



CHEMISTRY

BOOKS - AIIMS PREVIOUS YEAR PAPERS

AIIMS 2012

Chemistry

1. Threshold frequency of a metal is $5 \times 10^{13} \text{ s}^{-1}$ upon which $1 \times 10^{14} \text{ s}^{-1}$ frequency light is focused. Then the maximum kinetic energy of emitted electron is

A. 3.3×10^{-21}

B. 3.3×10^{-20}

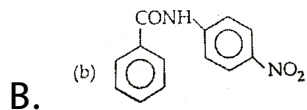
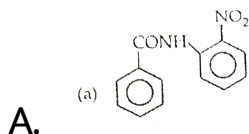
C. 6.6×10^{-21}

D. 6.6×10^{-20}

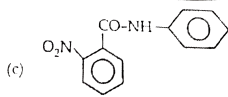
Answer:

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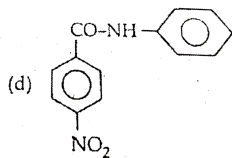
2. Which is the major product formed when $C_6H_5CONHC_6H_5$ undergoes nitration?



C.



D.



Answer:



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3. How many $P = S$ bond present in $(HPO_3)_3$?

A. 0

B. 3

C. 6

D. 9

Answer:



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4. At equilibrium which is correct :-

A. $\Delta G = 0$

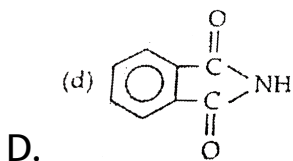
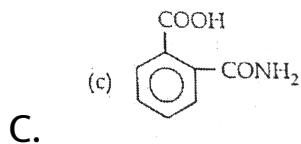
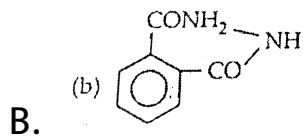
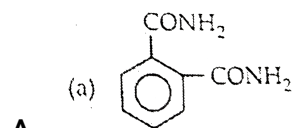
B. $\Delta S = 0$

C. $\Delta H = 0$

D. $\Delta G^\circ = 0$

Answer:

5. If phthalic acid is treated with NH_3 and then it is first heated weakly then strongly, the final product formed is



Answer:



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6. In bcc structure contribution of corner and central atom is

A. $\frac{1}{8}, 1$

B. $\frac{1}{4}, \frac{1}{8}$

C. $\frac{1}{8}, \frac{1}{2}$

D. $1, \frac{1}{2}$

Answer:



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7. Bond dissociation energy of CH_4 is 360 kJ/mol and C_2H_6 has 620 kJ/mol. Then bond dissociation energy of C-C bond is :-

A. 170 kJ/mol

B. 50 kJ/mol

C. 80 kJ/mol

D. 220 kJ/mol

Answer:



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8. For silicon which is not correct?

- A. It is a type of silicate.
- B. It is thermally unstable.
- C. It is hydrophilic.
- D. Repeating unit is R_2SiO .

Answer:



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9. In bohr's model $\frac{nh}{2\pi}$ shows :-

- A. Momentum

B. Kinetic energy

C. Potential energy

D. Angular momentum

Answer:



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10. For a reaction, $r = k(\text{CH}_3\text{COCH}_3)^{3/2}$ then unit of rate of reaction and rate constant respectively is

A. $\text{mol L}^{-1}\text{s}^{-1}$, $\text{mol}^{-1/2}\text{L}^{1/2}\text{s}^{-1}$

B. $\text{mol}^{-1}\text{L}^{-1}\text{s}^{-1}$, $\text{mol}^{-1/2}\text{L}^{-1/2}\text{s}^{-1}$

C. $\text{mol L}^{-1} \text{s}^{-1}$, $\text{mol}^{+1/2} \text{L}^{1/2} \text{s}^{-1}$

D. mol L s , $\text{mol}^{+1/2} \text{L}^{1/2} \text{s}$

Answer:



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11. If Si is doped with B,

A. n-type semiconductor is formed

B. p-type semiconductor is formed

C. insulator is formed

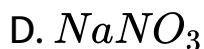
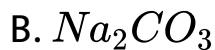
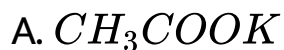
D. polymer is formed.

Answer:



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12. Which has the highest pH ?



Answer:



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13. Living in the atmosphere of CO is dangerous because it

A. combines with O_2 present inside to form CO_2

B. reduces organic matter of tissues

C. combines with haemoglobin and makes it incapable to absorb oxygen

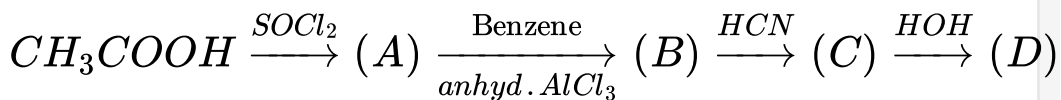
D. dries up the blood.

Answer:

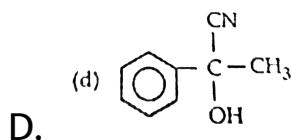
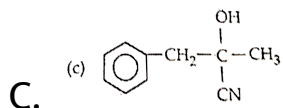
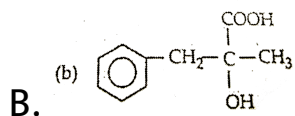
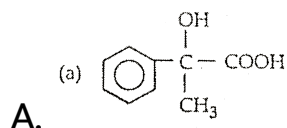


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14. A set of reactions yielded a product (D):



The structure of (D) would be:



Answer:

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15. Which of the following is a chiral compound?

A. Hexane

B. n-Butane

C. Methane

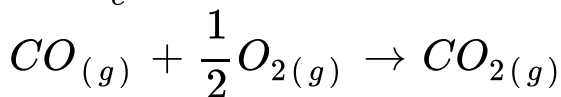
D. 2, 3, 4-Trimethylhexane.

Answer:



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16. $\frac{K_p}{K_c}$ for following reaction will be



A. RT

B. $\frac{1}{RT}$

C. $\frac{1}{\sqrt{RT}}$

D. $\frac{RT}{2}$

Answer:



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17. If $t_{1/2}$ vs $\frac{1}{a^2}$ is a straight line graph then determine the order of reaction.

A. Zero order

B. First order

C. Second order

D. Third order

Answer:



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18. $CsCl$ has *bcc* arrangement and its unit cell edge length is 400 pm. Calculate the interionic distance in $CsCl$.

A. 400 pm

B. 800 pm

C. $\sqrt{3} \times 100$ pm

D. $\frac{\sqrt{3}}{2} \times 400 \text{ pm}$

Answer:



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19. A colloidal solution is kept in dark and is illuminated by a beam of light then brightness appears at the right angle of direction of light. This effect is called :-

- A. Tyndall effect
- B. Brownian effect
- C. Hardy-Schulze effect

D. None of these

Answer:



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20. MnO_3 in an acidic medium dissociates into

A. MnO_2 and MnO_4^-

B. MnO and MnO_4^-

C. MnO_2 and MnO

D. MnO_2 and MnO_3

Answer:

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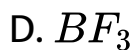
21. Magnetic moment of Cr^{2+} is nearest to



Answer:

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22. The dipole moment is minimum in



Answer:



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23. Number of isomers of C_5H_6

A. 2

B. 3

C. 4

D. 5

Answer:



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24. At 60° and 1 atm, N_2O_4 is 50% dissociated into NO_2 then K_p is

A. 1.33 atm

B. 2 atm

C. 2.67 atm

D. 3 atm

Answer:



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25. pK_a increases in benzoic acid when substituent "x" is bonded at para-position, then "x" is

A. $-COOH$

B. $-NO_2$

C. $-CN$

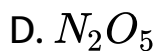
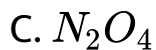
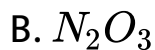
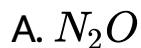
D. $-OCH_3$

Answer:



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26. $N - N$ bond length is minimum in



Answer:



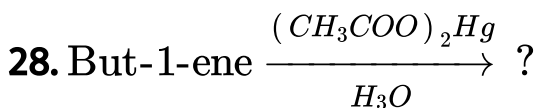
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27. Which is correct example of condensation polymer?

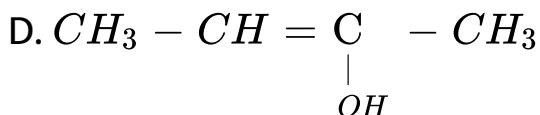
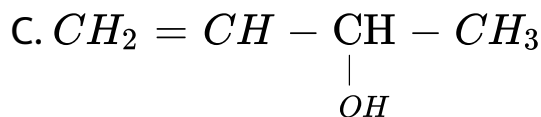
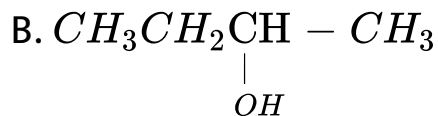
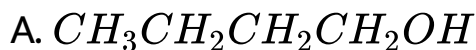
- A. Nylon, Buna-S
- B. Teflon, Buna-N
- C. Nylon6,6 Dacron
- D. Neoprene, Buna-S

Answer:

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The product in the above reaction is

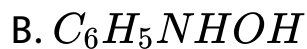


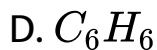
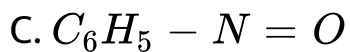
Answer:



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29. Nitrobenzene ($PhNO_2$) $\xrightarrow{Zn + NH_4Cl}$ P, P will be

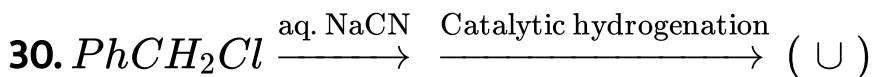




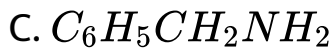
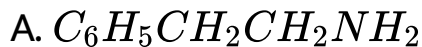
Answer:



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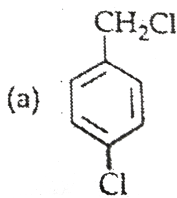
The final product (U) is :



Answer:

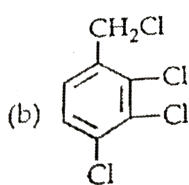
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31. An aromatic compound (A), $C_7H_6Cl_2$ gives $AgCl$ on boiling with alcoholic $AgNO_3$ soln. And yields C_7H_7OCl on treatment with $NaOH$. (A) on oxidation gives a monochlorobenzoic acid which affords only the monoderivative on nitration the compound (A) is

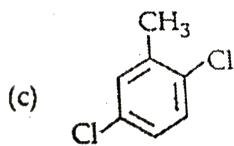


A.

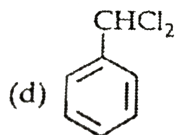
B.



C.



D.



Answer:

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32. Assertion : Rate of reaction doubles when concentration of reactant is doubled if it is a first

order reaction.

Reason : Rate constant also double.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer:



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33. Assertion : Sodium acetate on Kolbe's electrolysis gives methane.

Reason : Methylene free radical is formed at cathode.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer:



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34. Assertion : H_3PO_2 has strong reducing property but H_3PO_4 does not.

Reason : $P - OH$ bond present in H_3PO_4 .

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false
- D. If both assertion and reason are false.

Answer:





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35. Assertion: 1,2-dichloroethane is optically active.

Reason: Meso compounds are optically active.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false
- D. If both assertion and reason are false.

Answer:



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36. Assertion : ClF_3 has T-shape structure.

Reason : It has two lone pairs arranged at 180° angle.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false
- D. If both assertion and reason are false.

Answer:



37. Assertion : O_2 is paramagnetic.

Reason : It has one unpaired electron.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false
- D. If both assertion and reason are false.

Answer:



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38. Phenol is more reactive than benzene towards electrophilic substitution reaction.

In case of Phenol, the intermediate carbocation is more resonance stabilised.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false
- D. If both assertion and reason are false.

Answer:



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39. Assertion : Fluorine is a stronger oxidizing agent than iodine.

Reason : Fluorine has greater electronegativity than iodine.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer:



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40. Assertion: Ce^{4+} is used as an oxidising agent in volumetric analysis.

Reason: Ce^{4+} has the tendency to attain +3 oxidation state.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer:



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41. Assertion : The spectrum of He^+ is expected to be similar to that of hydrogen.

Reason : He^+ is also one electron system.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer:

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42. Assertion: Cl_2 gas bleaches the articles permanently.

Reason: Cl_2 is a strong reducing agent.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false
- D. If both assertion and reason are false.

Answer:



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43. Statement I $[Fe(H_2O)_5NO]SO_4$ is paramagnetic
Statement II The Fe in $[Fe(H_2O)_5NO]SO_4$ has three unpaired electrons .

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false
- D. If both assertion and reason are false.

Answer:



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44. Assertion : The solubility of a gas in a liquid increases with increase of pressure.

Reason : The solubility of a gas in a liquid is directly proportional to the pressure of the gas.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false
- D. If both assertion and reason are false.

Answer:



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45. Assertion: In a pressure cooker the water is brought to boil. The cooker is then removed from the stove. Now on removing the lid the pressure cooker, the water starts boiling again.

Reason: The impurities in water bring down its boiling point.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer:



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