

1. The correct set of four quantum numbers for the balance electron of rubidium atom ($Z=37$) is

- A.5, 1, 1, +1/2
- B.6, 0, 0, +1/2
- C.5, 0, 0, +1/2
- D.5, 1, 0, -1/2

2. The correct electronic configuration of Cr ($Z=24$) is

- A.[Ar] 3d 5 4s 1
- B.[Ar] 3d 4 4s 2
- C.[Ar] 3d 9 4s 2
- D.[Ar] 3d 10 4s 1

3. Which of the following statements is incorrect for periodic classification of elements?

- A.The properties of elements are periodic function of their atomic numbers.
- B.Non-metallic elements are less in number than metallic elements.
- C.For transition elements,the 3d-orbital are filled with electrons after 3p-orbitals and before 4s-orbitals
- D.The first ionisation enthalpies of elements generally increase with increase in atomic number as we go long a period.

4. The atomic mass of Sr as predicted according to the Dobereiner's law of triads in the triad Ca($Z=40$), Sr, Ba($Z=137$) is ____.

- A.80
- B.88
- C.100
- D.85

5. In which of the following species is the underlined carbon having Sp^3 hybridisation?

- A. CH_3COOH
- B. CH_3CH_2OH
- C. CH_3COCH_3
- D. $CH_2=CHCH_3$

6. Which of the following pair is expected to have the same bond order?

- A. O_2 , N_2
- B. O_2^+ , N_2^-
- C. O_2^- , N_2^+
- D. O_2^- , N_2^-

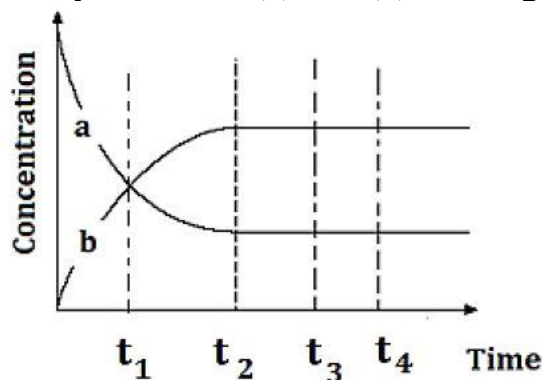
7. Standard enthalpy change of combustion is defined as the enthalpy change when

- A.1 mole of compound is burnt in oxygen.
- B.1 mole of compound is completely burnt in oxygen under standard conditions of 298K and 1 bar.
- C.1 mole of compound is burnt under oxygen at 293K and 1 bar.
- D.1 mole of oxygen is used to burn a compound under standard conditions of 298K and 1 bar.

8. Thermodynamics is not concerned about

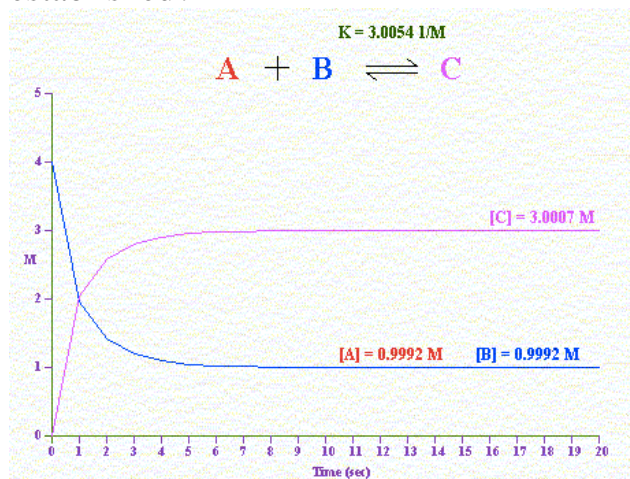
- A.Energy changes involved in a chemical reaction.
- B.The extent to which a chemical reaction proceeds
- C.The rate at which a reaction proceeds.
- D.The feasibility of a chemical reaction.

9. Identify the labels (a) and (b) on the graph.



- A.a is the amount (concentration) of reactants and b is the concentration of products
- B.a is the amount (concentration) of products and b is the concentration of reactants
- C.a is the volume of reactants and b is the volume of products
- D.a is the mass of reactants and b is the mass of products

10. At what time (in seconds) is equilibrium established?



- A. 0 seconds
 B. 1 second
 C. 5 seconds
 D. 10 seconds

11. Which reagent would be best for the selective reduction of an aldehyde?

- A. NaBH_4 / NaBH_4
 B. LiAlH_4 / LiAlH_4
 C. OsO_4 / OsO_4
 D. H_2 / Lindlar Catalyst

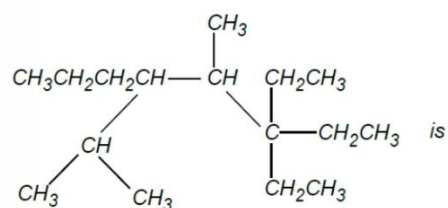
12. What element is being Oxidized?



- A. N
 B. H
 C. O
 D. S

13.

The IUPAC name of the compound

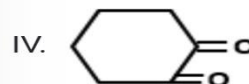
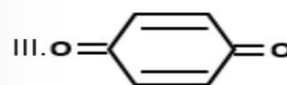
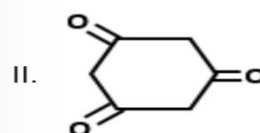
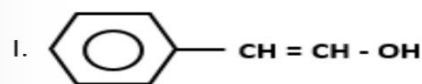


1. 3,3-diethyl-4-methyl-5 (methylethyl)octane
 2. 3,3-diethyl-5-isopropyl-4-methyloctane
 3. 4-isopropyl-5-methyl-6,6-diethyloctane
 4. 6,6-diethyl-4-isopropyl-5-methyloctane

- A. 1
 B. 2
 C. 3
 D. 4

14.

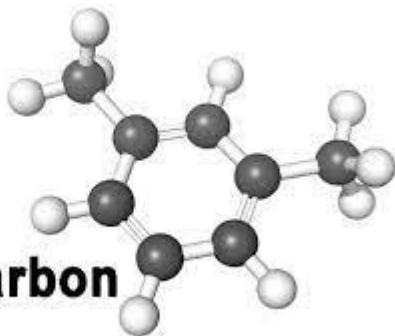
Tautomerism is exhibited by



1. 1 and 2
 2. 1, 3 and 4
 3. 1, 2 and 4
 4. 1, 2, 3 and 4

- A. 1
 B. 2
 C. 3
 D. 4

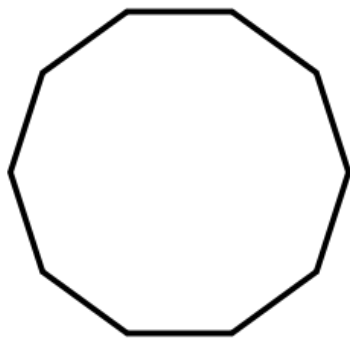
15. What is the general formula for saturated hydrocarbons?



Hydrocarbon

- A. C_nH_{2n}
- B. C_nH_{n+1}
- C. C_nH_{2n+1}
- D. C_nH_{2n+2}

16. What is the name of the compound? And how many carbon atom of the compound?



- A. Cyclononane, 9 carbon atom
- B. Cyclohexane, 6 carbon atom
- C. Cyclodecane, 10 carbon atom
- D. Cyclobutane, 4 carbon atom

17. What two types of atoms make a covalent bond?

- A. 2 Nonmetals
- B. 1 Nonmetal and 1 Metal
- C. 2 Metals
- D. 2 Noble Gases

18. Oxygen's atomic number is 8. This means that an oxygen atom must have

- A. 8 electrons
- B. 8 protons
- C. 8 neutrons
- D. a mass number of 8

19. WHICH OF THE FOLLOWING HAS MOST NEGATIVE ELECTRON GAIN ENTHALPY

- A. P
- B. S
- C. Cl
- D. F

20. Chemical potential is _____ property

- A. Extensive
- B. Intensive
- C. Colligative
- D. Constitutive

Answer:

21. How many electrons should Oxygen have around its Lewis dot model?

Answer:

22. Determine the number of moles of Na_2CrO_4 that contain 4.33×10^{25} oxygen atoms. Given the Avogadro's number, N_A is 6.02×10^{23} .

Answer:

23. What is the mass of 4.0 moles of CH_4 in g?

Answer:

24. What is the molality of a solution made by dissolving 2 moles of $NaOH$ in 400 grams of water inmol/kg?

Answer:

25. What is the molality of a solution in which 3.0 moles of $NaCl$ is dissolved in 1.5 Kg of water?

Answer: