



# CHEMISTRY

# **BOOKS - AIIMS PREVIOUS YEAR PAPERS**

# **AIIMS 1998**

# Chemistry

 If one wished to remove substantially all of all chloride ions from an aqueous solution, this could be done by the addition of an aqueous solution of

A. gelatin

B. starch

C.  $AgNO_3$ 

D.  $Na_2SO_4$ 

Answer: C

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2. The basic building block of proteins is (are)

A. ammonia

B. amino acids

C. nitrogenous bases

D. messenger RNA

# Answer: B

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3. If it is known that  $H_2S$  is a weak acid that ionizes to form  $2H^+$  and  $S^{2-}$  , lowering the pH of a solution of  $H_2S$  by adding HCl would

A. lower the  $S^{2-}$  concentration

B. have no effect on  $S^{2-}$  concentration

C. raise the  $S^{2-}$  concentration

D. not be possible.



**4.** In transcription of RNA from DNA , thymine will form a base pair only with

A. cytosine

B. guanine

C. adenine

D. thymine.

# Answer: C



**5.** Theoretically the ring monobromination of 4bromo-1,2-disopropylbenzene could produce \_\_\_\_ isomers .

A. 5

**B.**4

C. 3

D. 2

### Answer: C



6. Prolonged boiling of animal fat with lye is called

A. saponification

B. stain removal

C. ecology

D. conjugation

Answer: A

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7. The hydronium ion ls

A. an uranium byproduct

B. an ion with the formula of  $H_2O^+$ 

C. really a free radial rather than an ion

D. a protonated water molecule.

Answer: D

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**8.** The smallest organic ring compound that may be synthesized contains \_\_\_\_ carbon atoms

B. 4

C. 3

D. 7

Answer: C

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9. The process of fermentation can be considered to

be

A. dehydration

B. oxidation

C. anaerobic respiration

D. aerobic respiration

# Answer: C

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10. Without considering stereoisomers the number of

possible dibromobutane isomers is

A. 5

B. 4

C. 3

D. 8

# Answer: B

# **D** View Text Solution

- **11.** Consider this reaction  $Fe^{++} \xrightarrow{} Fe^{+++} + e^{-}$ 
  - A. The reaction toward the left is a reduction
  - B. The reaction toward the right is a reduction
  - C. The reaction toward the right is an oxidation.
  - D. One and three are correct

Answer: D



**12.** The neutralization of 50 ml of 0.25  $NH_2SO_4$  will require \_\_\_\_ ml of 0.50 N NaOH.

A. 2.5

B. 0.25

C. 50

D. 25

#### Answer: D



**13.** Of the compounds listed below , which has the greatest affinity for combining with hemoglobin ?

A. helium

B. carbon monoxide, CO

C. oxygen,  $O_2$ 

D. carbon dioxide,  $CO_2$ 

Answer: B



**14.** Below are listed the major differences between compounds and mixtures . Which one is an incorrect pairing ?

A. MIXTURE-Physical union,COMPOUND-Chemical union
B. MIXTURE-No new substances are formed ,COMPOUND-New substances are formed
C. MIXTURE-Can be separated by physical means ,COMPOUND-Can be separated by physical

means

D. MIXTURE-Elements form no definite proportions

,COMPOUND-Elements form definite proportions

Answer: C

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**15.** Which of the following reactions is a decomposition reaction ?

A. HCl + NaOH  $\rightarrow$  NaCl +  $H_2O$ 

B.  $Zn + CuSO_4 
ightarrow ZnSO_4 + Cu$ 

 $\mathsf{C.}\, 2HgO \overset{\Delta}{\longrightarrow} 2Hg + O_2$ 

# D. $CO_2 + H_2O ightarrow H_2CO_3$

# Answer: C

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16. Who discovered neutron?

A. James Chadwick

- **B.** Ernest Rutherford
- C. Marie and Pierre Curie
- D. Albert Einstein.

Answer: A



**17.** Which of the following structural formulas is not properly identified ?

#### Answer: C

**18.** An inorganic cation has been precipitated from water by the addition of NaOH. When we find that the precipitate may be redissolved upon the addition of NaOH or dilute  $HNO_3$ , we may conclude that the precipitate was

A. amphoteric

B. colloidal

C. amorphous

D. anthropomorphic

# Answer: A





# 19. The inorganic cation in the question above could

be

A. nickel

B. ferric

C. silver

D. aluminium

Answer: D

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20. 2,4-D (2,4-dichlorophenoxyacetic acid ) is a potent

stimulator of plant metabolism. Most sensitive to it is

(are)

A. phytoplankton

B. dicotyledons

C. monocotyledons

D. kentucky fescue grass

Answer: B



21. Transuranium elements are

A. elements that have been postulated but not

found naturally or produced artificially

B. man-made elements with more than 92 protons

in the nucleus

C. found naturally in abundance greater than that

of uranium isotopes

D. found on earth as a result of bombardment by

particles from the planet Uranus .

#### **Answer: B**

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22. Black and white photographic film is based on the

light-catalyzed chemical reaction

 $\textbf{A.} quinone_1 \rightarrow quinone_2 \rightarrow \text{ hydroquinone}$ 

B. 
$$Ag^+He 
ightarrow Ag^\circ$$

C.  $Cd^{++}He 
ightarrow Cd^{+}$ 

 $\mathsf{D.gelatin}_C o \operatorname{gelatin}_B + H_2O$ 

#### Answer: B



23. Solids

- A. are rigid and have a definite form
- B. possess molecules which vibrate very slowly in a

ftxed position

- C. possess molecules which are close together
- D. have all of the above characteristics

Answer: D

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24. In order to produce polyvinyl alcohol we would

expect to

A. ask for another task . This one has not been

done successfully

- B. hydroxylate polyethylene
- C. polymerize another vinyl monomer and convert

the polymer to polyvinyl alcohol

D. polymerize the monomer, vinyl alcohol

Answer: C

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25. Ethyl bromide, methyl bromide, and sodium will

react to form

A. propane

B. butane

C. ethane

D. all of the above.

### Answer: D

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**26.** If acetylene is reacted with an excess of sodium metal in hexane and the reaction product is treated with 1-bromopropane, the final product will be

A. 3-octene

B. 4-octyne

C. 8-octane

D. none of the above

Answer: B

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27. Reaction of propanal with HCN followed by acid

hydrolysis of the reaction product with produce

A. propanoic acid

B. 1-butylamine

C.  $\alpha$ -hydroxybutanoic acid

D. all of the above

# Answer: C

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**28.** A Grignard reagent , such as  $(CH_3MgBr)$  will react with  $C_2H_5OH$  and then with acidified water to produce

A. a secondary or tertiary alcohol

B. an aldehyde

C. a ketone

D. none of the above

# Answer: D

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**29.** The predominant ring structure of glucose in aqueous solution is called

A. cyclopentyl

B. furanose

C. pyranose

D. none of the above



**30.** When two free radicals collide

A. termination of the free radical reaction results

B. they explode with the release of a large quantity

of energy

C. ionization results

D. none of the above is possible





**31.** According to the principle of LeChateller, a higher pressure applied to the reversible reaction  $N_2 + 3H_2 \xrightarrow{} 2NH_3$  would be expected to result in

A. shifting the equilibrium to the right

B. shifting the equilibrium to the left

C. no change in the equilibrium

D. increased percentages of  $NH_3$  and  $H_2$ 

Answer: A

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32. Acetaldehyde , in the presence of NaOH, will

A. produce 3-hydroxybutanol

B. be converted to acetic acid

C. produce ethyl acetate

D. do none of the above

#### Answer: A



**33.** The pH of a weak solution of ammonium hydroxide

has been measured . If ammonium chloride is now

# added

- A. the pOH will decrease
- B. the pH will increase
- C. the pH will decrease
- D. the acidity will decrease

# Answer: C



34. Which of the following is an incorrect statement?

A. Certain substances break up into ions when

dissolved in water

B. Atoms and ions of the same element have

different properties

C. The fewer ions formed. the greater the electric

current carried by an electrolyte

D. Ions have a charge equal to the number of

electrons gained or lost

### Answer: C

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**35.** In a titration of iodine with sodium thiosulphate , the formation of a blue colour on the addition of colourless starch solution indicates that

A. a blue complex of starch , iodine and sodium

thiosulphate has been produced

B. all of the iodine has not been reduced

C. the glassware has not been washed sufficiently

D. all of the iodine has not be oxidized

#### Answer: B



**36.** A negative iodoform test (i.e., no yellow precipitate ) will be the result when NaOH +  $I_2$  is reacted with

A. 
$$CH_3 - CH_2 - CH_2 - \overset{H}{C} = O$$
  
B.  $H - \overset{O}{C} - CH_3$   
C.  $CH_3 - \overset{C}{C} - CH_2 - CH_3$   
D.  $CH_3 - \overset{C}{C} - CH_3$ 

#### Answer: A

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37. Factor(s) that influence enzymatic activity is (are )

A. pH

B. concentration, substrate, cofactors

C. enzyme poisons

D. all of the above.

Answer: D

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38. The alpha helix in a protein is classified as the

- A. tertiary structure
- B. secondary structure
- C. primary structure
- D. quaternary structure

# Answer: B

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**39.** Methyl iodide and n-propyl iodide may be reacted

with sodium metal to produce \_\_\_\_\_ organic products

B. 3

C. 2

D. 8

Answer: B

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**40.** The compound listed below that would be produced in greatest yield is

A. hexyl iodide

B. sodium propane

C. n-hexane

D. n-butane

# Answer: D

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**41.** Catalytic hydrogenation of phenyl diazonium bromide produces

A. phenylhydrazine

B. bromobenzene

C. benzene

D. phenylamine

# Answer: A

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42. Addition of water to metallic sodium produces

A. hydrogen and sodium hydroxide

B. sodium hydrate

C. oxygen and sodium hydride

D. nitrogen and sodium hydride.

Answer: A

**43.** The common lead storage battery produces electricity by two hall cell reactions, one of which is (written in the direction of production of electricity)

A. 
$$Pb+SO_4^{2-}
ightarrow PbSO_4+2e^-$$

B. 
$$PbSO_4 + 2e^- 
ightarrow Pb + SO_4^{2-}$$

C.

 $PbSO_4 + 2H_2O \rightarrow PbO_2 + 4H^+ + SO_4^{2-} + 2e^-$ 

D. none of the above

#### Answer: A





44. Calcium carbide reacts with water to produce

A. methane

B. carbon dioxide

C. acetylene

D. carbohydrate

Answer: C



45. Which of the following aqueous solutions will

have the lowest freezing point ?

A. 1.5 M glucose

B. 0.3 M  $Na_2SO_4$ 

C.1 M NaCl

D.  $H_2O$ 

Answer: C



46. The reaction of HBr with 1-propene in the presence

of peroxides will produce primarily

A. 2-bromopropane

B. 1-bromopropane

C. 2-bromopropene

D. 1.2-dibromopropane

Answer: B



47. A zwitter ion is a molecule containing

A. more than one cationic or anionic function

B. polar and nonpolar groups

C. both cationic and anionic funtions

D. none of the above

### Answer: C

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48. Use of helium is preferred over use of hydrogen in

airships (e.g., blimps ) because

A. helium is chemically less reactive

B. helium has a lower density

C. both of the above

D. none of the above.

Answer: A

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**49.** Low molecules weight mercaptans are often added to natural gas to

A. provide a stench which is helpful in the

detection of gas leaks

B. prevent corrosion of the pipelines

C. produce a pleasant deodorant during burning

D. slightly retard the burning

Answer: A

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50. Nucleotides are composed of two types of sugars

A. glucose and ribose

B. glucose and maltose

C. ribose and deoxyribose

D. meltose and deoxyribose

# Answer: C

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**51.** Assertion: Noble gases can be liquefied.

Reason: Attractive forces can exist between nonpolar molecules.

A. Assertion is true but the Reason is false

B. Assertion is false, Reason is true

C. Both Assertion and Reason are true and the

Reason is a correct explanation of the Reason.

D. Both Assertion and Reason are true but Reason

is not a correct explanation of the assertion.

Answer: D

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**52.** Assertion : Alkali metal salts give colour to the Bunsen flame .

Reasoning : This is due to excitation of valence shell electrons of sodium ions from lower to higher orbitals

A. Assertion is true but the Reason is false

- B. Assertion is false, Reason is true
- C. Both Assertion and Reason are true and the

Reason is a correct explanation of the Reason.

D. Both Assertion and Reason are true but Reason

is not a correct explanation of the assertion.

#### Answer: C



53. Assertion: Amongest the halogens, fluorine can oxidise the elements to the highest oxidation- state.Reason: Due to small size of fluoride ion, it is difficult

to oxidise fluoride ion to fluorine. Hence reverse reaction takes place more easily.

A. Assertion is true but the Reason is false

B. Assertion is false, Reason is true

C. Both Assertion and Reason are true and the

Reason is a correct explanation of the Reason.

D. Both Assertion and Reason are true but Reason

is not a correct explanation of the assertion.

#### Answer: D

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54. Assertion: A solution of bromine in  $CCl_4$  is decolorised on passing acetylene gas through it Reasoning : Bromine is expelled from the solution by acetylene gas

A. Assertion is true but the Reason is false

B. Assertion is false, Reason is true

C. Both Assertion and Reason are true and the

Reason is a correct explanation of the Reason.

D. Both Assertion and Reason are true but Reason

is not a correct explanation of the assertion.

Answer: A



**55.** Assertion (A) : When the transition element ionises, the 4s-orbital electrons are removed before the 3d-orbital electrons.

Reason (R) : The energy of 3d-orbital electrons is lower than that of 4s-orbital electrons.

A. Assertion is true but the Reason is false

B. Assertion is false, Reason is true

C. Both Assertion and Reason are true and the

Reason is a correct explanation of the Reason.

D. Both Assertion and Reason are true but Reason

is not a correct explanation of the assertion.

# Answer: A



**56.** Assertion: Nitrogen is unreactive at room temperature but becomes reactive at elevated temperature (on heating or in the presence of catalysts).

Reason: In nitrogen molecule, there is extensive delocalisation of electrons.

A. Assertion is true but the Reason is false

B. Assertion is false, Reason is true

C. Both Assertion and Reason are true and the

Reason is a correct explanation of the Reason.

D. Both Assertion and Reason are true but Reason

is not a correct explanation of the assertion.

Answer: A

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57. Assertion: Fluorescein is an adsorption indicator.

Reasoning : The indicator fluorescein is a dye

A. Assertion is true but the Reason is false

- B. Assertion is false, Reason is true
- C. Both Assertion and Reason are true and the

Reason is a correct explanation of the Reason.

- D. Both Assertion and Reason are true but Reason
  - is not a correct explanation of the assertion.

#### Answer: D



**58.** Statement I: All enzymes are protiens but all proteins are not enzymes.

Statement II: Enzymes are biocatalysts and have stable configuration having an active site.

A. Assertion is true but the Reason is false

B. Assertion is false, Reason is true

C. Both Assertion and Reason are true and the

Reason is a correct explanation of the Reason.

D. Both Assertion and Reason are true but Reason

is not a correct explanation of the assertion.

#### Answer: D

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**59.** Assertion (A): Alkali metals are strong reducing agents.

Reason (R): They have only one electron to be lost form their valence shells.

A. Assertion is true but the Reason is false

B. Assertion is false, Reason is true

C. Both Assertion and Reason are true and the

Reason is a correct explanation of the Reason.

D. Both Assertion and Reason are true but Reason

is not a correct explanation of the assertion.

Answer: C

**60.** Assertion (A): May endothermic reactions that are not spontaneous at room temperature become spontaneous at high temperature.

Reason (R) : Entropy of the system increases with increase in temperature.

A. Assertion is true but the Reason is false

- B. Assertion is false, Reason is true
- C. Both Assertion and Reason are true and the

Reason is a correct explanation of the Reason.

D. Both Assertion and Reason are true but Reason

is not a correct explanation of the assertion.

# Answer: C

