CHEMISTRY

BOOKS - MTG CHEMISTRY (BENGALI ENGLISH)

QUESTION PAPER 2009

Multiple Choice Questions Chemistry

1. The equilibrium constant (K) of a reaction may be written as

A. $K = e^{-\Delta G / RT}$

B. $K = e^{-\Delta G^0 / RT}$

C. $K = e^{-\Delta H / RT}$

D. $K = e^{-\Delta H^0 / RT}$

Answer:

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2. For the reaction $SO_2 + \dfrac{1}{2}O_2 = SO_3$, if we write $K_p = K_c(RT)^x$, then x becomes:
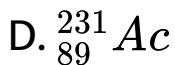
A. -1

B. $-\dfrac{1}{2}$

C. $\dfrac{1}{2}$
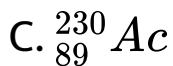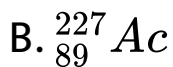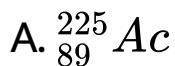
D. 1

Answer:

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3. If it is assumed that $^{235}_{92}U$ decays only by emitting $\alpha-$ and $\beta-$ particles, the possible product of the decay is

A. $^{225}_{89}Ac$

B. $^{227}_{89}Ac$

C. $^{230}_{89}Ac$

D. $^{231}_{89}Ac$

Answer:

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4. The time taken for 10% completion of a first order reaction is 20mins. Then, for 19% completion, the reaction will take

A. 40 mins

B. 60 mins

C. 30 mins

D. 50 mins

Answer:

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5. Which of the following will decrease the pH of

a 50ml solution of 0.01M HCl?

A. addition of 5ml of 1MHCl

B. addition of 50ml of 0.01M HCl

C. additin of 50ml of 0.002 M HCl

D. addition of Mg

Answer:

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6. Equal volume of molar hydrochloric acid and sulphuric acid are neutralised by dilute NaOH solution and x kcal and y kcal of heat are

liberated respectively. Which of the following is true?

A. x=y

B. $x = \dfrac{y}{2}$

C. $x = 2y$

D. none of the above

Answer:

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7. Hybridisation of central atom in NF_3 is

A. sp^3

B. sp

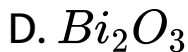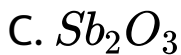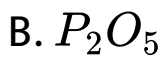C. sp^2

D. dsp^2

Answer:

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8. Of the following compounds the most acidic is

A. As_2O_3

B. P_2O_5

C. Sb_2O_3

D. Bi_2O_3

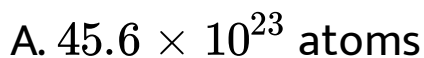**Answer:**

9. The half-life of a radioactive element is 10 hours. How much will be left after 4 hours in 1g atom sample?

A. 45.6×10^{23} atoms

B. 4.56×10^{23} atoms

C. 4.56×10^{21} atoms

D. 4.56×10^{20} atoms

Answer:

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10. For the Paschen series the value of n_1 and n_2 in the expression

$$\Delta E = Rhc\left(\frac{1}{n_1^2} - \frac{1}{n_2^2}\right)$$ are

A. $n_1 = 1, n_2 = 2, 3, 4,......$

B. $n_1 = 2, n_2 = 3, 4, 5,......$

C. $n_1 = 3, n_2 = 4, 5, 6,......$

D. $n_1 = 4, n_2 = 5, 6, 7,......$

Answer:

11. Under which of the following conditins is the relation $\Delta H = \Delta E = P\Delta V$ valid for a closed system?

A. Constant Pressure

B. Constant temperature

C. Constant temperature and pressure

D. Constant temperature, pressure and composition,

Answer:

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12. An organic compound made of C, H and N constant 20% nitrogen. Its molecular weight is

A. 70

B. 140

C. 100

D. 65

Answer:

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13. In Cu-ammonia complex, the state of hybridiation of Cu^{+2} is

A. sp^3

B. d^3s

C. sp^2f

D. dsp^2

Answer:

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14. The reactin that takes place when Cl_2 gas is passed through conc. NaOH solution is

A. Oxidation

B. Reduction

C. Displacement

D. Disproportionation

Answer:

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15. 'Electron'' is an alloy of

A. Mg and Zn

B. Fe and Mg

C. Ni and Zn

D. Al and Zn

Answer:

16. Blackened oilpainting can be restored into

original form by the action of

A. Chlorine

B. BaO_2

C. H_2O_2

D. MnO_2

Answer:

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17. Of the following acids the one which has the capability to form complex compound and also possesses oxidizing and reducing properties is

A. HNO_3

B. HNO_2

C. HCOOH

D. HCN

Answer:

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18. Atoms in a P_4 molecule of white phosphorus are arranged regularly in the following way

A. at the corners of a cube

B. at the corners of a octahedron

C. at the corners of a tetrahedron

D. at the centre and corners of a tetrahedron

Answer:

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19. Which of the following statements is not correct?

A. Silicon is extensively used as a semiconductor

B. Carborundum is SiC

C. Silcon occurs in free state in nature
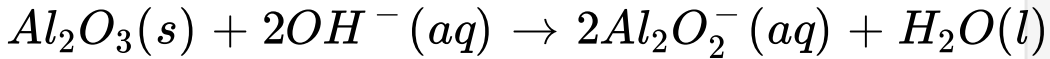
D. Mica constains the elements silicon

Answer:

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20. In aluminium extraction by the Bayer process, alumina is extracted from banxite by sodium

hydroxide at height temperatures and pressures

$$Al_2O_3(s) + 2OH^-(aq) \rightarrow 2Al_2O_2^-(aq) + H_2O(l)$$

Solid impurities such as Fe_2O_3 and SiO_2 are removed and then $Al(OH)_4^-$ is reprecipitated:

$$2Al(OH)_4^- \rightarrow Al_2O_3.3H_2O(s) + 2OH^- \text{ (aq).}$$

In the industrial world.

A. Carbon dioxide is added to precipitate the alumina

B. Temperature and pressure are dropped and the supersaturated solution seeded

C. Both (A) and (B) are practised

D. The water is evaporated

Answer:

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21. The addition of HBr to 2-pentene gives

A. 2-bromopentane only

B. 3-bromopentane only

C. 2-bromopentane and 3-bromopentane

D. 1-bromopentane and 3-bromopentane

Answer:

22. Elthelene can be separated from acetylene by passing the mixture through

    A. fuming H_2SO_4

    B. pyrogallol

    C. ammoniacal Cu_2Cl_2

    D. Charcoal power

Answer:

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23. Reaction of R OH with R'MgX produces

    A. RH

    B. R'H

    C. $R - R$

    D. $R' - R'$

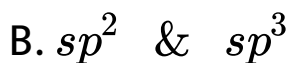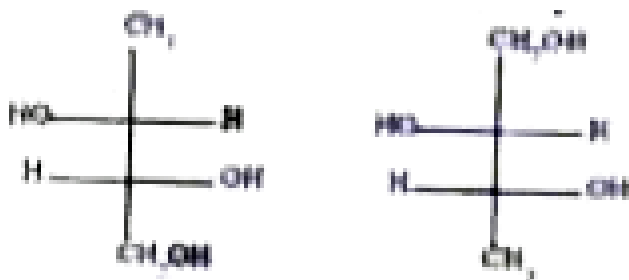**Answer:**

24. In the compound $HC \equiv C - \overset{\overset{\displaystyle CH_3}{|}}{C} = CH_2$ the hybridization of $C - 2$ and $C - 3$ carbons are respectively:

A. sp^3 & sp^3

B. sp^2 & sp^3

C. sp^2 & sp

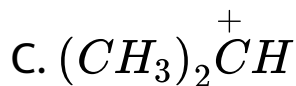D. sp^3 & sp
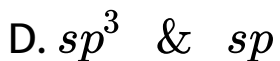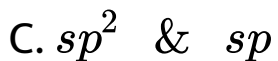
Answer:

25. The two structures written below represent
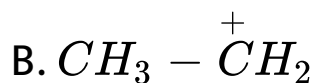

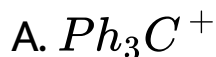
A. pair of diastereomers

B. pair of enantiomers

C. same molecule

D. both are optically inactive

Answer:

26. Which of the following carbocations will be most stable?

A. Ph_3C^+

B. $CH_3 - \overset{+}{C}H_2$

C. $(CH_3)_2\overset{+}{C}H$

D. $CH_2 = CH - \overset{+}{C}H_2$
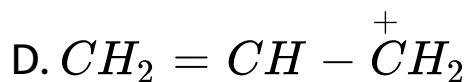
Answer:

27. Which statement is incorrect?

    A. Phenol is a weak acid

    B. Phenol is an aromatic compound

    C. Phenol liberates CO_2 from Na_2CO_3 soln

    D. Phenol is soluble in NaOH

Answer:

28. In which of the following reactions new carbon-carbon bond is not formed

    A. Cannizaro reaction

    B. Wurtz reaction

    C. Aldol condensation

    D. Friedel -Craff reaction

Answer:

29. A compound is formed by substitution of two chlorine for two hydrogens in propane. The number of possible isomeric compounds is

A. 4

B. 3

C. 5

D. 2

Answer:

30. Which one of the following is called a carbylamine/

    A. R CN

    B. $RCONH_2$

    C. $RCH = NH$
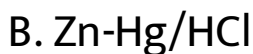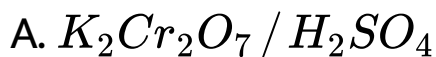
    D. R NC

Answer:

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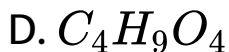**31.** For making distinction between 2-pentanone and 3-pentanone the reagent to be employed is
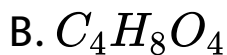
A. $K_2Cr_2O_7/H_2SO_4$

B. Zn-Hg/HCl

C. SeO_2

D. Iodine/NaOH

Answer:

32. Which one of the following formulae does not represent an organic compound?

A. $C_4H_{10}O_4$

B. $C_4H_8O_4$

C. $C_4H_7CIO_4$

D. $C_4H_9O_4$

Answer:

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33. The catalyst used for olefin polymerization is

    A. Ziegler-Natta Catalyst

    B. Wilkinson Catalyst

    C. Raney nickel catalyst

    D. Merrifield resin

Answer:

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34. The oxidant which is used as an antiseptic is

A. $KBrO_3$

B. $KMnO_4$

C. CrO_3

D. KNO_3

Answer:

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35. Which of the following contributes to the

double helical structure of DNA
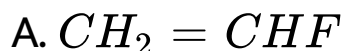
A. hydrogen bond

B. covalent bond

C. disulphide bond

D. van-der Waal's force

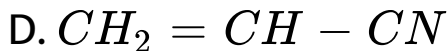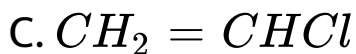**Answer:**

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36. The monomer used to produce orlon is

A. $CH_2 = CHF$

B. $CH_2 = CCl_2$

C. $CH_2 = CHCl$

D. $CH_2 = CH - CN$
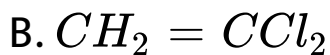
Answer:

37. 1 mole of photon, each of frequency $2500S^{-1}$

, would have approximately a total energy of

A. 1erg

B. 1 Joule

C. 1 eV

D. 1MeV

Answer:

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38. If n_t number of radioatoms are present at time t, the following expression will be a constant
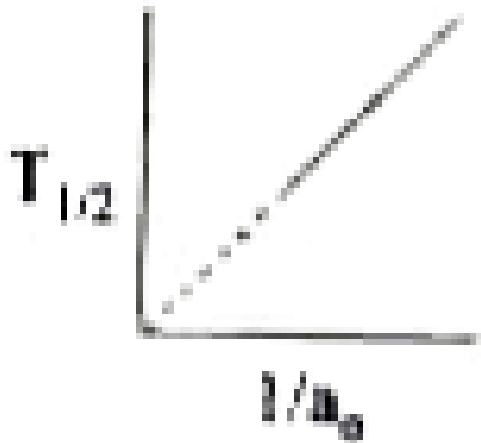
A. n_t / t

B. $\ln n_t / t$

C. $d\ln n_t / dt$

D. $t. n_t$

Answer:

39. The following graph shows how $T_{1/2}$ (half-life) of a reactant R changes with the initial reactant concentration a_0.

The order of the reaction will be:

A. 0

B. 1

C. 2

D. 3

Answer:

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40. The second law of thermodynamics says that in a cylic process:

    A. work cannot be converted into heat

    B. heat cannot be converted into work

    C. work cannot be completely converted into heat

    D. heat cannot be completely converted into work

Answer:

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