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CBSE Board
Class XI
Chemistry
Sample Paper 5

Q1. Which statement is wrong about Bohr's theory?
(A) Orbit is a three dimensional area where probability of finding electron is maximum.
(B) Orbit is a two dimensional track on which electron moves
(C) Atom has definite boundary
(D) Energies and angular momentum of orbits are quantized.

Sol. (A)

Q2. The introduction of a neutron into the nuclear composition of an atom would lead to a change in
(A) The number of electrons also
(B) The chemical nature of the atom
(C) Its atomic number
(D) Its atomic weight

Sol. (D)

Q3. Which statement is true?
(A) Spacing between energy levels n = 1 and n = 2 in hydrogen atom is greater than that of n = 2 and n = 3
(B) Spacing between energy levels n = 1 and n = 2 in hydrogen atom is equal to that n = 2 and n = 3
(C) Spacing between energy levels n = 1 and n = 3 in hydrogen atom is less than that of n = 2 and n = 3
(D) None of these

Sol. (A)

Q4. 22.7 ml of N/10 Na_2CO_3 solution neutralizes 10.2 ml of a dilute H_2SO_4. Then the volume of water that must be added to 400 ml of same H_2SO_4 to make it exactly N/10 is
(A) 245 ml
(B) 484.6 ml
(C) 480 ml
(D) 400 ml

Sol. (D)

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Q5. Rearrange the following (I to IV) in the order of increasing masses and choose the correct answer from (A), (B), (C) and (D) (Atomic mass of N = 14, O = 16, Cu = 63).

(I) 1 molecule of oxygen

(II)1 atom of nitrogen

(III) 1×10^{-10} gm molecular weight of oxygen

(IV) 1×10^{-10} gm atomic weight of copper

(A) (II) < (I) < (III) < (IV)

(B) (IV) < (III) < (II) < (I)

(C) (II) < (III) < (I) < (IV)

(D) (III) < (IV) < (I) < (II)

Sol. (A)

Q6. In which of the following, the Vander Waal's radii is largest

(A) Ne

(B) O

(C) Cl

(D) F

Sol. (C)

Q7. Which of the following atoms has highest first ionization potential?

(A) Cs

(B) K

(C) Rb

(D) Ca

Sol. (D)

Q8. Which one of the following is largest in size?

(A) N^{3-}

(B) O^{2-}

(C) F^{-}

(D) Na^{+}

Sol. (A)

Q9. If P, V, T represent pressure, volume and temperature of a gas, the correct representation of Boyle's law is

(A) $V \propto \frac{1}{T}$ (at constant P)

(B) PV = RT

(C) $V \propto \frac{1}{P}$ (at constant T)

(D) PV = nRT

Sol. (C)

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Q10. Five grams each of the following gases at 87°C and 750mm pressure are taken. Which of them will have the least volume?
(A) HF
(B) HCl
(C) HBr
(D) HI

Sol. (D)

Q11. An intensive property is that property which depends upon
(A) the nature of the substance
(B) the amount of the substance
(C) both the amount and nature of the substance
(D) neither the nature nor the amount of the substance

Sol. (D)

Q12. ΔH_f^0 of $CO_2(g), CO(g), N_2O(g)$ and $NO_2(g)$ in KJ/mol are respectively -393, -110, 81 and 34. Calculate ΔH in KJ of the following reaction.
$2NO_2(g) + 2CO(g) \longrightarrow N_2O(g) + 3CO_2(g)$
(A) 836
(B) 1460
(C) -836
(D) -1460

Sol. (C)

Q13. Which of the following, when mixed, will give a solution with pH greater than 7?
(A) 0.1M HCl + 0.2M NaCl
(B) 100 ml 0.2 M H_2SO_4 + 100ml. 0.3M NaOH
(C) 25 ml of 0.1M HNO_3 + 25 ml 0.1M NH_3
(D) 100 ml 0.1M CH_3COOH + 100 ml 0.1M NaOH

Sol. (D)

Q14. 1cc. of 0.1N HCl is added to 999 cc. Solution of NaCl. The pH of resulting solution will be
(A) 4
(B) 3
(C) 5
(D) 6

Sol. (A)

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Q15. 6.023 $\times 10^{23}$ molecules of Ca $(OH)_2$ react with 3.01×10^{22} molecules of HCl, number of moles of $CaCl_2$ obtained are
(A) 0.05
(B) 0.10
(C) 0.025
(D) 3.01

Sol. (C)

Q16. A copper sulphate solution contains 1.595% of $CuSO_4$ by weight. Its density is 1.2 g / ml, Its molarity will be
(A) 0.12
(B) 0.06
(C) 1.20
(D) 1.595

Sol. (A)

Q17. NH_3 and H_2O form NH_4OH by
(A) electrovalent bond
(B) covalent bond
(C) coordinate bond
(D) none of these

Sol. (A)

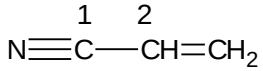
Q18. Select correct statements:
(A) H_2 is more rapidly adsorbed on Mo surfaces than D_2
(B) H_2 reacts over 13 times faster with Cl_2 than D_2 because H_2 has lower energy of activation.
(C) both are true
(D) none is true

Sol. (C)

Q19. Anti – Markovnikoff's addition of HBr is not observed in
(A) propene
(B) benzene
(C) butene – 2
(D) pentene – 2

Sol. (C)

Q20. The bond between carbon atom (1) and carbon atom (2) in the compound



Involves the hybrids as

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(A) sp and sp^2
(B) sp^2 and sp^2
(C) sp and sp
(D) sp^3 and sp

Sol. (A)

Q21. During debromination of meso – 2, 3 – dibromobutane, the major product formed is
(A) n – butane
(B) 1 – butene
(C) cis – 2 – butene
(D) trans – 2 – butene

Sol. (D)

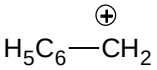
Q22. The gas which reacts with haemoglobin in blood is:
(A) CO
(B) SO_2
(C) CO_2
(D) NO

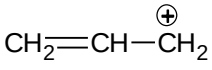
Sol. (A)

Q23. Ozone is present in
(A) Thermosphere
(B) Mesosphere
(C) Stratosphere
(D) Troposphere

Sol. (C)

Q24. Which one of the following is vinyl carbocation

(A) 

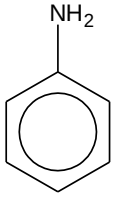
(B) 

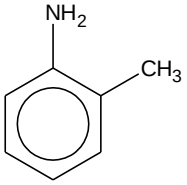
(C)

(D) All of these

Sol. (C)

Q25. Which one of the following is most basic?

(A) 

(B) 

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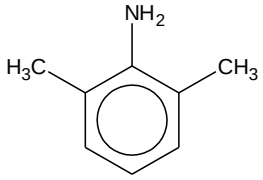
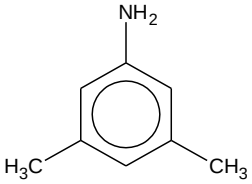
(C) 

(D) 

Sol. (C)

Q26. Which one is used as an air purifier in space craft?
(A) quick lime
(B) slaked lime
(C) potassium superoxide
(D) anhydrous $CaCl_2$

Sol. (C)

Q27. An aqueous solution of sodium sulphate is electrolysed using inert electrodes. The products at the cathode and anode are respectively
(A) H_2, O_2
(B) O_2, H_2
(C) O_2, Na
(D) O_2, SO_2

Sol. (A)

Q28. Which of the following metal ions has more polarizing power?
(A) Na^+
(B) Ca^{2+}
(C) K^+
(D) Be^{2+}

Sol. (D)

Q29. The dipole moment of o–,m– and p–dichlorobenzene will be in the following decreasing order
(A) o > p > m
(B) p > o > m
(C) m > o > p
(D) o > m > p

Sol. (D)

Q30. The bond length is O_2^+, O_2, O_2^- and O_2^{2-} follows the order
(A) $O_2^{2-} > O_2^- > O_2 > O_2^+$
(B) $O_2^+ > O_2 > O_2^- > O_2^{2-}$
(C) $O_2 > O_2^- > O_2^{2-} > O_2^+$
(D) $O_2^- > O_2^{2-} > O_2^+ > O_2$

Sol. (A)