



# CHEMISTRY

## BOOKS - KCET PREVIOUS YEAR PAPERS

### SOLVED PAPER 2011

Chemistry

1. Which one of the following statements is  
FLASE?

A. During roasting ,moisture is removed from the ore.

B. The ore is freed from almost all nonmetallic impurities.

C. Calcination of ore is carried out in the absence of any blast of air.

D. The concentrated zinc blende is subjected to calcination zinc blende is subjected to calcination during its extraction by pyrometallurgy.

**Answer: D**



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2. Which one of the following sets of quantum numbers represents the highest energy level in an atom?

A.  $n=4, l=0, m=0, s=+\frac{1}{2}$

B.  $n=3, l=1, m=1, s=+\frac{1}{2}$

C.  $n=3, l=2, m=-2, s = +\frac{1}{2}$

D.  $n=3, l=0, m=0, s=+\frac{1}{2}$

**Answer: C**



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3. When  $O_2$  is converted to  $O_2^+$

- A. Both paramagnetic character and bond order increase
- B. Bond order decreases
- C. Paramagnetic character increases

D. Paramagnetic character decreases and the bond order increases

**Answer: D**



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4. In chromite are , the oxidation number of iron and chromium respectively .....

A. + 3 + 2

B. + 3, + 6

C. +2, +6

D. +2, +3

**Answer: D**



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5. The number of naturally occurring p-block elements that are diamagnetic is

A. 18

B. 6

C. 5

D. 7

**Answer: C**



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6. If energies of the two photons are in the ratio 3:2, their wave lengths will be in the ratio of:

A. 9:4

B. 2:3

C. 1:2

D. 3:2

**Answer: B**



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7. Which one of these is NOT true for benzene

?



A. There are three carbon-carbon single bonds and three carbon-carbon double bonds.

B. It forms only one type of monosubstituted product.

C. The bond angle between carbon-carbon bonds is  $120^\circ$

D. Heat of hydrogenation of benzene is less than the theoretical value.

**Answer: A**



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8. Generally, the first ionization enthalpy increases along a period. But there are some exceptions. One which is NOT an expectation is:

A. Na and Mg

B. Be and B

C. N and O

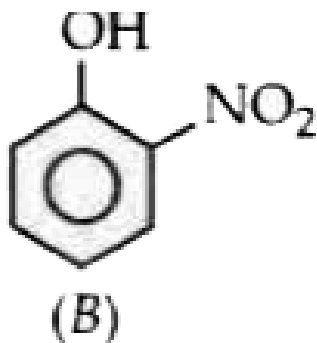
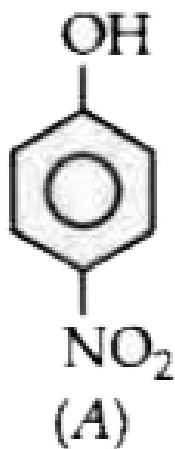
D. Mg and Al

**Answer: A**



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9. Out of the two compounds below the vapour pressure of (B) at a particular temperature is



A. lower than that of A

B. higher than that of A

C. Same as that of A

D. Higher or lower than A depending on  
the size of the vessel

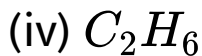
**Answer: B**



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**10.** Increasing order of carbon-carbon bond length for the following is :

(i)  $C_2H_4$



A.  $B < C < A < D$

B.  $C < B < A < D$

C.  $B < A < C < D$

D.  $D < C < A < B$

**Answer: C**



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11. A mixture of  $CaCl_2$  and NaCl weighing 4.44g is treated with sodium carbonate solution to precipitate all the calcium ions as calcium carbonate. The calcium carbonate so obtained is heated strongly to get 0.56g of CaO. The percentage of NaCl in the mixture is [Atomic mass of Ca = 40]

A. 31.5

B. 75

C. 25

D. 40.2

**Answer: B**



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**12.**  $50\text{cm}^3$  of 0.2N HCl is titrated against 0.1N NaOH solution. The titration is discontinued after adding  $50\text{cm}^3$  of NaOH. The remaining titration is completed by adding 0.5N KOH. The volume of KOH required for completing the titration is :

A.  $10\text{ cm}^3$

B.  $12 \text{ cm}^3$

C.  $16.2 \text{ cm}^3$

D.  $21.0 \text{ cm}^3$

**Answer: A**



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**13.** The r.m.s. velocity of hydrogen is  $\sqrt{7}$  times the r.m.s. velocity of nitrogen. If  $T$  is the temperature of the gas :



A.  $T_{N_2} = T_{H_2}$

B.  $T_{H_2} = \sqrt{7}T_{N_2}$

C.  $T_{N_2} = 2T_{H_2}$

D.  $T_{N_2} \sqrt{7}T_{H_2}$

**Answer: C**



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**14.** 25 g of each of the following gases are taken at  $27^\circ\text{C}$  and 600 mm pressure. Which of these will have the least volume?

A. HBr

B. HCl

C. HF

D. HI

**Answer: D**



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**15.** The amount of heat evolved when  $500\text{cm}^3$  of 0.1 M HCl is mixed with  $200\text{cm}^3$  of 0.2 M NaOH is .....

A. 1.292 kJ

B. 2.292 kJ

C. 0.292 kJ

D. 22.9 kJ

**Answer: B**



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**16.** Enthalpy of vaporization of benzene is  $+35.3 \text{ kJ mol}^{-1}$  at its boiling point,  $80^\circ \text{ C}$ . The entropy change in the transition of the vapour

to liquid at its boiling point [in  $JK^{-1}mol^{-1}$ ]

is .....

A.  $-100$

B.  $+100$

C.  $+342$

D.  $-342$

**Answer: A**



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17. Based on the first law of thermodynamics, which one of the following is correct ?

A. For an isothermal process,  $q = + w$

B. For an isothermal process,  $\Delta U = -q$

C. For an adiabatic process,  $\Delta U = -w$

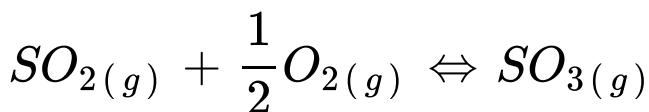
D. For an adiabatic process,  $q = -w$

**Answer: D**



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18. Consider the following gaseous equilibria with equilibrium constants  $K_1$  and  $K_2$  respectively.



The equilibrium constants are related as .....

A.  $2K_1 = K_2^2$

B.  $K_1^2 = \frac{1}{K_2}$

C.  $K_2^2 = \frac{1}{K_1}$

D.  $K_2 = \frac{2}{K_1^2}$

**Answer: B**



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**19.** During the adsorption of krypton on activated charcoal at low temperature .....

A.  $\Delta H < 0$  and  $\Delta S < 0$

B.  $\Delta H > 0$  and  $\Delta S < 0$

C.  $\Delta H > 0$  and  $\Delta S > 0$

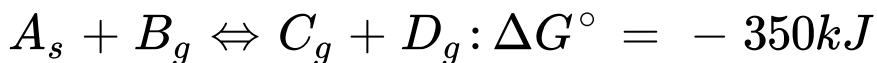
D.  $\Delta H < 0$  and  $\Delta S > 0$

**Answer: A**



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**20.** For the reversible reaction :



Which one of the following statements is true

?

A. The reaction is thermodynamically

nonfeasible

B. The entropy change is neative.



C. Equilibrium constant is greater than one.

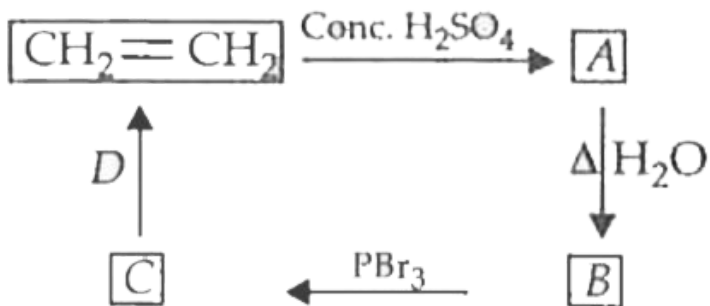
D. The reaction should be instantaneous.

**Answer: C**



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**21. Identify B and D in the following sequence of reactions**



A. ethanol and bromoethane

B. Ethyl hydrogen sulphate and alcoholic  
KOH

C. Ethyl hydrogen sulphate and aqueous  
KOH

D. Ethanol and alcoholic KOH

**Answer: D**



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22. The compound that reacts fastest with Lucas reagent is

A. butan -1-ol

B. butan-2-ol

C. 2-methyl propan-2-ol

D. 2-methyl propan-1-ol

**Answer: C**



23. Ethyl benzene can not be prepared by :

- A. Wurtz reaction
- B. Wurtz-fitting reaction
- C. Freidel-Crafts reaction
- D. Clemmensen reduction

**Answer: A**



24. 1.2g of an organic compound on Kjeldahlization liberates ammonia which consumes  $30\text{cm}^3$  of  $1\text{NHCl}$ . The percentage of nitrogen in the organic compound is

A. 30

B. 35

C. 46.67

D. 20.8

**Answer: B**



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25. Carbon can reduce ferric oxide to iron at a temperature above 983 K because

A. Free energy change for the formation of CO is more negative than that of  $Fe_2O_3$

B. CO is thermodynamically more stable than  $Fe_2O_3$

C. Carbon has higher affinity towards oxygen than iron

D. iron has higher affinity towards oxygen  
than carbon

**Answer: D**



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**26.** The yellow precipitate formed during the chromyl chloride test is chemically

A. Chromic acid

B. Lead chromate

C. Lead acetate

D. Sodium chromate

**Answer: B**



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27. One gram of silver gets distributed between  $10 \text{ cm}^3$  of molten zinc and  $100 \text{ cm}^3$  of molten lead of  $800^\circ \text{C}$ . The percentage of silver in the zinc layer is approximately



A. 2

B. 5

C. 3

D. 1

**Answer: C**



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**28. Which one of the following is true?**

A. NaOH is used in the concentration of bauxite ore

B. NaOH is a primary standard in volumetric analysis

C. Manganous hydroxide is soluble in excess of NaOH solution

D. NaOH solution does not react with  $Cl_2$

**Answer: A**



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29. In Ramsay and Rayleigh's isolation of noble gases from air, the nitrogen of the air is finally converted into

A.  $\text{NaNO}_2$  only

B. NO and  $\text{NO}_2$

C.  $\text{NaNO}_3$  only

D.  $\text{NaNO}_2$  and  $\text{NaNO}_3$

**Answer: D**



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30. The expected spin magnetic moment of

$Fe^{3+}$  is :

A. 4

B. 7

C. 5

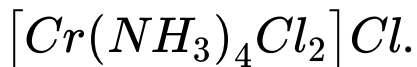
D. 6

**Answer: C**



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31. Write the IUPAC name of the complex



- A. dichlorotetraamminecobalt(III) chloride
- B. tetraaminedichlorocobalt(III) chloride
- C. tetraminedichlorocobalt(II) chloride
- D. tetraaminedichlorocobalt(IV) chloride

**Answer: B**



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32. Excess of silver nitrate solution is added to 100 ml of 0.01 M penta aqua chloro chromium (III) chloride solution .The mass of silver chloride obtained in grams is

[Atomic mass of silver is 108]

A.  $287 \times 10^{-3}$

B.  $143.5 \times 10^{-3}$

C.  $143.5 \times 10^2$

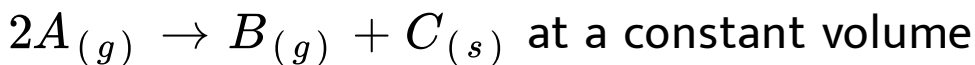
D.  $287 \times 10^{-2}$

**Answer: A**



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33. The following data were obtained during the first order decomposition of



and at a particular temperature.

S. No.	Time	Total pressure in Pascal
1	At the end of 10 min	300
2	After completion	200

A. 0.0693

B. 69.3

C. 6.93

D.  $6.93 \times 10^{-4}$

**Answer: A**



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**34.** The time required for 100% completion of a zero order reaction is

A.  $ak$

B.  $\frac{a}{2k}$



C.  $\frac{a}{k}$

D.  $\frac{2k}{a}$

**Answer: C**



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**35.** The activation energy for a reaction at the temperature  $T$  K was found to be  $2.303 RT \text{ J mol}^{-1}$ . The ratio of the rate constant to Arrhenius factor is :

A. 0.01

B. 0.1

C. 0.02

D. 0.001

**Answer: B**



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**36.** pH value of which one of the following is NOT equal to one ?

A. 0.1M  $CH_3COOH$

B. 0.1 M  $HNO_3$

C. 0.05 M  $H_2SO_4$

D. 50  $cm^3$  0.4 M HCl + 50  $cm^3$  0.2 M NaOH

**Answer: A**



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**37.** A buffer solution contains 0.1 mole of sodium acetate dissolved in  $1000cm^3$  of 0.1 M acetic acid. To the above buffer solution, 0.1

mole of sodium acetate is further added and dissolved. The pH of the resulting buffer is

A.  $pK_a$

B.  $pK_a + 2$

C.  $pK_a - \log 2$

D.  $pK_a + \log 2$

**Answer: D**



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**38.**  $H_2S$  is passed into one  $dm^3$  of a solution containing 0.1 mole of  $Zn^{2+}$  and 0.01 mole of  $Cu^{2+}$  till the sulphide ion concentration reaches  $8.1 \times 10^{-19}$  moles. Which one of the following statements is true?

[ $K_{sp}$  of ZnS and CuS are  $3 \times 10^{-22}$  and  $8 \times 10^{-36}$  respectively]

- A. Only ZnS precipitates
- B. Both CuS and ZnS precipitate
- C. Only CuS precipitates

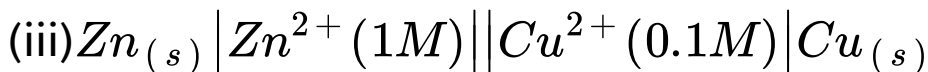
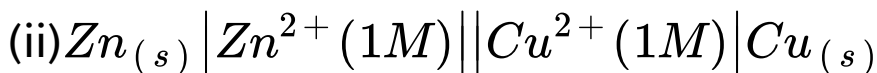
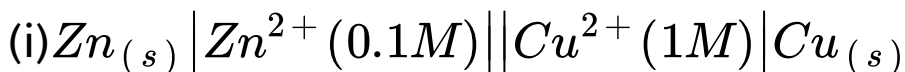
D. No precipitation occurs

**Answer: B**



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39.  $E_1$ ,  $E_2$  and  $E_3$  are the emfs of the following three galvanic cells respectively.



Which one of the following is true?

A.  $E_2 > E_1 > E_3$

B.  $E_1 > E_2 > E_3$

C.  $E_3 > E_1 > E_2$

D.  $E_3 > E_2 > E_1$

**Answer: B**



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**40.** 0.023g of sodium metal is reacted with  $100\text{cm}^3$  of water. The pH of the resulting solution is :

A. 10

B. 8

C. 9

D. 12

**Answer: D**



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**41.** The standard emf of a galvanic cell involving 2 moles of electrons in its redox



reaction is 0.59 V. The equilibrium constant for the redox reaction of the cell is

A.  $10^{20}$

B.  $10^5$

C. 10

D.  $10^{10}$

**Answer: A**



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42.  $9.65C$  of electric current is passed through fused anhydrous magnesium chloride. The magnesium metal thus, obtained is completely converted into a Grignard reagent. The number of moles of the Grignard reagent obtained is

A.  $5 \times 10^{-4}$

B.  $1 \times 10^{-4}$

C.  $5 \times 10^{-5}$

D.  $1 \times 10^{-5}$

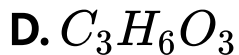
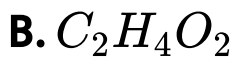
**Answer: C**



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**43.** The empirical formula of a non - electrolyte is  $CH_2O$ . A solution containing 6 g of the compound exerts the same osmotic pressure as that 0.05 M glucose solution at the same temperature. **The molecular formula of the compound is**

**A.  $CH_2O$**



**Answer: B**



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**44. Which one of the following is a covalent crystal?**

**A. Rock salt**

**B. Ice**

**C. Quartz**

**D. Dry ice**

**Answer: C**



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**45. Which one of the following does NOT involve coagulation ?**

- A. Clotting of blood by the use of ferric coagulation?**
- B. Formation of delta region**
- C. Treatment of drinking water by potash alum**
- D. Peptization.**

**Answer: D**



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**46. A solution of two liquids boils at a temperature more than the boiling point of either of them .Hence the binary solution show**

**A. Negative deviation from Raoult's law**

**B. Positive deviation from Raoult's law**

**C. No deviation from Raoult's law**

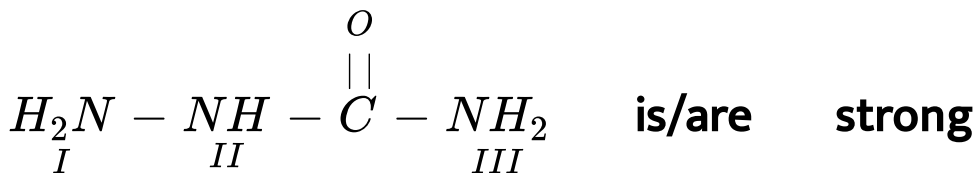
**D. Positive or negative deviation upon the composition**

Answer: A



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47. Which one of the nitrogen atoms in



nucleophilic centers

A. III

B. I

C. II



**D. All three nitrogen atoms are equally strong nucleophilic centers.**

**Answer: B**



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**48. The maximum number of possible optical isomers in 1-bromo-2-methyl cyclobutane is :**

**A. 4**

**B. 2**

**C. 8**

**D. 16**

**Answer: A**



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**49. Which of the following is most energetic conformation of cyclohexane?**

**A. Boat**

**B. Twisted boat**

C. Chair

D. Half chair

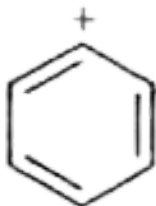
Answer: D



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50. Which one of the following is intermediate in the reaction of benzene with  $CH_3Cl$  in the presence of Anhydrous  $AlCl_3$  ?

A.  $Cl^+$



D.

**Answer: C**



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**51. Which one of the following is NOT TRUE for the hydrolysis of t-butyl bromide with aqueous**

**NaOH?**

**A. Reaction occurs through the  $S_N1$  mechanism.**

**B. The intermediate formed is a carbocation.**

**C. Rate of the reaction doubles when the concentration of alkali is doubled.**

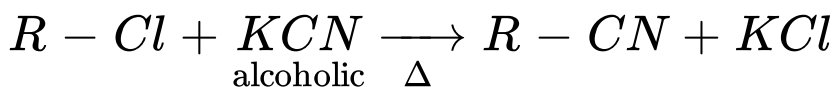
**D. Rate of the reaction doubles when the concentration of t-butyl bromide is double.**

**Answer: C**



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**52. Following is the substitution reaction in which -CN replaces -Cl.**



**To obtain propanonitrile, R-Cl should be**

- A. Chloroethane**
- B. 1-Chloropropane**
- C. Chloromethane**

## D. 2-Chloropropane

**Answer: A**



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**53. The conversion of m-nitrophenol to resorcinol involves respectively**

**A. Hydrolysis, diazotization and reduction**

**B. Diazotization, reduction and hydrolysis**

**C. hydrolysis, reduction and diazotization**

## D. Reduction ,diazotization and hydrolysis.

Answer: D



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54. Formic acid is a stronger acid than acetic acid. This can be explained using

A. + *Meffect*

B. - *Ieffect*

C. + *Ieffect*



**D.** – *Meffect*

**Answer: C**



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**55. The reagent with which both acetaldehyde and acetone react is**

**A. Fehling's solution**

**B.  $I_2 / NaOH$**

**C. Tollens' reagent**

## D. Carbonic acid

Answer: B



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56.  $\alpha$ -maltose consists of

A. One  $\alpha$ -D-glucopyranose unit and one  $\beta$ -

D-glucopyranose unit with 1-2 glycosidic

linkage

**B. Two  $\alpha$ -D-glucopyranose units with 1-2 glycosidic linkage**

**C. Two  $\beta$ -D- glucopyranose units with 1-4 glycosidic linkage**

**D. two  $\alpha$ -D-glucopyranose unit with 1-4 glycosidic linkage**

**Answer: D**



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57. Which of the following gives a aldehyde on dry distillation?

- A. Calcium formate + calcium acetate
- B. Calcium acetate + calcium benzoate
- C. Calcium acetate
- D. Calcium benzoate

**Answer:**



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**58. Which one of the following DOES NOT correctly match with each other?**

**A. Silk-polyamide**

**B. Lipase-enzyme**

**C. Butter-fat**

**D. Oxytocin -enzyme**

**Answer:**



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59. In an alkaline medium, glycine predominantly exists as/in a/an

A. Cation

B. Anion

C. Zwitter ion

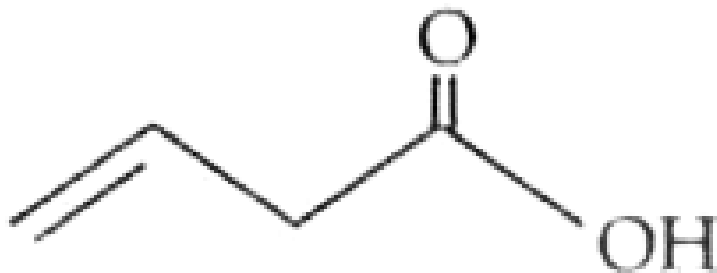
D. Covalent form

**Answer:**



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60. The IUPAC name of



- A. but-3-enoic acid
- B. but-1-enoic acid
- C. Pent-4-enoic acid
- D. Prop-2-enoic acid

**Answer:**



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