are the products formed in the reaction of xenon hexafluoride with silicon dioxide?





**Answer: c**



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45. Liquid flow from a higher to a level .Which of the following liquids can climb up the wall of the glass vessel in which it is placed ?

A. Alcohol

B. Liquid He

C. Liquid  $N_2$

D. water

**Answer: b**



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**46.** Remsay was awarded Noble Prize for the discovery of rare gases in

A. 1900

B. 1902

C. 1904

D. 1910

**Answer: c**



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**47.** Neon is extensively used in

- A. cold storage unit
- B. organic compounds
- C. medicines
- D. coloured electric discharge lamps

**Answer: d**



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**48.** The discovery of isotopes began with the experiments with

A. Xe

B. Kr

C. Ar

D. Ne

**Answer: d**



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**49.** Which statement about noble gases is not correct ?

A. a.  $Xe$  froms  $XeF_6$

B. b. Ar is used in electric bulbs

C. c. Kr is obtained during radioactive disintegration

D. d.He has the lowest boiling point among all the noble gases

**Answer: c**



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**50.** In solid argon , the atoms are held together by

- A. ionic bonds
- B. hydrogen bond
- C. van der waals forces
- D. hydrophobic forces

**Answer: c**



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**51.** The van der waals forces are the greater in

A. neon

B. argon

C. krypton

D. xenon

**Answer: d**



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**52.** Electronegativity of an inert gas is

A. high

B. low

C. negative

D. zero

**Answer: d**



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**53.** Which has the same electronic configuration as of inert gas ?

A.  $Ag^{3+}$

B.  $Cu^{2+}$

C.  $Pb^{4+}$

D.  $Ti^{4+}$

**Answer: d**



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**54.** Which of the following noble gas is not present in atmosphere ?

A. Rn

B. Kr

C. Ne

D. Ar

**Answer: a**



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**55. Which noble gas is more soluble in water ?**

A. He

B. Ar

C. Ne

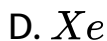
D. Xe

**Answer: d**



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56.  $\text{XeF}_6$  on completely hydrolysis gives

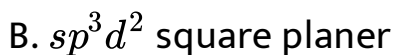


**Answer: a**



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57. Xenon tetrafluoride has hybridisation and structure as



C.  $sp^3d^2$  pyramidal

D.  $sp^3d^3$  octahedral

**Answer: b**



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**58.** Which noble gas has higher and least polarisability respectively ?

A. He,Xe

B. Ne,Kr

C. Kr,Ne

D. Xe,He

**Answer: d**



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**59. Which is monoatomic?**

A. Oxygen

B. Fluorine

C. Neon

D. Nitrogen

**Answer: c**



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60. In the clathrates of xenon with water the nature of bonding in Xe and  $H_2O$  molecule is

- A. covalent
- B. hydrogen bonding
- C. coordinate
- D. dipole-induced dipole

**Answer: d**



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61. Asthma patients use a mixture of .....for respiration

- A.  $O_2$  and  $H_2$

B.  $O_2$  and  $He$

C.  $O_2$  and  $Ar$

D.  $O_2$  and  $Ne$

**Answer: b**



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**62.** The solubility of noble gases in water shown the order

A.  $He > Ar > Kr > Na > Xe$

B.  $He > Na > Ar > Kr > Xe$

C.  $Xe > Kr > Ar > Na > He$

D. none of above

**Answer: c**



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**63.** Out of (i)  $XeO_3$  (ii)  $XeOF_4$  and (iii)  $XeF_6$  the molecules having same number of lone pairs on  $Xe$  are

A. (i) and (ii) only

B. (i) and (iii) only

C. (ii) and (iii) only

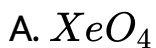
D. (i),(ii) and (iii) only

**Answer: d**



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64. Which is planar molecule ?



Answer: b



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65. Which of the following cannot be formed ?





**Answer: d**



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**66.** Helium is not used to fill gas balloons. True/False



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**67.** Which of the following is an explosive compound ?





**Answer: a**



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**68.** The idea which prompted Bartlett to prepare first ever compound of noble gas was

A. Low bond dissociation enthalpy of F-F in  $F_2$  molecule

B. High bond energy of  $Xe - F$

C. Ionisation enthalpies of  $O_2$  and  $Xe$  are almost same

D. none of the above

**Answer: c**



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**69.** Noble gases are also known as aerogens because

A. They occur in air

B. They are rarely found in atmosphere

C. They are most rarely found in atmosphere

D. none of the above

**Answer: a**



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70. Which of the following gas mixture is used by divers for deep sea diving respiration is?

- A. Nitrogens is much less soluble in blood than helium
- B. Helium is much less soluble in blood than nitrogen
- C. Nitrogen is highly soluble in water
- D. Due to high pressure deep under the sea nitrogen and oxygen react to give poisonous nitric oxide

**Answer: b**



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71. Percentage of argon in air is

- A. Nearly half as that of  $CO_2$
- B. Nearly half as that of  $CO_2$
- C. Nearly thirty times as that of  $CO_2$
- D. none of these

**Answer: c**



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**Exercises Assertion And Reason**

1. Assertion : Solubility of noble gases in water decreases with increasing size of the noble gas.

Reason : Solubility of noble gases in water is due to dipole-dipole interaction.

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

B. If both (A) and (R ) are correct, but (R ) is the correct explanation of (A)

C. If (A) is correct but (R ) is incorrect

D. If (A) is incorrect but (R ) is correct

**Answer: d**



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2. Assertion : Noble gases are chemically inert

Reason : All noble gases have  $ns^2np^6$  valence shell electronic configuration

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

B. If both (A) and (R) are correct, but (R) is the correct explanation of (A)

C. If (A) is correct but (R) is incorrect

D. If (A) is incorrect but (R) is correct

**Answer: c**



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**3. Assertion :** He and Ne do not form any clathrates

**Reason :** Both He and Ne are very small in size

- A. If both (A) and (R) are correct and (R) is the correct explanation of (A)
- B. If both (A) and (R) are correct, but (R) is the correct explanation of (A)
- C. If (A) is correct but (R) is incorrect
- D. If (A) is incorrect but (R) is correct

**Answer: a**



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4. Assertion : Deep sea divers use  $He - O_2$  mixture for breathing

Reason : Unlike  $N_2$   $He$  is insoluble in blood even under high pressure

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

B. If both (A) and (R ) are correct, but (R ) is the correct explanation of (A)

C. If (A) is correct but (R ) is incorrect

D. If (A) is incorrect but (R ) is correct

**Answer: a**



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5. Assertion (A): Iodine forms  $IF_7$ .

Reason (R ): In iodine 5d-subshell is available in the valence shell to expand its octet.

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

B. If both (A) and (R ) are correct, but (R ) is the correct explanation of (A)

C. If (A) is correct but (R ) is incorrect

D. If (A) is incorrect but (R ) is correct

**Answer: a**



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6. Assertion : He and Be have similar valence shell electronic configuration  $ns^2$

Reason : Both are chemically inert.

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

B. If both (A) and (R) are correct, but (R) is the correct explanation of (A)

C. If (A) is correct but (R) is incorrect

D. If (A) is incorrect but (R) is correct

**Answer: c**



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7. Assertion :  $XeF_2$  is linear

Reason :Xe atom in  $XeF_2$  is sp hybridised

- A. If both (A) and (R ) are correct and (R ) is the correct explanation of (A)
- B. If both (A) and (R ) are correct,but (R ) is the correct explanation of (A)
- C. If (A) is correct but (R ) is incorrect
- D. If (A) is incorrect but (R ) is correct

**Answer: c**



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8. Assertion :  $XeF_4$  is square planar

Reason :Xe atom in  $XeF_4$  is  $dsp^2$  hybridised

- A. If both (A) and (R ) are correct and (R ) is the correct explanation of (A)
- B. If both (A) and (R ) are correct, but (R ) is the correct explanation of (A)
- C. If (A) is correct but (R ) is incorrect
- D. If (A) is incorrect but (R ) is correct

**Answer: c**



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9. Assertion :Ne and Ar do not form any chemical compound

Reason :They have  $ns^2sp^6$  fully filled valence shell electronic configuration

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

B. If both (A) and (R ) are correct,but (R ) is the correct explanation of (A)

C. If (A) is correct but (R ) is incorrect

D. If (A) is incorrect but (R ) is correct

**Answer: b**



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**10. Assertion :** Ionisation enthalpy of noble gases is zero

**Reason :** Noble gases have fully filled valence shell

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

B. If both (A) and (R ) are correct, but (R ) is the correct explanation of (A)

C. If (A) is correct but (R ) is incorrect

D. If (A) is incorrect but (R ) is correct

**Answer: d**



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**11. Assertion :** Noble gases are diamagnetic atoms

**Reason :** The atomic numbers of noble gases are even and all the orbitals are doubly occupied by the electrons

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

B. If both (A) and (R ) are correct, but (R ) is the correct explanation of (A)

C. If (A) is correct but (R ) is incorrect

D. If (A) is incorrect but (R ) is correct

**Answer: a**



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12. Assertion :  $Ne_2$  does not exist

Reason : Bond order of  $Ne_2$  is 1

- A. If both (A) and (R ) are correct and (R ) is the correct explanation of (A)
- B. If both (A) and (R ) are correct, but (R ) is the correct explanation of (A)
- C. If (A) is correct but (R ) is incorrect
- D. If (A) is incorrect but (R ) is correct

**Answer: b**



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1. What is the oxidation number of  $Xe$  in  $XeOF_2$ ?



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2. What is the total number of electron present in the last orbit of argon?



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3. What is the percentage of argon in air ?



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4. What is the total number of unpaired electrons in inert gas ?



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5. What is the total number of lone pair of electron present on  $Xe$  in  $XeF_2$  ?



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6. What is the oxidation state of  $XeF_6$ ?



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7. How many dpi-per bonds are there in  $XeO_4$ ?



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## Exercises Fill In The Blanks

1. The word "Argon" means\_\_\_\_\_.



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2. The most abundant inert gas is\_\_\_\_\_.



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3. The principal source of helium is \_\_\_\_\_.



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4. Source of most of the noble gases is \_\_\_\_\_.



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5. The symbol Rn represents \_\_\_\_\_.



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6. The noble gas having the lowest atomic numbers is \_\_\_\_\_.



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7. In the clathrates of xenon with water the nature of bonding in Xe and  $H_2O$  molecule is



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8. The value of electron affinity for inert gases is \_\_\_\_\_.



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9. The lifting power of helium is \_\_\_\_\_ of hydrogen.



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10. The formula of sodium perxenate is \_\_\_\_\_.



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11. The noble gas He was discovered in the chromosphere of sun by\_\_\_\_\_.



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12. The noble gas which shown abnormal behaviour in liquid state and behaves as a super fluid is \_\_\_\_.



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13. \_\_\_\_\_ is used as anaesthetic due to the formation of aqueous clathrates in physiologically strategic sports



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14.  $C_p / C_v$ , ratio for noble gases is \_\_\_\_\_.



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15. The gas which is filled in tungsten lamp is \_\_\_\_\_.



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Exercises True And False

1. Atmospheric air is free from noble gases.



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2. Xe is the most reactive noble gas



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3. He is an inert gas. True (T) or False (F)



**Watch Video Solution**

4. The most abundant inert gas found in atmosphere is  
helium



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5. Clathrates are also known as cage compounds



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6. Neon is obtained during radioactive disintegration



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7. He is an inert gas. True (T) or False (F)



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8. Radon is obtained from the decay of radium.(T/F)



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9. Helium is used to fill gas balloons instead of hydrogen because it is lighter and non-inflammable



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10. On moving along the period , the atomic radii decreases. Explain.



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11. Clathrate compounds are used for transportation of noble gases.



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## Exercises Archives Linked Comprehension

1. The noble gases have closed-shell electronic configuration and are monatomic gases under normal condition. The low boiling points of the lighter noble gases are due to the weak dispersion forces between the atoms and the absence of other intermolecular interactions.

The direct reaction of xenon with fluorine leads to a series

of compounds with water oxidation number +2, -4 and +6,  $XeF_4$  reacts violently with water to give  $XeO_2$ . The compound of deduced exhibits inorganic chemistry and their geometries can be deduced considering the total number of electron pairs in the valence shell.

Argon is used in arc welding because of its

- A. a. low reactivity with metals
- B. b. ability to lower the melting point of metals
- C. c. flammability
- D. d. high calorific value

**Answer: a**



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2. The noble gases have closed-shell electronic configuration and are monatomic gases under normal condition. The low boiling points of the lighter noble gases are due to the weak dispersion forces between the atoms and the absence of other interatomic interactions.

The direct reaction of xenon with fluorine leads to a series of compounds with water oxidation number +2, +4 and +6,  $\text{XeF}_4$  reacts violently with water to give  $\text{XeO}_2$ . The compound of deduced stoichiometry and their geometries can be deduced considering the total number of electron pairs in the valence shell.

The structure of  $\text{XeO}_3$  is

A. linear

B. planar

C. pyramidal

D. T-shaped

**Answer: c**



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3. Noble gases have completely filled valence shell i.e.  $m^2sp^2$  except He (i.e). Noble gases are monatomic under normal conditions. Low boiling point of the lighter noble gases are due to weak van der Waals forces between the atoms and absence of any intermolecular interactions. Xe

reacts with  $F_2$  so give a source of fluorine

$XeF_2$ ,  $XeF_4$ ,  $XeF_4$ ,  $XeF_3$  on complete hydrolysis gives

$XeF_3$ ,

$XeF_4$  and  $XeF_4$  are expected to be

- A. oxidising
- B. reducing
- C. unreactive
- D. strongly basic

**Answer: a**



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1. The shape of  $XeO_2F_2$  molecule is:

- A. Trigonal bipyramidal
- B. Square planar
- C. Tetrahedral
- D. See-saw

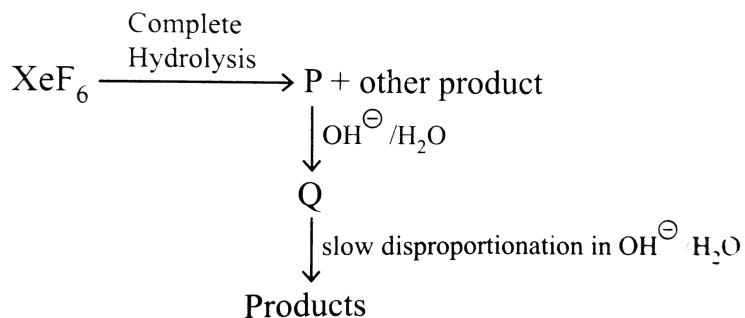
**Answer: d**



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2. Under ambient condition , the total number of gases released as products in the final step of the reaction

scheme shown below is



A. 0

B. 1

C. 2

D. 3

**Answer: c**



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## Exercises Archives Integer

1. Species having the formula  $XZ_4$  is given below  $SF_4$ , Define shape on the basis of the location of X and Z atoms.



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## Exercises Archives Subjective

1. Draw the molecular structures of  $XeF_2$ ,  $XeF_4$  and  $XeO_2F_2$ , indicating the location of lone pair(s) of electrons.



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## Ex 5 1 Subjective

1. Why helium and neon do not form compounds with fluorine?



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2. Why neon is used in warning signal illuminations?

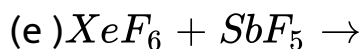
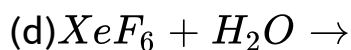
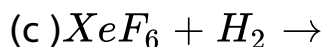
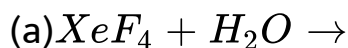


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3. Why helium and neon do not form clathrates with quinol?

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4. Complete the following reactions



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5. Why zero group element do not form compound under ordinary conditions?

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6. Why  $Xe$  does not form fluorides such as  $XeF$ ,  $XeF_3$  or  $XeF_5$ ?

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7. Does the hydrolysis of  $XeF_6$  lead in a redox reaction?

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Ex 5 1 Objective

1. Boiling point and melting point of noble gases are in the order

A.  $He < Ne < Ar < Kr < Xe$

B.  $He > Ne > Kr > Ar > Xe$

C.  $He < Kr < Ne < Ar < Xe$

D.  $He > Kr > Ne > Ar > Xe$

**Answer: a**



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2. Which of the noble gases has its ionisation enthalpy close to that of molecular oxygen?

A. Ar

B. Xe

C. Kr

D. Rn

**Answer: b**



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3. Which of the possible following florides of xenon is impossible ?

A.  $XeF_2$

B.  $XeF_4$

C.  $XeF_6$

D.  $XeF_3$

**Answer: d**



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**4.** Xenon fluorides are colourless and at room temperature are

A. Solid

B. Liquid

C. Gases

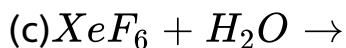
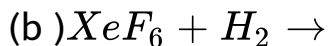
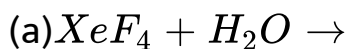
D. Superfluid

**Answer: a**



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**5. Complete the following reactions**



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**6. Used in cryoscopic experiment**

A. Ne

B. Ar

C. He

D. Kr

**Answer: a**



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7. He is added to the oxygen supply used by sea divers because

A. it is less soluble in blood than  $N_2$  at high pressure

B. it is lighter than  $N_2$

C. it is readily miscible with  $O_2$

D. it is less poisonous than  $N_2$

**Answer: b**



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**8.** Which one of the following statement is not correct?

A. a.Ar is used in electric bulb

B. b.Kr is obtained during redioactive decay

C. c.Boiling point of helium to the lowest among all noble gases

D. d.Xe forms  $XeOF_4$

**Answer: b**



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9. The coloured discharge tubes for advertisement mainly contains

A. Xe

B. Ne

C. He

D. Ar

**Answer: b**



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10. Xenon reacts with

- A. The most electropositive element
- B. The most Electronegative element
- C. The hydrogen halide
- D. Non-metals

**Answer: a**



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11. Discovery of noble gas compounds were the basic of formation of an ionic solid , dioxygenyl

hexafluoridoplatinate (V)  $O_2^{\oplus} [PtF_6]^{\ominus}$  when  $O_2$  reacts with  $PtF_6$ . This experiment was carried out by

A. Bartlett and Lohman

B. Ramsay

C. Dawar

D. Fischer -Ringe

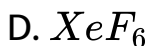
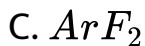
**Answer: c**



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**12. Which one of the following does not exist ?**

(i)  $XeOF_4$  (ii)  $NeF_2$  (iii)  $XeF_2$  (iv)  $XeF_6$



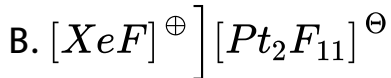
**Answer: c**



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13. When deep red  $PtF_6$  vapour was mixed with  $Xe$  at room temperature to produce a yellow ionic solid. The product is





C. Both (a) and (b)

D. None

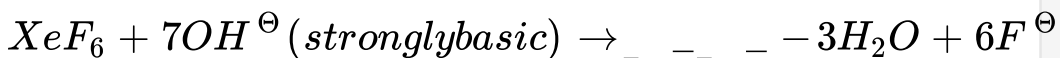
**Answer: c**



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b.



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