CHEMISTRY

BOOKS - MTG CHEMISTRY (BENGALI ENGLISH)

QUESTION PAPER 2018

Chemistry

1. The following equilibrium constnats are given:

$N_2 + 3H_2 \Leftrightarrow 2NH_3, K_1$

$N_2 + O_2 \Leftrightarrow 2NO, K_2$

$H_2 + \frac{1}{2}O_2 \Leftrightarrow H_2O, K_3$

The equilibrium constant for the oxidation of 2 mol of NH_3 to give NO is

A. $K_1 . \frac{K_2}{K_3}$

B. $K_2 . \frac{K_3^3}{K_1}$

C. $K_2 . \frac{K_3^2}{K_1}$

D. $K_2^2 \frac{K_3}{K_1}$

Answer:

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2. Which of the following is a condensation polymer?

A. PVC

B. Teflon

C. Decron

D. Polystyrene

Answer:

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3. Which of the following is present in maximum amount in axid rain?

A. HNO_3

B. H_2SO_4

C. HCl

D. H_2CO_3

Answer:

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4. Which of the set of oxides are arranged in the proper of basic, amphoteric, acidic?

A. SO_2, P_2O_5, CO

B. BaO, Al_2O_3, SO_2

C. CaO, SiO_2, Al_2O_3

D. CO_2, Al_2O_3, CO

Answer:

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5. Out of the following outer electronic configurations of atoms, the highest oxidation state is achieved by which one?

A. $(n-1)d^8ns^2$

B. $(n-1)d^5ns^2$

C. $(n-1)d^3ns^2$

D. $(n-1)d^5ns^1$

Answer:

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6. At room temperature, the reaction between water and fluorine produces

A. HF and H_2O_2

B. HF, O_2 and F_2O_2

C. F^-, O_2 and H^+

D. HOF and HF

Answer:

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7. Which of the following is least thermally statble?

A. $MgCO_3$

B. $CaCO_3$

C. $SrCO_3$

D. $BeCO_3$

Answer:

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8. Cl_2O_7 is the anhydride of

A. $HOCl$

B. $HClO_2$

C. $HClO_3$

D. $HClO_4$

Answer:

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9. The main reason that $SiCl_4$ is easily hydrolysed as compared to CCl_4 is that

A. Si-Cl bond is weaker than $C - Cl$ bond

B. $SiCl_4$ can form hydrogen bonds

C. $SiCl_4$ is covalent.

D. Si can extend its coordination number beyond four.

Answer:

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10. Silver chloride dissolves in excess of ammonium hydroxide solution. The cation present in the resulting solution is

A. $\left[Ag(NH_3)_6\right]^+$

B. $\left[Ag(NH_3)_4\right]^+$

C. Ag^+

D. $\left[ag(NH_3)_2\right]^+$

Answer:

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11. The case of hydrolysis in the compounds $CH_3COCl(I), CH_3-CO-O-COCH_3(II), CH_3COOC_2H_5(III)$ and $CH_3CONH_2(IV)$ is of the order

A. $I > II > III > IV$

B. $IV > III > II > I$

C. $I > II > IV > III$

D. $II > I > IV > III$

Answer:

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12. $CH_3 - C \equiv CMgBr$ can be prepared by the reaction of

A. $CH_3 - C \equiv C$ Br with $MgBr_2$

B. $CH_3 - C \equiv CH$ with $MgBr_2$

C. $CH_3 - C \equiv CH$ with KBr and Mg metal

D. $CH_3 - C \equiv CH$ with CH_3MgBr

Answer:

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13. The number of alkene (s) which can produce 2-butanol by the succesive treatment of (i) B_2H_6 in tetrahydrofuran solvent and (ii)

alkaline H_2O_2 solutio is

A. 1

B. 2

C. 3

D. 4

Answer:

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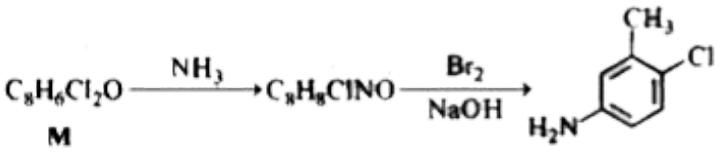
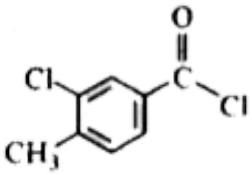
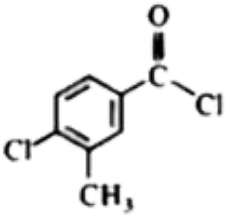
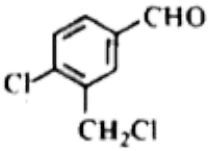
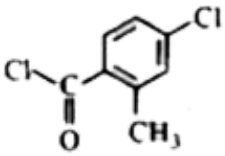
14. Identify M in the following sequence of reactions:



A. 

B. 

C. 

D. 

Answer:

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15. Methoxybenzene on treatment with HI produces

A. Iodobenzene and methanol

B. Phenol and methyl iodide

C. Iodobenzene and methyl iodide

D. Phenol and methanol

Answer:

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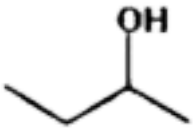
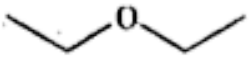
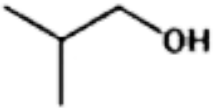
16. $\underset{N}{C_4H_{10}O} \xrightarrow[H_2SO_4]{K_2Cr_2O_7} C_4H_8O \xrightarrow[\text{warm}]{I_2 / NaOH} CHI_3$

Here N is

A. 

B. 

C. 

D. 

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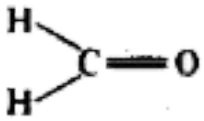
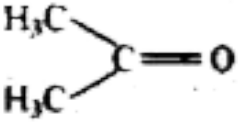
17. The correct order of reactivity for the addition reaction of the following carbonyl compounds with ethylmagnesium iodide is



(I)



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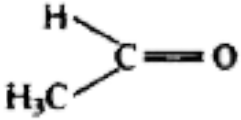
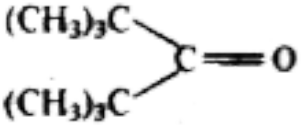


(III)



(IV)

A. $I > III > II > IV$

B. $IV > III > II > I$

C. $I > II > IV > III$

D. $III > II > I > IV$

Answer:

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18. If aniline is treated with conc.H_2SO_4 and heated at $200^\circ C$ the product is

A. Anilinium sulphate

B. Benzenesulphonic acid

C. m-Amiobenzenesulphonic acid

D. Sulphanilic acid

Answer:

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19. Which of the following electronic configuration is not possible?

A. $n = 3, l = 0, m = 0$

B. $n = 3, l = 1, m = -1$

C. $n = 2, l = 0, m = -1$

D. $n = 2, l = 1, m = 0$

Answer:

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20. The number of unpaired electros is Ni(atomic number =28) are

A. 0

B. 2

C. 4

D. 8

Answer:

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21. Which of the following has the strongest H-bond?

A. O-H...S

B. S-H...O

C. F-H...f

D. F-H...O`

Answer:

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22. The half life of C^{14} is 5760 years. For a 200 mg sample of C^{14}, the time taken to change to 25 mg is

A. 11520 years

B. 23040 years

C. 5760 years

D. 172800 years

Answer:

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23. Ferric ion forms a Prussian blue precipitate due to the formation of

A. $K_4\left[Fe(CN)_6\right]$

B. $K_3\left[Fe(CN)_6\right]$

C. $Fe(CNS)_3$

D. $Fe_4\left[Fe(CN)_6\right]_3$

Answer:

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24. The nucleus ${}_{29}^{64}CU$ accepts an orbital electron to yield

A. ${}_{28}^{65}Ni$

B. ${}_{30}^{64}Zn$

C. ${}_{28}^{64}Ni$

D. ${}_{30}^{65}Zn$

Answer:

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25. How many moles of electrons will weigh one kiligram?

A. 6.023×10^{23}

B. $\frac{1}{9.108} \times 10^{31}$

C. $\frac{6.023}{9.108} \times 10^{54}$

D. $\frac{1}{9.108 \times 6.023} \times 10^{8}$

Answer:

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26. Equal weights of ethane and hydrogen are mixed in an empty container at $25^{\circ}C$. The fraction of total pressure exerted by hydrogen is

A. $1:2$

B. $1:1$

C. $1:16$

D. $15:16$

Answer:

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27. The heat of neutralization of a strong base and a strong acid is 13.7 kcal. The heat released when 0.6 mole HCl solution is added to

0.25 mole of NaOH is

A. 3.425 kcal

B. 8.22 kcal

C. 11.645 kcal

D. 13.7 kcal

Answer:

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28. A compound formed by elements X and Y crystallizes in the cubic structure, where X atoms are at the corners of a cube and Y atoms are at the centres of the body. The formula of the compound is

A. XY

B. XY_2

C. X_2Y_3

D. XY_3

Answer:

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29. What amount of electricity can deposit 1 mole of AI metal at cathode when passed through molten $AlCl_3$?

A. $0.3F$

B. $1F$

C. $3F$

D. $1/3F$

Answer:

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30. Give the standard half cell potentials (E°) ef the following as

$Zn = Zn^{2=} + 2e^{-} \qquad E^{\circ} = +0.76V$

$Fe = Fe^{2+} + 2e^{-} \qquad E^{\circ} = 0.41V$

Then the standard emf of the cell with the reaction $Fe^{2+} + Zn \rightarrow Zn^{2+} + Fe$ is

A. $-0.35V$

B. $+0.35V$

C. $+1.17V$

D. $-1.17V$

Answer:

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31. $[X] + \text{dil. } H_2SO_4 \rightarrow [Y]$: Colourless, suffocating gas

$[Y] + K_2Cr_2O_7 + H_2SO_4 \rightarrow$ Greenn colouration of solution

Then [X] and [Y] are

A. SO_3^{2-}, SO_2

B. Cl^-, HCl

C. S^{2-}, H_2S

D. CO_3^{2-}, CO_2

Answer:

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32. $[P] \xrightarrow{Br_2} C_2H_4Br_2 \xrightarrow[NH_3]{NaNH_2} [Q]$

$[Q] \xrightarrow[Hg^{2+}, \Delta]{20\% H_2SOS_4} [R] \xrightarrow{Zn-Hg/HCl} [S]$

The species P,Q,R and S respectively are

A. ethene, ethyne, ethanal, ethane

B. ethane, ethyne, ethanal, ethene

C. ethene, ethyne, ethanal, ethanol

D. ethyne, ethane, ethene, ethanal

Answer:

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33. The number of possibel organobromine compounds which ca be obtained in the allylic bromination of 1-butene with N-bromosuccinimideis

A. 1

B. 2

C. 3

D. 4

Answer:

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34. A metal M (specific head 0.16) forms a metal chlorid wih $\approx 65\ \%$ chlormie presented in it. The formula of the metal chloride will be

A. MCl

B. MCl_2

C. MCl_3

D. MCl_4

Answer:

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35. During a reversible adiabatic process, the pressure of a gas is found to be proportional to the cube of its absolute temperature. The ratio $\frac{C_p}{C_v}$ for the gas is

A. $\frac{3}{2}$

B. $\frac{7}{2}$

C. $\frac{5}{3}$

D. $\frac{9}{7}$

Answer:

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36. White phosphorus P_4 has the following characteristics:

A. 6P-P single bonds

B. 4P-P single bonds

C. 4 lone pair of electrons

D. P-P-P angle of 60°

Answer:

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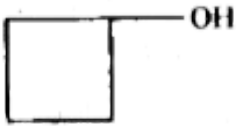
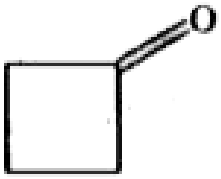
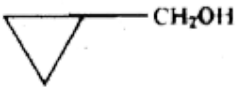
37. The possibel product (s) to be obtained from the reaction of cyclobutyl amine with HNO_2 is /are

A. 

B. 

C. 

D. $H_2C = CH_2$

Answer:

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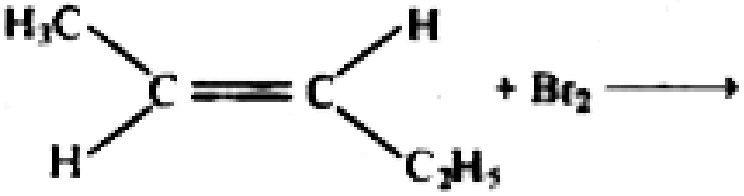
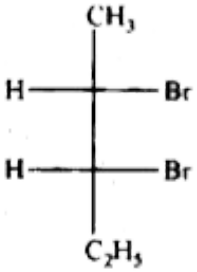
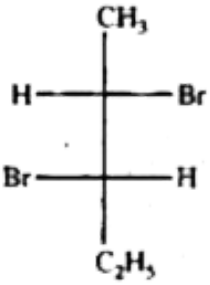
38. The major product(s) obtained in the following reaction is/are



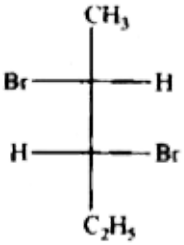
A.



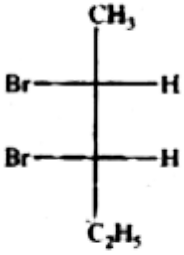
B.



C.



D.



Answer:

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39. Which statements are correct for the perioxide ion?

A. it has five completely filled anti bonding molecular orbitals.

B. It is diamagnetic

C. It has bond order one

D. It is isoelectronic with neon.

Answer:

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40. Among the following the extensive variables are

A. H (enthalph)

B. P(Pressure)

C. E(Internal energy)

D. V(Volume)

Answer:

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