



CHEMISTRY

BOOKS - MHTCET PREVIOUS YEAR PAPERS AND PRACTICE PAPERS

PRACTICE SET 22

Physics Chemistry

1. The number of sodium atoms in 2 moles of sodium ferrocyanide is

A. 12×10^{23}

B. 26×10^{23}

C. 34×10^{23}

D. 48×10^{23}

Answer: D



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2. Formic acid can be distinguished from acetic acid by its reaction with

A. $NaHCO_3$

B. Tollen's reagent

C. NaOH

D. None of these

Answer: B



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3. If a salt bridge is removed between the half cells, the voltage

A. decreases to zero

B. increases

C. increases rapidly

D. do not change

Answer: A



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4. Lanthanum the first element of lanthanide series has

- A. Only unfilled 3d-orbitals
- B. unfilled 3d and 4d-orbitals
- C. unfilled 4d and 4f-orbitals
- D. unfilled 4f and 5d-orbitals

Answer: D



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5. Aspirin is prepared by the acetylation of salicylic acid with

A. phenol

B. acetic anhydride

C. methyl acetate

D. chlorine

Answer: B



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6. A radioactive substance decays to $\frac{3}{4}$ th of original value in 2h. The half-life of the substance is

A. 1 h

B. 30 min

C. 1 h 30 min

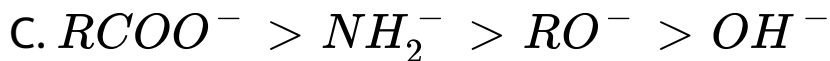
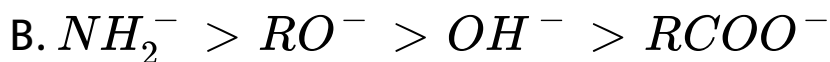
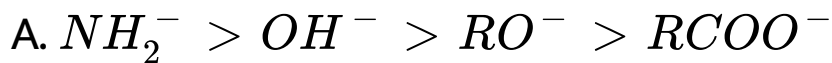
D. None of these

Answer: A



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7. Among the following the correct order of basicity is



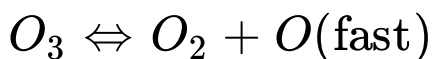
Answer: B

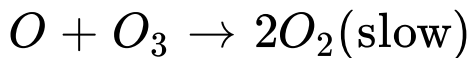


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8. The chemical reaction $O_3 \rightarrow 3O_2$ proceeds

as





The rate expression should be

A. $r = k[O_3]^2$

B. $r = k[O_3]^2[O_2]^{-1}$

C. $r = k[O_3][O_2]$

D. None of these

Answer: B



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9. Which of the following compounds of chlorine contains both ionic and covalent bonds ?

A. NaCl

B. NaClO_4

C. AlCl_3

D. POCl_3

Answer: B



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10. The heat of combustion of carbon and monoxide are -394 and -285 KJ mol^{-1} respectively. The heat of formation of CO in KJ mol^{-1} is :-

A. -218

B. -109

C. $+109$

D. $+218$

Answer: C



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11. Equation for Boyle's law is

A. $\frac{dp}{p} = - \frac{dV}{V}$

B. $\frac{dp}{p} = + \frac{dV}{V}$

C. $\frac{d^2p}{p} = - \frac{dV}{dT}$

D. $\frac{d^2}{p} = + \frac{d^2V}{dT}$

Answer: B



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12. The product formed is an isobar, if there is

A. 1α emission

B. 2β emission

C. α and 1β emission

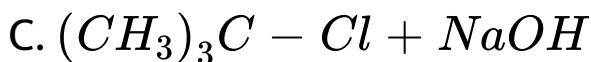
D. 2α and 1β emission

Answer: B



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13. Which of the following reaction follows S_N1 mechanism ?



Answer: B



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14. Which of the following has maximum number of unpaired electrons?

A. Zn

B. Fe^{2+}

C. Ni^{3+}

D. Cu^{+}

Answer: C



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15. In the reaction,
 $SO_2 + 2H_2S \rightarrow 3S + 2H_2O$, the substance
oxidised is



Answer: B



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16. A 0.50 molal solution of ethylene glycol in water is used as coolant in a car . If the freezing point constant of water is 1.86° per molal , at which temperature will the mixture freeze?

A. $0.93^{\circ} C$

B. $-0.93^{\circ} C$

C. $1.86^{\circ} C$

D. $-1.86^{\circ} C$

Answer: A



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17. Solution of $0.1N NH_4OH$ and $0.1N NH_4Cl$ has $pH 9.25$, then find out K_b of NH_4OH .

A. 9.25

B. 4.75

C. 3.75

D. 8.25

Answer: B



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18. How many grams of CO_2 will be produced by the complete combustion of 2 moles of ethanol ?

A. 132 g

B. 44 g

C. 176 g

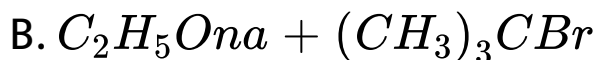
D. 88 g

Answer: C



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19. In which of the following reactions ether does not form ?



Answer: B



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20. Which of the following sweeteners has the lowest sweetness value

A. Alitame

B. Aspartame

C. Saccharine

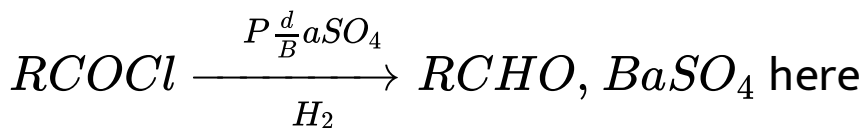
D. Sucralose

Answer: B



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21. In the Rosenmund's reaction



- A. promotes catalytic activity of Pd
- B. removes the HCl formed in the reaction
- C. deactivates Pd
- D. activates Pd

Answer: D



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22. The first order rate constant for dissociation of N_2O_5 is $6.2 \times 10^{-4} s^{-1}$. The half-life period (in s) of this dissociation will be

A. 1117.7

B. 111.7

C. 223.4

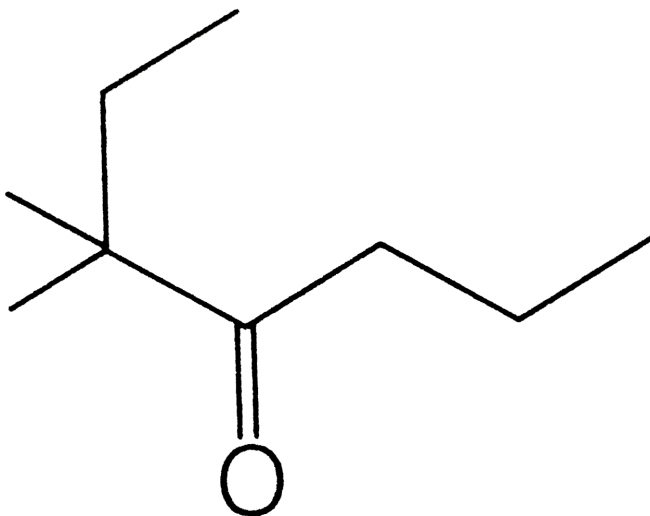
D. 160.9

Answer: A



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23. The IUPAC name of the compound



A. 2-ethyl-2-methyl-3-hexanone

B. 5-ethyl-5-methyl-4-hexanone

C. 5,5-dimethyl-4-heptanone

D. 3,3-dimethyl-4-heptanone

Answer: D

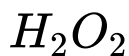


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24. 30 volume hydrogen peroxide means

A. 30 % of H_2O_2 solution

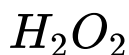
B. $30cm^2$ of the solution contains 1 g of



C. $1cm^3$ of the solution liberates

$30cm^3$ of O_2 at STP

D. 30cm^2 of the solution contains 1 mole of

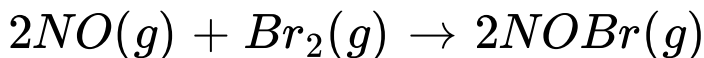


Answer: C



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25. The gas phase reaction of nitric oxide and bromine yields nitrosyl bromide



The rate law is rate = $k[NO]^2[Br_2]$

The overall reaction order is

A. 1

B. 2

C. 3

D. 4

Answer: C



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26. Fungicides are organic compounds of

A. mercury

B. fluorine

C. lead

D. chlorine

Answer: A



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27. Reaction of esters with Grignard reagents

give rise to :

A. primary alcohol

B. secondary alcohol

C. tertiary alcohol

D. ketone

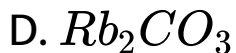
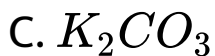
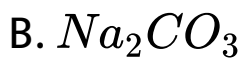
Answer: C



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28. Which of the metal carbonates is decomposed on heating ?

A. $MgCO_3$



Answer: A



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29. CO binds itself to metal atoms through

A. carbon atom only

B. oxygen atom only

C. carbon and oxygen atom

D. does not bind

Answer: A



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30. The compounds formed at anode in the electrolysis of an aqueous solution of potassium acetate are

A. C_2H_6 and CO_2

B. C_2H_4 and CO_2

C. CH_4 and H_2

D. CH_4 and CO_2

Answer: A



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31. In the periodic table actinides occupy

A. III B group in 7th row

B. III BV group in 5th row

C. III B group in 5th row

D. None of the above

Answer: A



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32. Diborane is used for reduction of

A. carboxylic acids

B. esters

C. nitro groups

D. both (a) and (b)

Answer: D



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33. During electrochemical process

A. Gibbs free energy increases

B. Gibbs free energy remains constant

C. no prediction can be made about Gibbs
free energy

D. Gibbs free energy decreases

Answer: D



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34. The stability of $Me_2C = CH_2$ is more than that of $MeCH_2CH = CH_2$ due to :

A. inductive effect of the Me group

B. resonance effect of the Me group

C. hyperconjugative effect of the Me group

D. resonance as well as inductive effect of
the group

Answer: C



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35. What is the role of a catalyst in a catalysed
reaction

A. Lowers the activation energy

B. Increase the activation energy

C. Affects the free energy change

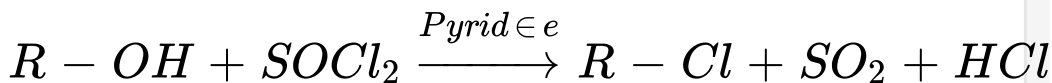
D. Affects the enthalpy change

Answer: A



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36.



Pyridine in the above reaction

A. catalyse the reaction

B. used to dissolve alkyl chloride

C. used to remove excess of $SOCl_2$

D. None of the above

Answer: A

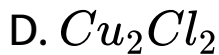
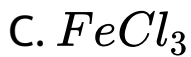


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37. Which of the following is diamagnetic ?

A. Cu_2Cl_2

B. $NiCl_2$



Answer: A



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38. Which of the following changes with change in temperature ?

A. Mole fraction

B. Formality

C. % (w/W)

D. Molality

Answer: B



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39. Which of the following has least boiling point ?

A. Ethyl ether

B. Formality

C. n-butyraldehyde

D. n-butyl alcohol

Answer: A



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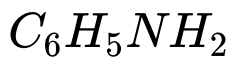
40. N_2 gas is liberated when $[HCl + NaNO_2]$

reacts with the following compound



urea





The answer is

A. A,B,C

B. A,B,D,

C. A,C,D

D. B,C,D

Answer: A



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41. The main constituent of most natural fibres is

A. starch

B. glycol

C. cellulose

D. caprolactum

Answer: C



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42. The d (+)lactic acid is obtained from:

A. fermentation of cane sugar

B. green vegetables

C. muscles

D. fermentation of milk sugar

Answer: C



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43. When ${}_{13}^{27}\text{Al}$ is bombarded with α -particle, a radioactive isotope of phosphorus ${}_{15}^{30}\text{P}$ is formed. Which particle is emitted along with ${}_{15}^{30}\text{P}$?

A. Deuteron

B. Proton

C. Electron

D. Neutron

Answer: D



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44. The difference between the heats of reaction at constant pressure and a constant volume for the reaction

$$2C_6H_6(l) + 15O_2(g) \rightarrow 12CO_2(g) + 6H_2O(l)$$

at $25^\circ C$ in kJ is

A. -7.43

B. 3.72

C. -3.72

D. 7.43

Answer: A



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45. Why Sc($Z=21$) is not considered as transition element ?

A. Properties of Sc are similar to alkali metals

B. 3d-orbitals are empty in its stable compound

C. Stable oxidation number of Sc is + 2

D. Atomic volume of Sc is very large

Answer: B



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46. Methyl isocyanide on hydrolysis gives

A. CH_3NH_2

B. HCOOH

C. CH_3COOH

D. both (a) and (b)

Answer: D



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47. With CH_3MgBr , diethyl ether gives

A. coordination complex

B. n-butane

C. a mixture of ethyl bromine and methyl
bromide

D. propane

Answer: A



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48. Acetamine when heated with PCl_5 , gives

A. CH_3Cl

B. CH_3CN

C. $CH_3CCl_2NH_2$

D. $CH_2Cl_2CONH_2$

Answer: C



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49. The standard emf of a cell having one electron change is found to be $0.591V$ at $25^\circ C$, The equilibrium constant of the reaction is :

A. 1.0×10^1

B. 1.0×10^5

C. 1.0×10^{10}

D. 1.0×10^{30}

Answer: C



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