



CHEMISTRY

BOOKS - MTG CHEMISTRY (BENGALI ENGLISH)

QUESTION PAPER 2008

Chemistry

1. 2N HCl solution will have same molar concentration as a



Answer:



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2. One mole of methylamine on reaction with nitrous acid gives at N.T.P

- A. 1.0 litre of nitrogen
- B. 22.4 litres of nitrogen
- C. 11.2 litres of nitrogen
- D. 5.6 litres of nitrogen

Answer:



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3. Addition of sodium acetate to 0.1M acetic acid will cause

- A. increase of pH
- B. decrease of pH
- C. no change in pH

D. change in pH that cannot be predicted

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4. The electronic configuration $1s^2 2s^2 2p^6 3s^2 3p^6 3d^9$ represents a

- A. Metal atom
- B. Non metal atom
- C. Non metallic anion
- D. Metallic cation

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5. Unusually high boiling point of water is the result of

- A. Intermolecular hydrogen bonding
- B. Both inter-and intra-molecular hydrogen bonding
- C. Intramolecular hydrogen bonding
- D. High specific heat

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6. In the reaction $3A \rightarrow 2B$, rate of reaction $+\frac{d(B)}{dt}$ is equal to

A. $-\frac{1}{3} \frac{d(A)}{dt}$

B. $-\frac{2}{3} \frac{d(A)}{dt}$

C. $+2 \frac{d(A)}{dt}$

D. $-\frac{3}{2} \frac{d(A)}{dt}$

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7. In a given shell, the order of screening effect is

A. $f > d > p > s$

B. $s > p > d > f$

C. $f > p > s > d$

D. $p < d < s < f$

Answer:



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8. A catalyst is a substance which

A. Increases the equilibrium constant of the reaction

B. Increases the equilibrium concentration of products

C. Does not alter the reaction mechanism

D. Changes the activation energy of the reaction

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9. Which of the following expressions gives the de Broglie relationship?

A. $p = \frac{h}{mv}$

B. $\lambda = \frac{h}{mv}$

C. $\lambda = \frac{h}{mp}$

D. $\lambda m = \frac{v}{p}$

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10. The bond order in O_2^- ion is

A. 2

B. 1

C. 2.5

D. 1.5

Answer:



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11. The R.M.S. velocity of an ideal gas at constant pressure varies with density (d) as

A. $\frac{1}{\sqrt{d}}$

B. d

C. \sqrt{d}

D. d^2

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12. Solubility product of magnesium hydroxide at ordinary temperature is 1.96×10^{-11} . pH of a saturated solution of magnesium hydroxide will be

A. 10.53

B. 8.47

C. 6.94

D. 3.47

Answer:

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13. If the volume of the vessel in which the reaction, $2NO(g) + O_2(g) = 2NO_2(g)$ is occurring, is diminished to one third of

its initial volume, the rate of the reaction will be increased by (here, g = gas)

- A. 3 times
- B. 9 times
- C. 27 times
- D. 36 times

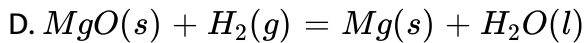
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14. Without performing any calculation indicate the process from the following list for which change of entropy will be positive

- A. $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$
- B. $HCl(g) + NH_3(g) \rightleftharpoons NH_4Cl(s)$
- C. $NH_4NO_3(s) = N_2O(g) + 2H_2O(g)$



(s = solid, l = liquid, g = gas)

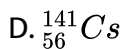
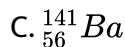
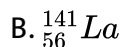
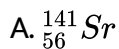
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15. The product P of the nuclear reaction ${}_{92}^{235}U + {}_0^1n \rightarrow P + {}_{36}^{92}Kr + 3{}_0^1n$

is



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16. The freezing point of water is depressed by $0.37^{\circ}C$ in a 0.01 molal NaCl solution. The freezing point of a 0.02 molal solution of urea is depressed by

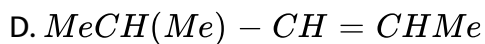
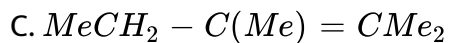
- A. $0.37^{\circ}C$
- B. $0.74^{\circ}C$
- C. $0.185^{\circ}C$
- D. $0^{\circ}C$

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17. Which one of the following gives on ozonolysis both aldehyde and ketone :

- A. $Me_2C = CHMe$
- B. $Me_2C = CMe_2$



Answer:

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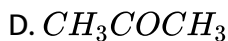
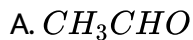
18. Benzoylation of phenol in alkaline medium is known as

- A. Friedel Craft reaction
- B. Wurtz-Fittig reaction
- C. Schotten-Baumann reaction
- D. Sabatier-Sandern's reaction

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19. Which one of the following compounds is most reactive towards nucleophilic addition?



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20. Distillation of acetone with concentrated H_2SO_4 gives

A. diacetone alcohol

B. mesityl oxide

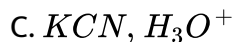
C. mesitylene

D. Propene-2-ol

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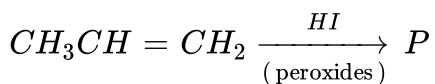
21. RCH_2CH_2OH can be converted into RCH_2CH_2COOH by the following sequence of steps:

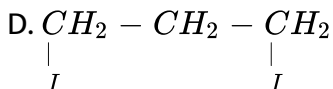
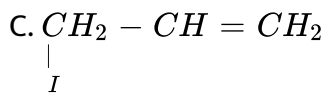
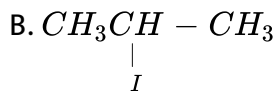


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22. The major product 'P' in the following reaction is





Answer:



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23. Formation of cyanohydrin from a ketone is an example of

- A. Electrophilic addition
- B. Nucleophilic substitution
- C. Nucleophilic addition
- D. Electrophilic substitution

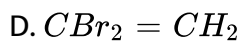
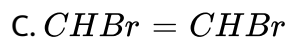
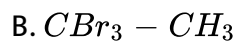
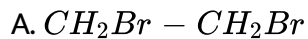
Answer:





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24. Which of the following will exhibit cis - trans isomerism?



Answer:



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25. How many primary amines are possible with the formula $C_4H_{11}N$?

A. 1

B. 2

C. 3

D. 4

Answer:

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26. The IUPAC name of $CH_3 - CH = CH - C \equiv CH$ is

A. Pent - 3 - en - 1 - yne

B. Pent - 3 - en - 4 - yne

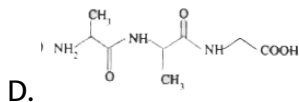
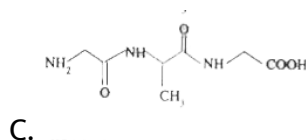
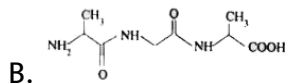
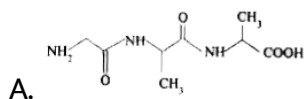
C. Pent-2-en - 4-yne

D. Pent-2-en - 3 - yne

Answer:

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27. A tripeptide is written as Glycine-Alanine-Glycine. The correct structure of the tripeptide is

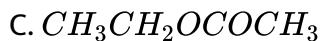


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28. Which of the following will produce only one product upon reduction with $LiAlH_4$?

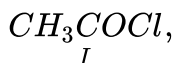




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29. Which pair of the following gives effervescence with aq. $NaHCO_3$?



A. I and II

B. I and IV

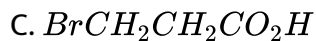
C. II and III

D. I and III

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30. Which of the following acids has the smallest dissociation constant?

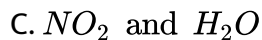
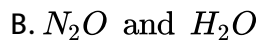
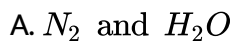


Answer:



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31. Which one of the following pairs is obtained on heating ammonium dichromate?



D. NO and NO_2

Answer:

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32. Which one of the following processes is used for the manufacture of calcium?

- A. Reduction of CaO with carbon
- B. Reduction of CaO with hydrogen
- C. Electrolysis of a mixture of anhydrous $CaCl_2$ and KCl
- D. Electrolysis of molten $Ca(OH)_2$

Answer:

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33. Composition of azurite mineral is

- A. $CuCO_3 \cdot CuO$
- B. $Cu(HCO_3)_2 \cdot Cu(OH)_2$
- C. $2CuCO_3 \cdot Cu(OH)_2$
- D. $CuCO_3 \cdot 2Cu(OH)_2$

Answer:



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34. When KI is added to an acidified solution of sodium nitrite

- A. No gas is liberated and I_2 is set free
- B. N_2 gas is liberated and HI is produced
- C. N_2O gas is liberated and I_2 is set free
- D. N_2 gas is liberated and HOI is produced

Answer:

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35. $Fe(OH)_3$ can be separated from $Al(OH)_3$ by the addition of

- A. NaCl solution
- B. dil. HCl solution
- C. NaOH solution
- D. NH_4Cl and NH_4OH

Answer:

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36. Select the incorrect statement from the following:

- A. Ozone is used as germicide for the purification of air

- B. In ozone oxygen-oxygen bond length is identical with that of molecular oxygen
- C. Ozone molecule is angular in shape
- D. Ozone is an oxidising agent

Answer:

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37. The brown complex obtained in the detection of nitrate radical is formulated as $[Fe(H_2O)_5NO]SO_4$.

What is the oxidation number of Fe in this complex?

- A. +1
- B. +2
- C. +3
- D. 0

Answer:



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38. Sodium nitrate on reduction with Zn in presence of NaOH solution, produces ammonia. Mass of sodium nitrate absorbing one mole of electron will be

A. 7.750 g

B. 10.625 g

C. 8.000 g

D. 9.875 g

Answer:



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39. In transforming 0.01 mol of PbS to $PbSO_4$, the volume of "10-volume" hydrogen peroxide required will be

- A. 11.2 ml.
- B. 22.4 ml.
- C. 33.6 ml.
- D. 44.8 ml.

Answer:



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40. An unknown element forms an oxide. What will be the equivalent weight of the element if the oxygen content is 20% of the above compound by weight?

- A. 16
- B. 32

C. 8

D. 64

Answer:



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