

A-LEVEL CHEMISTRY MULTIPLE CHOICE QUESTIONS: PART 1

- Which of the following is the correct configuration for the chromium atom?
 - $[\text{Ar}]3d^44s^2$
 - $[\text{Ar}]4s^24p^4$
 - $[\text{Ar}]3d^6$
 - $[\text{Ar}]3d^54s^1$

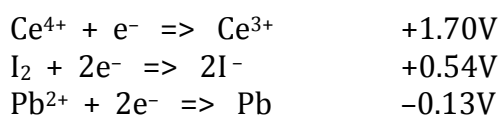
- Which of the following has the most negative lattice enthalpy of formation?
 - NaCl(s)
 - KBr(s)
 - MgO(s)
 - CaS(s)

- When bromoethane is reacted with an excess of ammonia the main organic product will be which of the following?
 - ethylamine
 - diethylamine
 - triethylamine
 - tetraethylammonium bromide

- An aqueous solution containing the complex ion $[\text{M}(\text{H}_2\text{O})_6]^{2+}$ is pale blue. When concentrated ammonia is added the solution turns deep blue. When concentrated hydrochloric acid is added to a solution of $[\text{M}(\text{H}_2\text{O})_6]^{2+}$ it turns yellow-green. What is the identity of the transition metal M?
 - chromium
 - cobalt
 - nickel
 - copper

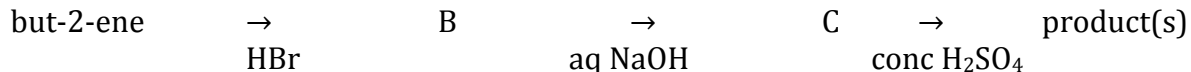
- Which of the following represents the enthalpy of atomisation of chlorine?
 - $\text{Cl}_2(\text{g}) \rightarrow 2\text{Cl}(\text{g})$
 - $\frac{1}{2}\text{Cl}_2(\text{g}) \rightarrow \text{Cl}(\text{g})$
 - $\text{Cl}(\text{g}) + \text{e} \rightarrow \text{Cl}^-(\text{g})$
 - $\text{Cl}^-(\text{g}) \rightarrow \text{Cl}^-(\text{aq})$

6. Use the following standard reduction potentials to decide which of the four statements below is the correct one:



- a. Ce^{4+} is the strongest oxidising agent and Ce^{3+} is the weakest reducing agent
b. Ce^{4+} is the strongest oxidising agent and Pb is the weakest reducing agent
c. Pb^{2+} is the strongest oxidising agent and Pb is the weakest reducing agent
d. Pb is the strongest oxidising agent and Pb^{2+} is the weakest reducing agent
7. Ethanoic acid has a K_a value of 1.75×10^{-5} , and a 0.01 mol dm^{-3} solution of ethanoic acid has a pH of 3.37. What is the percentage dissociation of the ethanoic acid in this solution?
- a. 1.75
b. 3.37
c. 4.27
d. 23.4

8. What is the product(s) of the following reaction scheme?



- a. butanal
b. butanone
c. mixture of two alkenes
d. mixture of three alkenes
9. How many hydrogen atoms are there in one molecule of 2,3,4,5,6,7-hexamethyldecane?
- a. 28
b. 30
c. 32
d. 34
10. Serine ($\text{H}_2\text{NCH}(\text{CH}_2\text{OH})\text{COOH}$) has an isoelectric point of pH 5.68. Which of the following represents the correct molecular structure of the amino acid serine at pH10?
- a. $\text{H}_2\text{NCH}(\text{CH}_2\text{OH})\text{COOH}$
b. $^+\text{H}_3\text{NCH}(\text{CH}_2\text{OH})\text{COOH}$
c. $\text{H}_2\text{NCH}(\text{CH}_2\text{OH})\text{COO}^-$
d. $^+\text{H}_3\text{NCH}(\text{CH}_2\text{OH})\text{COO}^-$