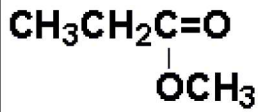


## Simulation exam 2

1. The best classification for the following compound is: \_\_\_\_\_ .



- (a) aldehyde
- (b) ester
- (c) ketone
- (d) carboxylic acid
- (e) alcohol

2. Choose the correct match regarding name of inorganic compounds;

- 1.  $\text{CaI}_2$ : calcium iodide
- 2.  $\text{Fe}(\text{NO}_3)_3$ : iron nitrate
- 3.  $\text{Al}(\text{OH})_3$ : Aluminum hydroxide

- A 3 only
- B 1 and 3 only
- C 1, 2 and 3
- D 1 and 2 only
- E 1 only

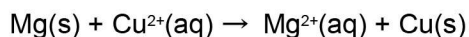
3. 44.8 liter of nitrogen gas (in STP condition) consist of how many atoms of nitrogen?  
(in STP condition every mol of gas occupies 22.4 lit )  
(Avogadro number is  $6.0 \times 10^{23}$ )

- A  $2.4 \times 10^{23}$
- B  $2.4 \times 10^{24}$
- C  $1.2 \times 10^{23}$
- D  $1.2 \times 10^{24}$
- E  $1.5 \times 10^{23}$

4. The precipitate formed when barium chloride is treated with sulfuric acid is:

- A  $\text{BaS}_2\text{O}_4$
- B  $\text{BaSO}_3$
- C  $\text{BaSO}_2$
- D  $\text{BaSO}_4$
- E BaS

5. What type of chemical reaction is the following reaction?



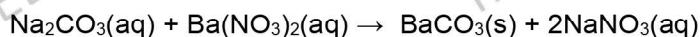
1. Single replacement
2. Oxidation reduction
3. Combination

- A 2 only  
B 1 and 3 only  
C 1, 2 and 3  
D 1 and 2 only  
E 1 only

6. According to the Lewis theory, a base

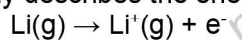
- (a) is a proton acceptor.
- (b) is a proton donor.
- (c) makes available a share in a pair of electrons.
- (d) produces  $\text{OH}^-$  ions in aqueous solution.
- (e) accepts a share in a pair of electrons.

7. The spectator ion(s) in the following reaction is/are:



- (a)  $\text{Na}^+$  and  $\text{Ba}^{2+}$
- (b)  $\text{Ba}^{2+}$  and  $\text{CO}_3^{2-}$
- (c)  $\text{CO}_3^{2-}$  and  $\text{NO}_3^-$
- (d)  $\text{Na}^+$  only
- (e)  $\text{Na}^+$  and  $\text{NO}_3^-$

8. Which of the following terms accurately describes the energy associated with the process:



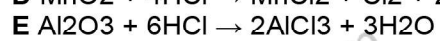
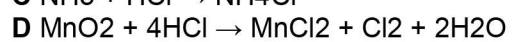
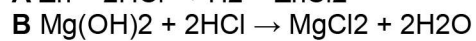
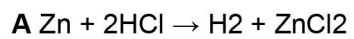
- (a) electron affinity
- (b) binding energy
- (c) ionization energy
- (d) electronegativity
- (e) none of these

9. Which of the following pairs of molecules and their molecular geometries is **INCORRECT**?

- A  $\text{NF}_3$  - trigonal planar  
B  $\text{H}_2\text{O}$  - bent  
C  $\text{BF}_3$  - trigonal planar  
D  $\text{AsF}_5$  - trigonal bipyramidal  
E  $\text{SF}_6$  - octahedral

10. A triple bond contains \_\_\_ sigma bond(s) and \_\_\_ pi bond(s).
- (a) 0, 3
  - (b) 3, 0
  - (c) 2, 1
  - (d) 1, 2
  - (e) 3, 2
11. The reaction of ethyne with which of the following gives  $\text{CH}_2\text{Br-CHBrCl}$ ?
- (a) HCl, then HBr
  - (b) HCl, then  $\text{Br}_2$
  - (c)  $\text{Cl}_2$ , then HBr
  - (d)  $\text{Cl}_2$ , then  $\text{Br}_2$
  - (e)  $\text{H}_2$ , then  $\text{Br}_2$
12. Suppose the reaction:  $\text{A} + 2\text{B} \rightarrow \text{AB}_2$  occurs by the following mechanism:
- Step 1  $\text{A} + \text{B} \rightarrow \text{AB}$  slow
- Step 2  $\text{AB} + \text{B} \rightarrow \text{AB}_2$  fast
- Overall  $\text{A} + 2\text{B} \rightarrow \text{AB}_2$
- The rate law expression must be Rate = \_\_\_\_\_.
- (a)  $k[\text{A}]$
  - (b)  $k[\text{B}]$
  - (c)  $k[\text{A}][\text{B}]$
  - (d)  $k[\text{B}]^2$
  - (e)  $k[\text{A}][\text{B}]^2$
13. Which of the following separation techniques can be used to obtain liquid ethanol from an aqueous mixture of ethanol, ethanal and ethanoic acid?
- 1 filtration
  - 2 fractional distillation
  - 3 centrifugation
- A 1 and 3 only
  - B 1 and 2 only
  - C 2 only
  - D 1 only
  - E 3 only
14. In which of the following pairs of species does the vanadium, V, have the same oxidation state?
- A  $\text{VO}_2$  and  $\text{VO}_3^-$
  - B  $\text{VO}_2$  and  $\text{V}_2\text{O}_5$
  - C  $\text{VCl}_4$  and  $\text{VO}_2^+$
  - D  $\text{VCl}_4$  and  $\text{VO}_3^-$
  - E  $\text{V}_2\text{O}_5$  and  $\text{VO}_2^+$

15. In which of the following reactions does HCl act as a reducing agent?



**Answer key:**

1.b	2.b	3.a	4.d	5.d	6.c	7.e	8.c	9.a	10.d
11.b	12.c	13.c	14.e	15.d					

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