



CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA TPC JEE MAIN TEST 47

Chemistry Single Choice

1. Which of the following is the incorrect statement?

A. He_2 does not exist because its bond order is zero.

B. O_2 , O_2^- and O_2^+ are all paramagnetic.

C. Any two atomic orbitals can combine to form two molecular orbitals.

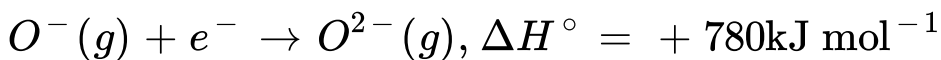
D. π_{2p_x} and π_{2p_y} are degenerate molecular orbitals.

Answer: C



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2. The formation of the oxide ion, $O^{2-}(g)$, from oxygen atom requires first an exothermic and then an endothermic step as shown below:



Thus process of formation of O^{2-} in gas phase is

unfavourable even though O^{2-} is isoelectronic with Neon. It is due to the fact that,

A. oxygen is more electronegative.

B. addition of electron in oxygen results in larger size of the ion.

C. electron repulsion outweighs the stability gained by achieving noble gas configuration.

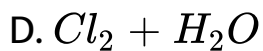
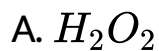
D. Lattice energy of oxide formation compensate energy gained during anion formation.

Answer: D



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3. Which is not used for permanent bleaching ?



Answer: B



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4. Incorrect match of general electronic configuration?

A. $(n - 2)f^{1-14}(n - 1)d^{0-1}ns^2 =$ f-block

elements

B. $(n - 1)s^2p^6ns^{1-2} =$ s-Block elements

C. $ns^{1-2}np^{0-5} =$ Representative elements

D. $(n - 2)f^{1-14}(n - 1)d^{1-10}ns^2 =$ d-Block

elements

Answer: D



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5. From which of the following reaction anhydrous $MgCl_2$ can be prepared.

A. $MgCl_2 \cdot 6H_2O$ + current of dry HCl

B. Mg + dil HCl on heating

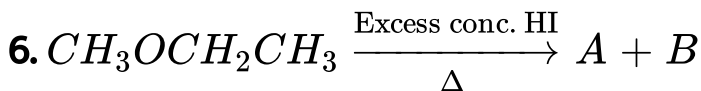
C. $MgCl_2 \cdot 6H_2O$ on heating

D. $MgSO_4 \cdot 7H_2O$ on heating

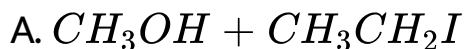
Answer: A

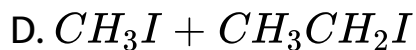
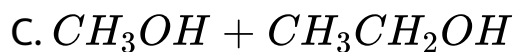


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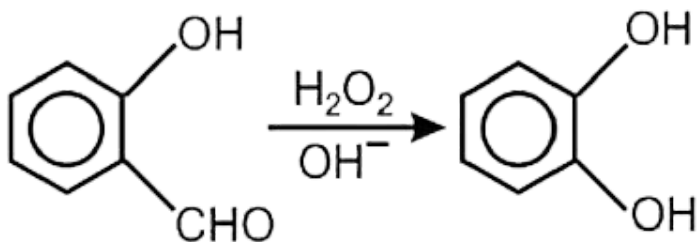
Products A and B, respectively, are:





Answer: D

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7.

Identify the name of the reaction.

A. Reimer-Tiemann reaction

B. Liebermann's nitroso reaction

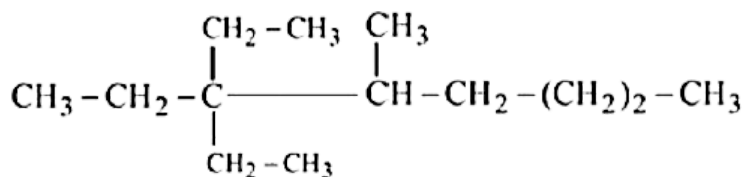
C. Dakin reaction

D. Leader-Manase reaction

Answer: C

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8. According to the IUPAC convention, the name of the compound is



A. 2, 2-diethyl-5-methyldecane.

B. 3, 3-ethyl-5-methyldecane.

C. 3,3-diethyl-5-methylhexane.

D. 3,3-diethyl-4-methyl octane.

Answer: D



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9. The activation energy of a reaction, can be determined from the slope of which of the following graphs?

A. $\frac{\ln k}{T}$ vs. T

B. $\ln k$ vs. $\frac{1}{T}$

C. $\frac{T}{\ln k}$ vs. $\frac{1}{T}$

D. $\ln k$ vs. T

Answer: B

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10. If 0.5 A current is passed through acidified water for 30 minute then determine the volume of O_2 (g) being produced at $25^\circ C$ and 760 mm of Hg provided the gas is saturated using water vapour (Given: aqueous tension = 23.0 mm at $25^\circ C$).

A. $5.88 \times 10^{-2} L$

B. $17.4 \times 10^{-2} L$

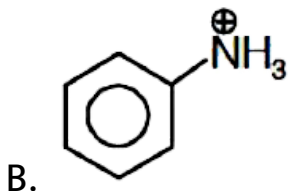
C. $1.31 \times 10^{-2} L$

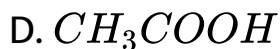
D. $11.3 \times 10^{-2} L$

Answer: A

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11. Which is the Lewis acid among following:





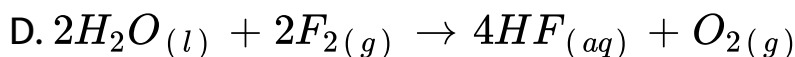
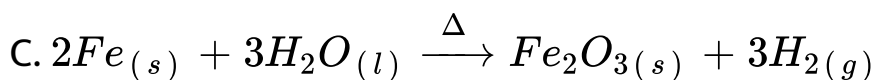
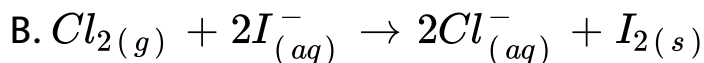
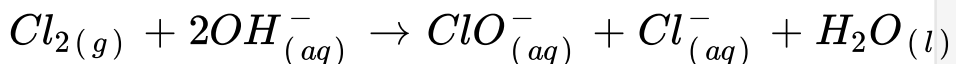
Answer: C



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12. Which of the following is a disproportionation reaction?

A.



Answer: A



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13. Crystal structure of diamond is similar to: -

A. $\text{NaCl}(s)$

B. Graphite(s)

C. $\text{ZnS}(s)$

D. $\text{Na}_2\text{O}(s)$

Answer: C



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14. On mixing 10 mL of acetone with 40 mL of chloroform, the total volume of the solution is :

A. < 50 mL

B. > 50 mL

C. $= 50$ mL

D. Cannot be predicted

Answer: A



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15. At a temperature of 273 K and pressure of 2 atm the weight of 305 mL of a diatomic gas is 1g. What is the weight of one atom? (N is the Av. no.)

A. $\frac{16}{N}$

B. $\frac{32}{N}$

C. 16 N

D. 32 N

Answer: A



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16. Pick out the incorrect match of intermolecular attraction between molecule/ion in the following pairs

A. HBr and H_2S -Dipole-dipole attraction

B. Cl_2 and CBr_4 - Dispersion force (London force)

C. NH_3 and C_6H_6 -Hydrogen bond

D. I_2 and NO_3^- - Ion-induced dipole attraction

Answer: C



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17. What will be the orbital angular momentum for a d-orbital electron?

A. $\sqrt{6} \left(\frac{h}{2\pi} \right)$

B. $\sqrt{2} \left(\frac{h}{2\pi} \right)$

C. $\frac{h}{2\pi}$

D. $2 \left(\frac{h}{2\pi} \right)$

Answer: A



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18. Milk is:

- A. fat dispersed in water
- B. water dispersed in fat
- C. fat and water dispersed in an oil
- D. a homogeneous solution of fat and water

Answer: A



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19. Which of the following compounds will absorb the maximum quantity of heat per mole when dissolved completely in the same amount of Water? The heats of solution of these compounds at $25^{\circ}C$ in kJ / mole of each solute is given in brackets :

A. $HNO_3(\Delta H = -33)$

B. $KCl(\Delta H = +17.64)$

C. $NH_4NO_3(\Delta H = +25.5)$

D. $HCl(\Delta H = -74.1)$

Answer: C



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Chemistry Subjective Numerical

1. Possible number of isomers of $[Pt(Cl)(NO_2)(NO_3)(SCN)]^{2-}$, given it is a square planar complex, is _____.



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2. Assuming the ideal geometries without any distortions, find the value of $\left(\frac{P}{Q}\right)$, on the basis of the following information.

Properties and Features of Osmium complexes	$\text{OsCl}_x(\text{CO})_{2x}$	$\text{Os}(\text{CO})_{x+3}$
Net dipole moment	Non-zero	Zero
C – Os – C bond angles 90° and 180°	Yes	Yes
Geometrical isomerism possible	Yes	No
Maximum number of atoms in single plane	P	Q



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3. The total number of ores of aluminium present in the following minerals are -

Magnesite, cryolite, kaolinite, malachite, epsom salt,
bauxite, cuprite

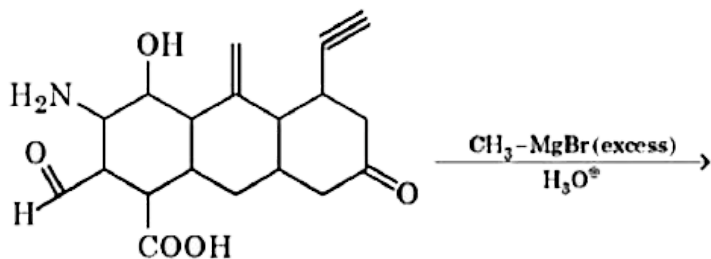
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4. In the crown like structure of a rhombic sulphur, the total number of S atoms is

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5. How many moles of Grignard reagent will be consumed during the following reaction for one mole

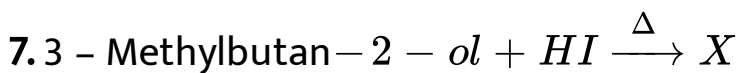
of the starting compound?



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6. A molecule of stachyose contains carbon atoms.

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Find the position of the nucleophile in product 'X'?

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8. How many of the following will show isomerism?

Butane, propane, hexane, ethane, pentane, methane, octane.

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9. XeF_4 and SbF_5 forms $[XeF_x]^+ [SbF_y]^-$. Then the possible value of y is

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