



CHEMISTRY

BOOKS - S CHAND IIT JEE

FOUNDATION

CARBON AND ITS COMPOUNDS

Question Bank 19 Fill In The Blanks

1. _____ is essential constituent of all living things.



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2. Carbon occurs in the earth's crust in free state as coal, diamond and _____



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3. Compounds of carbon found in living organisms are called _____ compounds.



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4. Carbon compounds like carbon monoxide, carbon dioxide, and the carbonates are known as _____ compounds of carbon.



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5. The phenomenon of an element occurring in two more different forms in the same physical state is called _____



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6. The different forms of an element in the same physical state are called _____



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7. _____ and _____ are the two crystalline forms of carbon.



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8. The atomic number of carbon is ____ and its atomic mass is ____ Its valency is _____



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9. _____ is the hardest naturally occurring substance.



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10. _____ is a soft crystalline form of carbon.



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11. All forms of carbon, when burnt in air produce _____ with release of heat.



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12. Graphite is a _____ conductor of electricity while diamond is a _____ conductor of electricity.



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13. The form of carbon which is known as black lead is _____



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14. The form of carbon which is used for cutting and drilling rocky glass is _____



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15. The form of carbon which is used as a lubricant at high temperature is _____



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16. _____ is formed when charcoal is burnt in a limited supply of air.



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17. Coke, coal tar, coal gas and ammonia solution are produced when coal is subjected to _____ of coal.



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18. Wood charcoal is a _____ conductor of heat and electricity.



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19. _____ is used as a reducing agent in the extraction of metals from their respective metallic oxides.



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20. _____ is used in making black shoe polish.



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21. Compounds of carbon and hydrogen alone are called _____



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22. _____ is the simplest hydrocarbon



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23. Fire extinguishers are devices in which _____ is produced in different forms for use

as the extinguishing agent.



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Question Bank 19 Fill In The Blanks With The Correct Answer

1. Charcoal, lamp black, coke, gas carbon are _____(crystalline/amorphous) forms of carbon.



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2. Fullerenes are _____

(crystalline/amorphous) forms of carbon.



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3. _____ (Diamond /graphite) is used as a lubricant.



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4. Charcoal is a good _____ (oxidising reducing) agent.



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5. In this allotrope of carbon, _____ (diamond / graphite) the carbon atoms are arranged in loosely joined layers which can slip over each other, each layer made up of rings of six carbon atoms.



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Question Bank 19 Answer True Or False

1. Coke is made by the destructive distillations of coal.



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2. True or False

Allotropes have the same physical properties but different chemical properties.



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3. Graphite is denser than diamond.



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4. Diamond is insoluble in all solvents. True or False.



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5. Graphite is a bad conductor of electricity.



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6. Wood charcoal is an important constituent of gun powder. True / False



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7. Coke, charcoal are good oxidising agents.



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8. Carbon monoxide is formed when coal or coke or charcoal is burnt in limited supply of oxygen.



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9. A fire can be extinguished either by lowering temp below the ignition temperature of combustible material or by cutting off the supply of air.



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10. Amorphous forms of carbon have a fixed crystalline shape.



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Question Bank 19

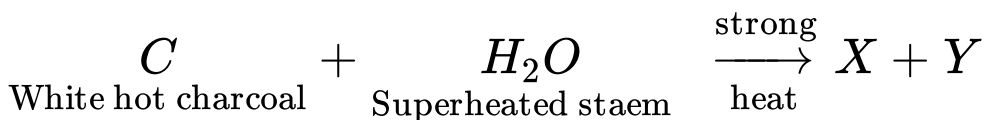
1. Match the following

- | | |
|--|---|
| 1. A soft crystalline allotrope of carbon with carbon atoms loosely arranged in hexagonal forms in layers. | (a) Anthracite |
| 2. Compounds of carbon and hydrogen. | (b) Sugar charcoal |
| 3. All living things contain this element. | (c) Wood charcoal |
| 4. A highly poisonous gas. | (d) Coke |
| 5. This gas is effective in extinguishing fires. | (e) Liquid carbon dioxide fire extinguisher |
| 6. This type of fire extinguisher is effective in extinguishing both oil and electrical fires. | (f) Carbon |
| 7. Used in the manufacture of electrodes | (g) Hydrocarbons |
| 8. It is a good adsorbent | (h) graphite |
| 9. Purest form of amorphous carbon | (i) Carbon monoxide |
| 10. Purest variety of coal containing 92–98% carbon | (j) Carbon dioxide |



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2. When superheated steam is passed through white hot charcoal, steam gets reduced to a mixture of X and Y.



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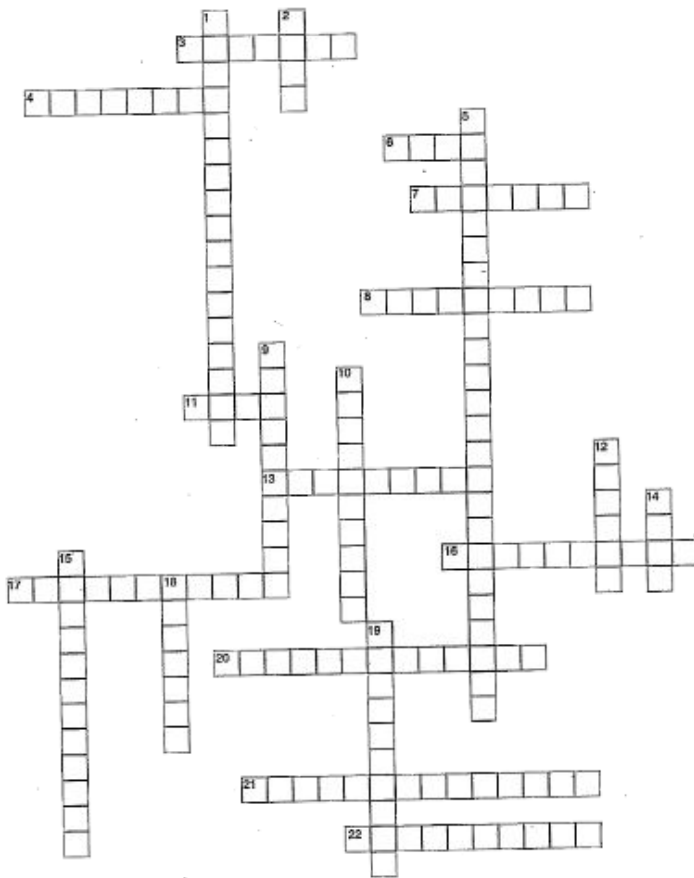
3. Solve the following crossword with the help of the given clues :

ACROSS

3. A form of pure carbon that occurs naturally as a crystal and is the hardest of all known minerals.
4. A naturally occurring, steel grey to black, crystalline form of carbon which is soft and slippery to touch.
6. An amorphous form of carbon containing 98% carbon and prepared by destructive distillation of coal.
7. A colourless, odourless, flammable gas that is the simplest of the hydrocarbons, having the formula CH_4 .
8. The phenomenon of existence of an element in more than one form in the same physical state.
11. Partially decayed vegetable matter containing only about 50–60% carbon. It is the first stage in the formation of coal.
13. Not made of crystals and lacking definite form or shape.
16. Any of several crystalline forms of a chemical element having different physical properties but almost identical chemical properties.
17. Form of a solid substance whose atoms are arranged in a definite geometrical pattern.
20. The process of the slow conversion of vegetable matter into carbon-rich substance.
21. A colourless, odourless gas, CO , formed when a carbon compound burns incompletely because of lack of enough oxygen.
22. An allotrope of carbon containing clusters of 60 carbon atoms joined together to form spherical molecules.

DOWN

1. A device used to extinguish or control small fires.
2. A hard black solid fossil fuel formed over million of years by the bacterial decomposition of ancient vegetable matter buried under earth.
5. The process of heating of a substance in the absence of air.
9. Purest variety of coal having high carbon content (91–98%). Burns with a clear flame and without smoke or odour.
10. The process by which molecules of a substance, such as a gas or a liquid, collect on the surface of another substance, such as a solid.
12. A naturally abundant, non-metallic element that occurs in all organic compounds.
14. A substance that produces heat energy when it undergoes a chemical or nuclear reaction.
15. Any of numerous organic compounds, such as methane, that contain only carbon and hydrogen.
18. A soft, brownish black form of coal having more carbon than peat but less carbon than bituminous coal.
19. A soft type of most abundant form of coal that burns with a smoky, yellow flame.



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Question Bank 19 Name The Following

1. Does not have a fixed crystalline shape



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2. what is produced after destructive distillation of coal.



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3. what is an essential constituent of all organic substances.



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4. This is a crystalline form of carbon which has football shaped spherical molecules.



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5. The allotrope of carbon used for making the black cores of pencils.



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6. Allotrope of carbon used in cutting glass and rock drilling.



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7. Amorphous form of carbon used in making shoepolish.



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8. Gas generated in fire extinguishers which is responsible for controlling fires.



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9. Why should soda-acid and foam-type extinguishers not be used in fighting electrical fires?



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10. Why is diamond hard while graphite is soft?



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11. Why is graphite a good conductor of electricity but diamond is not?



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12. An element belonging to group 14 of the periodic table has two common allotropes A and B. A is very hard and a non conductor of electricity while B is soft to touch and good conductor of electricity . Identify the element . Name each of these allotropes.



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13. A boy sharpens a pencil at both the ends and then uses its back ends to complete an

electric circuit will the current flow through the electric circuit? Give reason for your answer.

Name the black substance of the pencil



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14. A colourless gas is produced on heating strongly a piece of black electrode used in dry cell. This gas turns lime water milky, of what material is the electrode made?



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15. Why can inhaling of carbon monoxide become fatal?



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16. Why is it dangerous to sleep in a closed room with a coal fire burning?



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17. How does carbon dioxide help to extinguish fires?



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18. What are the different products formed when methane and chlorine are made to react in the presence of sunlight.



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1. Which one is the hardest natural substance among the following?

A. coal

B. coke

C. diamond

D. fullerene

Answer: C



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2. Which one of the following is an adsorbent?

A. lamp black

B. methane

C. coal

D. charcoal

Answer: D



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3. In combined state, carbon occurs as

A. coal

B. petroleum

C. graphite

D. diamond

Answer: B



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4. Which one of the following is a crystalline form of carbon?

A. gas carbon

B. lamp black

C. coke

D. fullerene

Answer: D



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5. Carbon forms an extremely large number of carbon compounds (or organic compounds) because

A. it has four electrons in its outermost shell

B. it behaves both as a metal as well as a non-metal

C. it combines with other elements to form covalent compounds.

D. it has the ability to combine with itself,
atom to atom, to form long chains.

Answer: D



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6. Destructive distillation of coal yields

A. coal tar

B. coal gas

C. coke

D. all of these

Answer: D



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7. The process by which decayed plants slowly convert into coal is called

A. carbonization

B. carbonification

C. fermentation

D. petrification

Answer: A



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8. The purest forms of the amorphous carbon is
is

A. wood charcoal

B. bone charcoal

C. sugar charcoal

D. lamp black

Answer: C



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9. Which of the following molecules is buckminster fullerene?

A. C_{90}

B. C_{60}

C. C_{70}

D. C_{120}

Answer: B



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10. Diamond and graphite burn, to give out:

A. Carbon monoxide

B. Carbon dioxide

C. Carbon

D. Oxygen

Answer: B



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11. Activated charcoal is used in gas masks for military and industrial purposes because:

- A. it adsorbs harmful gases
- B. it acts as a reducing agent
- C. it burns without smoke
- D. it is active

Answer: A



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12. The number of free electrons in the outermost shell of carbon in graphite is :

A. four

B. one

C. two

D. three

Answer: B



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13. Which of the following substances is used in place of H_2SO_4 in foam type fire extinguishers?

A. Aluminium sulphate

B. Alcohol

C. Sodium carbonate

D. Saponin

Answer: A



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14. In which of the following does carbon occur in its purest form in nature?

A. carbon black

B. graphite

C. diamond

D. coal

Answer: C



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15. Which one of the following is not a constituent of biogas?

A. Methane

B. Carbon dioxide

C. Hydrogen

D. Nitrogen dioxide

Answer: D



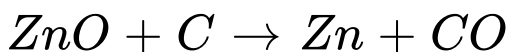
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16. What does water gas comprise of ?



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17. In the chemical equation



'C'acts as a/an

- A. oxidising agent
- B. reducing agent
- C. dehydrating agent
- D. hydrating agent

Answer: B



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18. Which of these is not a fossil fuel?

- A. Coal

B. biogas

C. natural gas

D. petroleum

Answer: B



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19. Which of the following are obtained from fossil fuels?

A. Coal

B. Coke

C. Coal tar

D. All of these

Answer: D



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20. The purest form of coal is

A. Lignite

B. peat

C. anthracite

D. none of these

Answer:



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Self Assessment Sheet 19 Fill In The Blanks To Make Correct Statements

1. _____ is a crystalline form of allotrope of carbon which is a bad conductor of heat and

electricity.



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2. _____ is a crystalline form of carbon which is soft and can write.



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3. The essential constituent of each organic molecule is the element _____



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4. A substance that does not have a fixed crystalline shape is called _____



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5. _____ is the purest form of carbon.



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6. _____ is a crystalline form of carbon that has layered structure of hexagonal rings arranged parallel to each other.



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7. _____ is a crystalline allotrope of carbon with 60 carbon atoms having a spherical shape.



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8. _____ is a black porous solid obtained by the destructive distillation of wood.



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9. _____ is used as a decolourizing agent in sugar refining industry and to filter aquarium water.



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10. _____ is used in making printer's ink, carbon paper, and black shoe polish.



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Self Assessment Sheet 19 Answer True Or False

1. Graphite is a bad conductor of electricity.



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2. Coal is amorphous form of carbon also having oxygen, hydrogen, nitrogen and sulphur.



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3. Graphite is denser than diamond



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4. Lead pencil is made up of lead metal.



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5. A soda fire extinguisher is effective in putting out fires caused by inflammable liquids like petrol and also those caused by electricity.



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Self Assessment Sheet 19

1. Match correctly

Column A

1. Compound of carbon used to soften hard water
2. Carbon dioxide
3. Major component of CNG

Column B

- (a) Methane
- (b) Sodium hydrogen sulphate (NaHCO_3)
- (c) Solid carbon dioxide
- (d) Na_2CO_3
- (e) Produced in fire-extinguishers and controls fires.



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2. How can wood charcoal be prepared in a laboratory?



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3. How is a liquid carbon dioxide extinguisher able to put out fires by electricity?



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4. The tip of the lead pencil is made of



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5. What is dry ice?



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6. Why is carbon tetravalent?



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7. What are substitution reactions? Illustrate with an example.



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8. What are hydrocarbons? Give examples



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9. Name the main constituent of natural gas



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10. Describe the structure of diamond



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11. Name the products formed when:

wood is burnt in the absence of air



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12. Name the products formed when:

bone is heated in the absence of air



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13. What is formed when steam is passed over red hot coke?



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14. In diamond, the number of free electrons are:

A. 1

B. 2

C. 0

D. 4

Answer: C



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15. Which amongst the following is not free state of carbon?

A. Diamond

B. Graphite

C. Coke

D. Petroleum

Answer: D



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16. Carbon exists in the atmosphere in the form of

A. Carbon monoxide only

B. Carbon monoxide in traces and carbon dioxide

C. Carbon dioxide only

D. Coal

Answer: C



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17. Which of the following statements are usually correct for carbon compounds ? These are good conductors of electricity.

are poor conductors of electricity.

have strong forces of attraction between their molecules.

do not have strong forces of attraction between their molecules.

A. (i) and (ii)

B. (ii) and (iii)

C. (i) and (iv)

D. (ii) and (iv)

Answer: D



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18. Buckminster fullerene is an allotropic form of

A. Phosphorous

B. Sulphur

C. Carbon

D. Tin

Answer: C



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19. which is the same for graphite and diamond:

A. atomic weight

B. crystalline structure

C. density

D. electrical conductivity

Answer: A



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20. Inert form of carbon is

A. Diamond

B. Graphite

C. Coal

D. Charcoal

Answer: B



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21. Graphite is a good conductor of electricity due to

A. has tetrahedral structure

B. has free electrons

C. is crystalline

D. has free atoms

Answer: B



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22. Diamond is an example of

A. metallic crystal

B. molecular crystal

C. ionic crystal

D. covalent crystal

Answer: D



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23. Which of the following statements are true regarding diamond?

A. It is the hardest substance

B. It has three dimensional structure

C. It is a good conductor of heat and electricity

D. It is used in jewellery and for cutting glass and drilling rocks.

Answer: A::D



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24. I am a gas. The following descriptions are made about me. What am I?

I am the simplest hydrocarbon.

I am the main constituent of natural gas found alongwith petroleum.

When I burn in an insufficient supply of air (oxygen), I form carbon monoxide and water.

I can be prepared in laboratory by heating a mixture of sodium acetate (CH_3COONa) and soda-lime.

A.

B.

C.

D.

Answer:



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