CHAPTER 9

SOLUTIONS

MCQs

Q.1 Which of the following solutions has the highest boiling point?

(a) 5.85% solution of NaCl
(b) 18.0% solution of glucose
(c) 6.0% solution of urea
(d) all have same boiling point

Q.2 Two solutions of NaCl and KCl are prepared separately by dissolving same amount of the solute in water. Which of the following statements is true for these solutions

(a) KCl solution will have higher boiling point than NaCl solution
(b) both the solutions have same boiling point
(c) KCl and NaCl solutions possess same vapour pressure

Q.3 Molarity of pure water is

(a) 1 (b) 18
(c) 55.5 (d) 6

Q.4 18 gm glucose is dissolved in 90 gm of water. The relative lowering of vapour pressure is equal to

(a) (b) 5.1
(c) (d) 6

Q.5 The molar boiling point constant is the ratio of the elevation in boiling point to

(a) molarity (b) molality
(c) mole fraction of solvent (d) less than that of water

Q.6 An aqueous solution of methanol in water has vapour pressure

(a) equal to that of water (b) equation to that of methanol
(c) more than that of water (d) less than that of water

Q.7 An ozeotropic mixture of two liquids boils at a lower temperature than either of them when

(a) it is saturated
(b) it shows positive deviation from Raoult's law
(c) it shows negative deviation from Raoult's law
(d) it is metastable

Q.8 In azeotropic mixture showing positive deviation from Raoult's law, the volume of mixture is

(a) slightly more than the total volume of components
(b) slightly less than the total volume of the component
(c) equal to the total volume of the components
(d) none of these

Q.9 A solution of glucose is 10%. The volume in which 1 gm mole of it is dissolved will be

(a) 1 dm3 (b) 1.8 dm3
(c) 200 cm3 (d) 900 cm3

Q.10 Colligative properties are the properties of

(a) dilute solutions which behave as nearly ideal solutions
(b) concentrated solutions which behave as nearly non–ideal solutions
(c) both (i) and (ii) (d) neither (i) nor (ii)

Q.11 The freezing mixture used in ice cream machine consists of ice and

(a) NaCl (b) CaCl2
(c) KNO3 (d) both a & c

Q.12 1 kg of sea water contains 4.96 x 10–3 gm of dissolved oxygen. The concentration of oxygen in sea water in ppm is

(a) 4.96 x 10–2 (b) 0.496
(c) 4.96 (d) 49.6

Q.13 A solution of sucrose is 34.2%. The volume of solution containing one mole of solute

(a) 500 cm3 (b) 1000 cm3
(c) 342 cm3 (d) 3420 cm3

Q.14 Salt of a weak acid with strong base when dissolved in water gives

(a) acidic solution (b) basic solution
(c) neutral solution (d) none

Q.15 Mole fraction of 10% urea is

(a) 0.042 (b) 0.023
(c) 0.032 (d) 0.072

Q.16 Which of the following mixtures of liquids show negative deviation

(a) ethyl alcohol ether (b) HCl and water
(c) phenol – water
(d) chlorobenzene – bromobenzene

Q.17 The term cryoscopy is used

(a) depression of freezing point
(b) elevation in boiling point
(c) lowering of vapour pressure
(d) osmotic pressure

Q.18 The term ebullioscopy is used

(a) depression of freezing point
(b) elevation in boiling point
(c) lower of vapour pressure
(d) none of above

Q.19 Azeotropic mixture

(a) obey Henry's law
(b) obey Raoult's law
(c) do not obey Raoult's law
(d) obey Dalton's law

Q.20 Hydrolysis of potassium acetate produce

(a) acidic solution (b) neutral solution
(c) basic solution (d) none of these

Q.21 Which one of the following salts will not hydrolyse

(a) NaCl (b) AlCl3

(c) Na2CO3 (d) CH3COONa

Q.22 The sum of mole fractions (X) of components of a solution is equal to

(a) 100 (b) 200
(c) one (d) zero

Q.23 Which pair of mixture is called idea solution

(a) nicotine–water
(b) chlorobenzene & bromobenzene
(c) water–ether
(d) water–alcohol

Q.24 The vapour pressure of aqueous solution of sugar solution is

(a) equal to vapour pressure of water
(b) more than vapour pressure of pure water
(c) less than vapour pressure of pure water
(d) none of above

Q.25 When NaCl is dissolved in water

(a) melting point decrease
(b) boiling point decrease
(c) both melting and boiling point decrease
(d) none of above

Q.26 The solution which distils without change in composition is called

(a) unsaturated solution (b) saturated solution
(c) zeotropic mixture (d) azeotropic mixture

Q.27 Solubility curve of Na2SO4 10 . H2O shows

(a) constant increase of solubility
(b) constant decrease of solubility
(c) discontinuous solubility with temp
(d) none of above

Q.28 Use of glycol as antifreeze in the automobile is an important application of

(a) colligative property
(b) Roault's law

(c) fractional crystallization
(d) hydrolysis

Q.29 Use of NaCl in ice cream making is an important application of
(a) constitutive property
(b) additive property
(c) colligative property
(d) Roault's law

Q.30 Which one of the following solutions will have higher vapour pressure than that of water
(a) aqueous solution of CH3OH
(b) aqueous solution of H2SO4
(c) aqueous solution of sugar
(d) aqueous solution of urea

Q.31 Ethylene glycol is mixed with water as anti freeze in radiator because
(a) it has low vapour pressure
(b) it raises the boiling point of water
(c) it lowers the freezing point of water
(d) it changes osmotic pressure
(e) it has all characters

Q.32 Which one of following is not soluble in alcohol
(a) KCl (b) urea
(c) acetone (d) ether

Q.33 Mixture of alcohol and water can be separated by
(a) solvent extraction (b) crystallization
(c) filtration (d) fractional distillation

Q.34 Which one of following is not a conjugate solution
(a) ether + water (b) phenol + water
(c) nicotine + water (d) ethanol + water

Q.35 Which one of the following has discontinuous solubility curve
(a) NaCl (b) KCl
(c) NaNO3 (d) CaCl2 . 6H2O

Q.36 Which one of following has continuous solubility curve

(a) NaCl (b) NaNO3
(c) Na2SO4 . 10H2O (d) both a and b

Q.37 Solubility of following decrease with increase in temp
(a) Ce2(SO4)3 (b) CaCl2 . 6H2O
(c) Pb(NO3)2 (d) K2Cr2O7

Q.38 According to Roault's law
(a) relative lowering of V.P. is equal to mole fraction of solute
(b) the lowering of V.P. is directly proportional to the mole fraction of solute
(c) V.P. of a solvent above a solution is equal to product of V.P. of pure solvent and mole fraction of solvent in solution
(d) all the above

Q.39 The solution of KCl
(a) acidic (b) basic
(c) neutral (d) none of above

Q.40 Na2SO4 solution is
(a) acidic (b) basic
(c) neutral (d) none of above

Q.41 The solution of CuSO4 is
(a) acidic (b) basic
(c) neutral (d) none of above

Q.42 The solution of AlCl3 is
(a) acidic (b) basic
(c) neutral (d) none of above

Q.43 The solution of CH3COONa
(a) acidic (b) basic
(c) neutral (d) none of above

Q.44 The no. of water of crystallization of MgCl2
(a) 12 (b) 6
(c) 3 (d) 4

Q.45 The no. of water of crystallization of MgSO4

(a) 12 (b) 7
(c) 5 (d) 3

Q.46 Freezing point depression is measured by
(a) Beckmann's apparatus
(b) Land's Berger's
(c) Antifreeze apparatus
(d) all the above

Q.47 Elevation of boiling is measured by
(a) Beckmann's apparatus
(b) Lands berger's method
(c) Antifreeze apparatus
(d) none of above

Q.48 Colligative properties are the properties of solution that depends upon
(a) nature of molecules (b) quality
(c) physical property (d) no. of molecules

Q.49 Aqueous solution of glucose boils at 100.52oC. The solution contains
(a) 180 gm glucose in 1 litre water
(b) 90 gm glucose in 1 litre water
(c) 18 gm glucose in 1 litre water
(d) 3.6 gm glucose in 1 litre water

Q.50 Aqueous solution of methanol is zeotropic mixture because
(a) it does not obey the Roalt's law
(b) mixture cannot be separated by sublimate
(c) mixture can be separated by distillation
(d) greater volume than the volume of component

Q.51 When equal volumes of ether and water are shaken, then two layers are formed the ether layer contains water
(a) 5.3% (b) 6.3%
(c) 1.2% (d) 2.1%

ANSWERS

Questions	1	2	3	4	5
Answers	d	b	c	c	B
Questions	6	7	8	9	10
Answers	c	b	a	b	a
Questions	11	12	13	14	15
Answers	d	c	b	b	c
Questions	16	17	18	19	20
Answers	b	a	b	c	c
Questions	21	22	23	24	25
Answers	a	c	b	e	a
Questions	26	27	28	29	30
Answers	d	c	a	c	d
Questions	31	32	33	34	35
Answers	e	a	d	d	d
Question	36	37	38	39	40

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Answers	d	a	d	c	c
Questions	41	42	43	44	45
Answers	a	a	b	b	b
Questions	46	47	48	49	50
Answers	a	b	d	a	c
Questions	51				
Answers	c				