

# Sample Test for University Entrance Exams

## Chemistry

- Which substance could be decomposed by chemical reactions?
  - water
  - sugar
  - mercury
  - argon

A: 1, 2                      B: 2, 3                      C: 3, 4                      D: 2, 4
- What is the volume of 8.8g CO<sub>2</sub> at STP Mw (CO<sub>2</sub>) = 44
  - 22.4 L
  - 2.24 L
  - 44.8 L
  - 4.48 L
- Under the symbol of 2 SO<sub>3</sub>, you may understand
  - 2 moles of SO<sub>3</sub>
  - 2 molecules of SO<sub>3</sub>
  - 6 moles of O<sub>2</sub>
  - 2 x 6 x 10<sup>23</sup> O atoms

A: 1, 2                      B: 2, 3                      C: 3, 4                      D: 1, 2, 3
- Which of the following atoms are isotopes of each other?
  - X: 11 protons, 12 neutrons
  - Y: 11 protons, 11 neutrons
  - V: 12 protons, 11 neutrons
  - W: 11 protons, 13 neutrons

A: 1, 3                      B: 1,2,4                      C: all of them                      D: none of them
- Which main energy shell can accommodate a maximum number of 8 electrons?
  - 1
  - 2
  - 3
  - all of them
- An element has the electronic configuration of 1s<sup>2</sup> 2s<sup>2</sup> 2p<sup>6</sup> 3s<sup>2</sup> 3p<sup>2</sup>. The number of valence electrons is
  - 2
  - 4
  - 12
  - 14
- Which electron dot symbol of a main group element represents a metal?
  - X
  - X
  - X
  - X

8. Which group of the periodic table is called halogens?

- A. II A
- B. IV A
- C. VI A
- D. VII A

9. Magnesium forms an ion with a charge of

- A. 1+ by losing one electron
- B. 1- by gaining one electron
- C. 2+ by losing two electrons
- D. 2- by gaining two electrons

10. Which molecules contain polar covalent bonds?

- 1. CO<sub>2</sub>
- 2. CCl<sub>4</sub>
- 3. F<sub>2</sub>
- 4. KF

A: 1,2

B: 2, 4

C: 1, 2, 3

D: 2, 3, 4

11. Ionic bond is likely to form between the atoms of

- 1. C and Br
- 2. Ca and I
- 3. P and Cl
- 4. O and Na

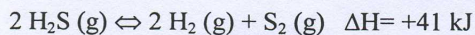
A: 1, 2

B: 2, 3

C: 2, 4

D: 1, 2, 4

12. Which of the following changes will shift the reaction at equilibrium to the left



- 1. increase the concentration of H<sub>2</sub>S
- 2. decrease the temperature
- 3. increase the pressure
- 4. increase the concentration of H<sub>2</sub>

A: 1, 2

B: 1, 2, 3

C: 2, 3, 4

D: 1, 2, 3, 4

13. Which solution contains the largest amount of glucose?

- A. 0.5 L 2 M solution
- B. 50 mL 0.2 M solution
- C. 1000 mL 1 M solution
- D. 0.25 L 5 M solution

14. Choose the solution with the highest hydronium ion concentration.

- A. pH = 2 HCl solution
- B. pH = 2 acetic acid solution
- C. 0.1 M HCl solution
- D. 0.1 M acetic acid solution

15. The oxidation number of Mn in  $\text{MnO}_4$  is

- A. +1
- B. +8
- C. +7
- D. -7