CHEMISTRY

AAKASH INSTITUTE ENGLISH

MOCK TEST 13

Exercise

1. Which among the following is a Lewis acid?

A. NH_3

B. BF_3

C. H_2O

D. NH_4+
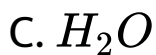
Answer: B

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2. The species which can act both as Bronsted

acid and base is

A. CO_3^{2-}

B. NO_3^-

C. HSO_4^-

D. SO_4^{2-}

Answer: C

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3. An example of a strong electrolyte is

A. Glucose

B. Urea

C. Ammonium hydroxide

D. Sodium formate

Answer: D

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4. For a weak acid HA of concentration $C(moll^{-1})$ and degree of dissociation (α), Ostwald's dilution law is represented by the equation

A. $K_a = \dfrac{C^2\alpha}{1-\alpha}$
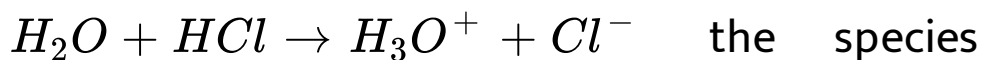
B. $K_a = \dfrac{\alpha^2 C}{1 - \alpha}$

C. $K_a = C\alpha$

D. $K_a = \dfrac{C\alpha^2}{1 - \alpha^2}$

Answer: B

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5. In the given irreversible reaction, $H_2O + HCl \rightarrow H_3O^+ + Cl^-$ the species that acts as Bronsted base is

A. H_2O

B. HCl

C. H_3O^+

D. Cl^-

Answer: A

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6. pH of a 0.001 M NaOH solution will be

A. 9

B. 3

C. 11

D. 12

Answer: C

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7. pH of a solution is 5. Thus. the concentration of hydroxyl ion in the solution is

A. $9molL^{-1}$

B. $5molL^{-1}$

C. $10^{-5} mol L^{-1}$

D. $10^{-9} mol L^{-1}$

Answer: D

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8. The dissociation constant of an acid, HA is

$1 x 10^{-5}$ The pH of 0.1 M solution of the acid will

be

A. 3

B. 5

C. 4

D. 2

Answer: A

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9. 100 mL of 0.01 M solution of NaOH is diluted

to 1 litre. The pH of resultant solution will be

A. 3

B. 12

C. 11

D. 8

Answer: C

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10. At $80°C$, pure distilled water has $[H_3O^+] = 1 \times 10^{-6}$ mol L^{-1} The value of K_w at this temperature will be

A. $1 \cdot 10^{-8}$

B. $1 \cdot 10^{-14}$

C. $1 \cdot 10^{-12}$

D. $1 \cdot 10^{-7}$

Answer: C

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11. The pH of a solution obtained by mixing 50 mL of 2N HCl and 50 mL of 1 N NaOH is [log 5 = 0.7]

A. 1.7

B. 1.3

C. 0.7

D. 0.3

Answer: D

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12. The pH of a solution increased from 3 to 6.

Its $\left[H^{\oplus} \right]$ will be

A. Increased by 1000 times

B. Reduced to half

C. Reduced by 100 times

D. Reduced by 1000 times

Answer: D

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13. Ionic product of water increases, if

A. H^+ ions are added

B. OH ions are added

C. Temperature decreases

D. Temperature increases

Answer: D

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14. The hydrogen ion concentration of 0.1 M solution of acetic acid, which is 20% dissociated, is

A. 0.02 M

B. 2 M

C. 0.2 M

D. 0.002 M

Answer: A

15. A monobasic weak acid solution which is 0.002 M has pH value equal to 5, The percentage ionization value of the acid in the solution will be

A. 0.5

B. 0.005

C. 5

D. 0.05

Answer: A

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16. In which of the following the solubility of AgCl will be minimum ?

A. $0.1MCaCl_2$

B. $0.01MAgNO_3$

C. Pure water

D. $0.1MNH_3$

Answer: A

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17. If the solubility of $Mg(OH)_2$ in water is $SmolL^{-1}$ then its K_sp will be

A. S^3

B. $4S^3$

C. $27S^3$

D. $8S^3$

Answer: B

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18. Aqueous solution of sodium acetate is

A. Alkaline

B. Neutral

C. Weakly acidic

D. Strongly acidic

Answer: A

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19. An acidic buffer solution can be prepared by

mixing the solutions of

A. Sodium chloride and sodium hydroxide

B. Nitric acid and sodium nitrate

C. Ammonium chloride and ammonium hydroxide

D. Sodium acetate and acetic acid

Answer: D

20. Degree hydrolysis (h) of a salt of weak acid and a strong base is given by

A. $\dfrac{K_w}{K_b}$

B. K_w/(K_a*K_b)`

C. $\dfrac{K_w}{K_a}$

D. $\dfrac{K_a \cdot K_b}{K_w}$

Answer: C

21. The pH of a solution at $25\,^{\circ}C$ containing 0.20

M sodium acetate and 0.06 M acetic acid is

$(pK_a f$ or $CH_3COOH = 4.74$ and $\log 3 = 0.477)$

A. 4.36

B. 5.26

C. 5.84

D. 6.32

Answer: B

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22. The pH of 0.2 M aqueous solution of NH_4Cl will be $(pK_b of NH_4OH = 4.74, \log 2 = 0.3)$

A. 4.98

B. 5.42

C. 4.76

D. 4.32

Answer: A

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23. On adding ammonium chloride to a solution ammonium hydroxide

A. Dissociation of NH_4OH increases

B. Concentration of OH increases

C. Concentration of OH decreases

D. Concentration of OH remains unchanged

Answer: C

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24. Aqueous solution of which salt will not be hydrolysed?

A. Potassium nitrate

B. Potassium cyanide

C. Potassium formate

D. Potassium acetate

Answer: A

25. If K_{sp} for $HgSO_4$ is 6.4×10^{-5}, then solubility of this substance in mole per m^3 is :

A. $5.4 \cdot 10^{-5} M$

B. $8 \cdot 10^{-3} M$

C. $8 \cdot 10^{-4} M$

D. $6.4 \cdot 10^{-3} M$

Answer: B

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26. pH of 0.5 M aqueous NaCN solution is $(pK_a of HCN = 9.3, \log 5 = 0.7)$

A. 10.3

B. 9.5

C. 10.6

D. 11.5

Answer: D

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27. Calculate the pH of an aqueous solution of 1.0M ammonium formate assuming complete dissociation. (pK_a fo atomic acid is 3.8 and pK_a of ammonia is 4.8).

A. 5.5

B. 7.5

C. 6.1

D. 6.5

Answer: D

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28. How many grams of calcium oxalate should

be dissolved in water to make one litre of

saturated solution? (K_sp of CaC_2O_4 is $2.5 X 10^{-9}$ and its molecular weight is 128 u)

A. $6.4 \cdot 10^{-3} g$

B. $8.0 \cdot 10^{-3} g$

C. $1.28 \cdot 10^{-3} g$

D. $6.4 \cdot 10^3 g$

Answer: A

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29. What is the pH at which $Mg(OH)_2$ begins to precipitate from a solution containing 0.1 M Mg^{2+} ions ?

$$\left[K_{sp} \text{ for } Mg(OH)_2 = 1.0 \times 10^{-11}\right]$$

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30. A certain buffer solution contains equal concentartion of $X^{\ominus}$ and HX. The K_b for $X^{\ominus}$ is 10^{-10}. The pH of the buffer is

A. 10

B. 4

C. 5

D. 11

Answer: B

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