## **DEGLOOR COLLEGE, DEGLOOR**

## Class - B.Sc. II Year

Subject - Physical Chemistry-IX

Choose the correct	t answer of the follow	ing	
1. Reaction rates can	change with		tration d) All of these
a) remperature	b) Addition of catalyst	c) Reaction concer	itration <b>d) All of these</b>
2. For first order reac	tions the rate constant k h	as the unit	
a) Lit mol <sup>-1</sup>	b) time <sup>−1</sup>	c) mol <sup>-1</sup> time <sup>-1</sup>	d) mol time Lit <sup>-1</sup>
3. Reaction rates are	generally		
a) are constant thre	oughout a reaction b) a	re smallest at the beg	inning & increase with time
c) are greatest at th	ne beginning & decrease	with time <b>d) No suc</b> l	n generalization can made
4. The reaction $A \rightarrow B$	3 is a second order reac	tion. When the conc.	of A is 0.50 M, the half life is
8 minute. What is t	he half life if initial conc. c	f A is 0.10 M ?	
a) 80 min	b) 8 min	c) 40 min	d) 4 min
5. As the temperature	e of a reaction is increased	d, the rate of reaction	increases because the
a) reactant molecul	es collide with greater ene	ergy b) reactant mole	cules collide less frequently
c) reactant molecul	es collide less frequently	with greater energy d	) activation energy is lowered
6. If the reaction 2A	+ 3D $\rightarrow$ Product, is first or	der in A & second ord	ler in D, then rate law will
have rate =			
a) k [A] [D]²	b) k [A]² [D]	c) k [A]² [D]²	d) k [A] [D]
7. for a certain reaction	on, a plot of log [A] verses	t gives a straight line	with slope of $-1.46 \text{ sec}^{-1}$ .
The order of reaction	on is		
a) 0	b) 1	c) 2	d) 3
8. The thermal decom	nposition of $N_2O_5$ to form	$NO_2 \&O_2$ is a first orde	er reaction. The rate
constant for reaction	on is 5.1 x 10 <sup>-4</sup> sec <sup>-1</sup> at 3 <sup>-4</sup>	18 K. what is half life o	of this processs
a) 3.9 x 10 <sup>3</sup> sec	b) 2.35 x 10 <sup>3</sup> sec	c) 1.0 x 10 <sup>3</sup> sec	d) 1.35 x 10³ sec
9. Which of the follow	ring does not affect the ra-	te of a chemical react	on?
a) Enthalpy of a re	eaction b) concentration	n of reactants c) tem	perature d) pressure
10. Rate law relates t	he rate of chemical reacti	on to	
a) temperature b)	activation energy c) con	centration of reacta	nts d) reaction mechanism
11. Rate laws for che	mical reactions are deterr	nined	
a) by examining the	e coefficients in the balan	ced chemical equation	า
b) from the equilibr	ium constant		
c) From the rates c	of forward and reverse rea	ction of the system	
d) by experiment			
12. Rate constant of f	irst order reaction is giver	ו by	
a) K = $\frac{2.303}{t} \log \frac{a}{a}$	<b>b)</b> $K = \frac{2.303}{t} \log \frac{a}{a-x}$	c) K = $\frac{t}{2.303} \log \frac{a}{a-2}$	$\frac{1}{x}$ d) K = $\frac{2.303}{at} \log \frac{a}{a-x}$
13. Rate constant of a	zero order reaction is give	n by	
a) K = xt	b) K = $\frac{x^2}{t}$	c) $\mathbf{K} = \frac{\mathbf{x}}{\mathbf{t}}$	d) K = $\frac{a}{xt}$

14. Arhenius equation is given by \_\_\_\_\_

a) $K = AT e^{-Ea/RT}$	b) $K = A e^{-EaT/R}$	c) $K = A e^{-RT/Ea}$	d) $\mathbf{K} = \mathbf{A} \ \mathbf{e}^{-\mathbf{E}\mathbf{a}/\mathbf{R}\mathbf{T}}$
15. Rate constant of	second order reactio	on is given by	
a) K = $\frac{2.303}{t} \frac{x}{a-x}$	b) K = $\frac{1}{t} \frac{x}{a-x}$	<b>c)</b> $\mathbf{K} = \frac{1}{t} \frac{\mathbf{x}}{\mathbf{a}(\mathbf{a}-\mathbf{x})}$	d) K = $\frac{1}{t} \frac{a(a-x)}{x}$
16. Unit of zero order	reaction is given by		
a) mol Lit <sup>-1</sup> sec <sup>-1</sup>	b) mol Lit sec <sup>-1</sup>	c) mol <sup>-1</sup> Lit <sup>-1</sup> sec <sup>-1</sup>	d) None of these
17. Half life of second	d order reaction is given	ı by	
a) $t_{1/2} = \frac{K}{a}$	b) $t_{1/2} = \frac{a}{K}$	c) $t_{1/2} = \frac{1}{Ka}$	d) None of these
18. Powers in the rate	e law are determined by	У	
a) the principle of c	detailed balance	b) physical states of rea	ctants & products
c) Experiment		d) coefficients in balance	ed chemical reaction
19. The half life of a f	irst order reaction proce	ess is	
a) depends on the	reactant concentration	b) directly proportion	nal to the concentration
c) inversely propor	tional to the concentrati	ion d) independent of I	eactant concentration
20. As temperature ir	creases, the reaction ra	ate	
a) decreases	b) decreses then incre	ases c) increases	d) remains the same
21. Reaction 2 NOg	$\rightarrow N_2 + O_2$ proceeds in	n a single elementary step	. This reaction is
a) unimolecular	b) bimolecular	c) termolecular	d) None of these
22. Why is minimum	energy needed for an e	ffective collision ?	
a) to break the bo	b)	orient the particles correc	tly
c) particles collides	s many times d)	to give off heat in a react	on
23. According to cher	nical kinetic, a reaction	can occur	
a) if the reactants of	collide with proper orien	tation b) if the reactants p	ossess sufficient energy
of collision c) if t	he reactants are able to	o form a correct transition	state d) All of these
24. What happens whether the second sec	nen molecules collide w	ith less than the activation	n energy needed for the
reaction ?			
a) they stick togeth	er but do not react		
b) they react, but n	nore slowly		
c) they react if the	bonds are arranged in t	the correct orinentation	
d) they do not rea	ict, they simply bound	e of each other	
25. Reaction 2 NO +	$O_2 \rightarrow 2 NO_2$ is		
a) unimolecular	b) bimolecular	c) termolecular	d) None of these
26. The conduction o	f electricity occurs by di	irect flow of electrons is ki	nown as
a) Ionic conductors	b) Electronic condu	ictors c) Electrolytic con	ductors d) None of these
		specific resistance	
27. The specific cond	luctance is	-	
27. The specific cond a) equal to	b) directly proportiona	al to <b>c) reciprocal of</b>	d) None of these
<ul><li>27. The specific conc</li><li>a) equal to</li><li>28. On dilution specif</li></ul>	luctance is b) directly proportiona ic conductivity	al to <b>c) reciprocal of</b>	d) None of these
<ul><li>27. The specific conc</li><li>a) equal to</li><li>28. On dilution specif</li><li>a) decreases</li></ul>	luctance is b) directly proportiona ic conductivity b) increases	al to <b>c) reciprocal of</b> 	d) None of these d) None of these

30. The equivalent conductance		with increase in temperature.		
a) decreases	b) increases	c) remains same	d) None of these	
31. The molar conductar	nce is given by			
a) $\mu = \frac{100 \text{ K}}{\text{M}}$	b) $\mu = \frac{K}{100 \text{ M}}$	c) $\mu = \frac{K}{1000 \text{ M}}$	d) $\mu = \frac{1000 \text{ K}}{\text{M}}$	
32. Cell constant is equa	Il to			
a) $\frac{\text{length}}{\text{Area}}$	b) length X Area	c) $\frac{\text{Area}}{\text{length}}$	d) Length + Area	
33. What is the cell cons	tant of the cell, if the distar	nce between two electro	de is 6.0 cm and	
area of electrode is 5	.0 cm <sup>2</sup> ?			
a) 1.2 cm	b) 12 cm	c) 1.2 cm⁻¹	d) 12 cm <sup>-1</sup>	
34. Kohlrausch's law car	n be expressed as			
a) $\lambda_{\infty} = \lambda a - \lambda c$	b) λ∞ = λa + λc	c) λ∞ = λc−λa	d) λ∞ = λa x λc	
35. The transport number	er of the anion is given by			
a) $\mathbf{t_a} = rac{\mathbf{v_a}}{\mathbf{v_a} + \mathbf{v_c}}$	b) $t_a = \frac{v_a}{v_a - v_c}$	c) $t_a = \frac{v_c}{v_a + v_c}$	d) t <sub>a</sub> = $\frac{v_c}{v_a - v_c}$	
36. A strong electrolyte i	s a substance which disso	ciates		
a) poorly	b) completely	c) both a & b	d) None of these	
37. The transport number	er of the K <sup>+</sup> is 0.492 in KCl	solution, the transport n	umber of Cl⁻ is	
a) 0.492	b) 0.502	c) 0.580	d) 0.508	
38. The ionic product of	water is			
a) 1 x 10 <sup>- 7</sup>	b) 1 x 10 <sup>7</sup>	c)1 x 10 <sup>− 14</sup>	d) 1 x 10 <sup>14</sup>	
39. When a strong acid i	s titrated against a strong l	base the end point is the	point of	
a) maximum conduc	tance <b>b) minimum cond</b>	luctance c) zero condu	uctance d) None of these	
a) 0.492	b) 0.502	c) 0.580	d) 0.508	
40. The wavelength of u	Itraviolet & visible light of e	lectromagnetic spectrum	n lies bet <sup>n</sup>	
a) 1000 – 2000 A	b) more than 8000 A <sup>0</sup>	c) 2000 – 8000 A <sup>0</sup>	d) None of these	
41 stops a	s soon as the incident radi	ation is cut off.		
a) Fluorescence	b) Phosphorescence	c) chemiluminescenc	e d) None of these	
42. The electronic spins	are expressed in terms of	spin multiplicity which is	given by	
a) S + 2	b) 2S + 2	c) 2S + 1	d) 2S – 1	
43. The quantum efficier	ncy of the reaction $H_2 + C$	$I_2 \rightarrow 2HCI$ is		
. a) 10 to 10 <sup>2</sup>	b) 10 <sup>-2</sup> to 10 <sup>2</sup>	c) 10 <sup>2</sup> to 10 <sup>4</sup>	d) 10 ⁴ to 10 <sup>6</sup>	
44. Lambert-Beer law is	given by the equation			
a) $\log \frac{I}{I_o} = - \varepsilon C x$	b) $\log \frac{I}{I_o} = \epsilon C x$	c) $\log \frac{I}{I_0} = - \in C$	d) $\log \frac{I}{I_0} = -b x$	
45. In a photochemical re	eaction 75 molecules are r	eacted to give products	by absorption of 25	
photons of suitable ra	adiation. The quantum yiel	d is		
a) 2	b) 3	c) 25	d) 1	
46. Reaction rates can c	hange with			
a) Temperature b)	Addition of catalyst c)	Reaction concentration	d) All of these	
47. For first order reaction	ons the rate constant k has	the unit		

a) Lit mol ⁻¹	b) time⁻¹	c) mol <sup>-1</sup> time <sup>-1</sup>	d) mol time Lit <sup>-1</sup>
48. Reaction rates a	re generally		
a) are constant thi	roughout a reaction b)	) are smallest at the begin	nning & increase with time
c) are greatest at	the beginning & decreas	se with time <b>d) No such</b>	generalization can made
49. The reaction A –	→ B is a second order r	eaction. When the conc.	of A is 0.50 M, the half life
ls 8 minute. Wha	it is the half life if initial c	conc. of A is 0.10 M ?	
a) 80 min	b) 8 min	c) 40 min	d) 4 min
50. As the temperatu	are of a reaction is increa	ased, the rate of reaction	increases because the
a) reactant molecu	les collide with greater e	energy b) reactant molec	ules collide less frequently
c) reactant molecu	les collide less frequent	ly with greater energy <b>d)</b>	activation energy is lowered
51. If the reaction 2/	A + 3D $\rightarrow$ Product, is first	st order in A & second ord	der in D, then rate law will
have rate =			
a <b>) k [A] [D]</b> ²	b) k [A]² [D]	c) k [A] <sup>2</sup> [D] <sup>2</sup>	d) k [A] [D]
52. for a certain read	tion, a plot of log [A] ver	rses t gives a straight line	with slope of $-1.46 \text{ sec}^{-1}$ .
The order of react	ion is		
a) 0	b) 1	c) 2	d) 3
53. The thermal deco	omposition of $N_2O_5$ to fo	rm NO <sub>2</sub> &O <sub>2</sub> is a first orde	er reaction. The rate
constant for reacti	on is 5.1 x 10 <sup>-4</sup> sec <sup>-1</sup> at	318 K. what is half life of	this processs
a) 3.9 x 10 <sup>3</sup> sec	b) 2.35 x 10 <sup>3</sup> sec	c) 1.0 x 10 <sup>3</sup> sec	d) 1.35 x 10 <sup>3</sup> sec
54. Which of the follo	owing does not affect the	e rate of a chemical react	ion ?
a) Enthalpy of a r	eaction b) concentrat	tion of reactants c) temp	erature d) pressure
55. Rate law relates	the rate of chemical rea	ction to	
a) temperature b	) activation energy c) c	oncentration of reactan	ts d) reaction mechanism
56. Rate laws for che	emical reactions are dete	ermined	
a) by examining th	e coefficients in the bala	anced chemical equation	
b) from the equilibrium constant			
c) From the rates of forward and reverse reaction of the system			
d) by experiment	, ,		
57. Rate constant of first order reaction is given by			
a) K = $\frac{2.303}{t} \log \frac{a}{t}$	$\frac{-x}{a}$ <b>b)</b> K = $\frac{2.303}{t} \log \frac{a}{a}$	$\frac{a}{-x}$ c) K = $\frac{t}{2.303} \log \frac{a}{a-x}$	d) K = $\frac{2.303}{at} \log \frac{a}{a-x}$
58. Rate constant of	zero order reaction is gi	iven by	
a) K = xt	b) K = $\frac{x^2}{t}$	c) $K = \frac{x}{t}$	d) K = $\frac{a}{xt}$
59. Arhenius equation	n is given by		
a) $K = AT e^{-Ea/RT}$	b) $K = A e^{-EaT/R}$	c) $K = A e^{-RT/Ea}$	d) $\mathbf{K} = \mathbf{A} \ \mathbf{e}^{-\mathbf{E}\mathbf{a}/\mathbf{R}\mathbf{T}}$
60. Rate constant of second order reaction is given by			
a) $K = \frac{2.303}{t} \frac{x}{a-x}$	b) $K = \frac{1}{t} \frac{x}{a-x}$	<b>c)</b> $\mathbf{K} = \frac{1}{t} \frac{\mathbf{x}}{\mathbf{a}(\mathbf{a}-\mathbf{x})}$	d) K = $\frac{1}{t} \frac{a(a-x)}{x}$
61. Unit of zero orde	r reaction is given by		
a) mol Lit <sup>-1</sup> sec <sup>-1</sup>	b) mol Lit sec <sup>-1</sup>	c) mol <sup>-1</sup> Lit <sup>-1</sup> sec <sup>-1</sup>	d) None of these
62. Half life of secon	d order reaction is giver	ו by	

a) $t_{1/2} = \frac{K}{a}$	b) $t_{1/2} = \frac{a}{K}$	<b>c)</b> $t_{1/2} = \frac{1}{Ka}$	d) None of these
63. Powers in the rate	e law are determined by		
a) the principle of c	letailed balance	o) physical states of rea	actants & products
c) Experiment	C	d) coefficients in baland	ced chemical reaction
64. The half life of a f	irst order reaction proces	s is	
a) depends on the	reactant concentration	b) directly proportion	onal to the concentration
c) inversely proport	tional to the concentratior	n d) independent of	reactant concentration
65. As temperature in	creases, the reaction rate	9	
a) decreases	b) decreses then increas	ses c) increases	d) remains the same
66. Reaction 2 NOg	$\rightarrow N_2 + O_2$ proceeds in a	a single elementary ste	p. This reaction is
a) unimolecular	b) bimolecular	c) termolecular	d) None of these
67. Why is minimum e	energy needed for an effe	ective collision?	
a) to break the bo	nds b) or	ient the particles corre	ctly
c) particles collides	many times d) to	give off heat in a reac	tion
68. According to cher	nical kinetic, a reaction ca	an occur	
a) if the reactants of	collide with proper orienta	tion	
b) if the reactants p	oossess sufficient energy	of collision	
c) if the reactants a	are able to form a correct	transition state	
d) All of these			
69. What happens wh	nen molecules collide with	n less than the activation	on energy needed for the
reaction ?			
a) they stick togeth	er but do not react		
b) they react, but m	nore slowly		
c) they react if the	bonds are arranged in the	e correct orinentation	
d) they do not rea	ct, they simply bounce	of each other	
70. Reaction 2 NO +	$O_2 \rightarrow 2 NO_2$ is		
a) unimolecular	b) bimolecular	c) termolecular	d) None of these
71. The conduction of	f electricity occurs by dire	ect flow of electrons is l	nown as
a) Ionic conductors	b) Electronic conduct	tors c) Electrolytic co	nductors d) None of these
72. The specific cond	uctance is	specific resistance	
a) equal to	b) directly proportional	to <b>c) reciprocal of</b>	d) None of these
73. On dilution specifi	ic conductivity		
a) decreases	b) increases	c) remains same	e d) None of these
74. The unit of equiva	alent conductance is		
a) Ohm <sup>-1</sup> cm <sup>1</sup> equt	<sup>-1</sup> b) Ohm <sup>-1</sup> cm <sup>-2</sup> equt <sup>-</sup>	<sup>1</sup> c) Ohm <sup>-1</sup> cm <sup>-1</sup> equ	it <sup>-1</sup> d) Ohm <sup>-1</sup> cm <sup>2</sup> equt <sup>-1</sup>
75. The equivalent co	onductance	with increase in terr	perature.
a) decreases	b) increases	c) remains same	e d) None of these
76. The molar conduc	ctance is given by		
a) $\mu = \frac{100 \text{ K}}{\text{M}}$	b) $\mu = \frac{K}{100 \text{ M}}$	c) $\mu = \frac{K}{1000 \text{ M}}$	d) $\mu = \frac{1000 \text{ K}}{\text{M}}$

77. Cell constant is equal to .....

a) <u>length</u> Area	b) length X Area	c) $\frac{\text{Area}}{\text{length}}$	d) Length + Area
78. What is the cell consta	ant of the cell, if the distan	ce between two electro	de is 6.0 cm and
area of electrode is 5.0	) cm <sup>2</sup> ?		
a) 1.2 cm	b) 12 cm	c) 1.2 cm⁻¹	d) 12 cm <sup>-1</sup>
79. Kohlrausch's law can l	be expressed as		
a) λ∞ = λa – λc	b)λ∞ = λa + λc	c) $\lambda_{\infty} = \lambda c - \lambda a$	d) λ∞ = λa x λc
80. The transport number	of the anion is given by		
a) $\mathbf{t}_a = \frac{\mathbf{v}_a}{\mathbf{v}_a + \mathbf{v}_c}$	b) $t_a = \frac{v_a}{v_a - v_c}$	c) $t_a = \frac{V_c}{V_a + V_c}$	d) t <sub>a</sub> = $\frac{v_c}{v_a - v_c}$
81. A strong electrolyte is	a substance which dissoc	iates	
a) poorly	b) completely	c) both a & b	d) None of these
82. The transport number	of the K <sup>+</sup> is 0.492 in KCl s	olution, the transport n	umber of $CI^-$ is
a) 0.492	b) 0.502	c) 0.580	d) 0.508
83. The ionic product of w	ater is		
a) 1 x 10 <sup>-7</sup>	b) 1 x 10 <sup>7</sup>	c)1 x 10 <sup>− 14</sup>	d) 1 x 10 <sup>14</sup>
84. When a strong acid is	titrated against a strong b	ase the end point is the	e point of
a) maximum conducta	ince <b>b) minimum cond</b> u	uctance c) zero condu	uctance d) None of these
a) 0.492	b) 0.502	c) 0.580	d) 0.508
85. The wavelength of ultr	aviolet & visible light of el	ectromagnetic spectrun	n lies bet <sup>n</sup>
a) 1000 – 2000 A	b) more than 8000 A <sup>0</sup>	c) 2000 – 8000 A <sup>0</sup>	d) None of these
86 stops as	soon as the incident radia	ation is cut off.	
a) Fluorescence	b) Phosphorescence	c) chemiluminescenc	e d) None of these
87. The electronic spins a	re expressed in terms of s	pin multiplicity which is	given by
a) S + 2	b) 2S + 2	c) 2S + 1	d) 2S – 1
88. The quantum efficienc	y of the reaction $H_2 + Cl_2$	$_2 \rightarrow 2HCI$ is	
. a) 10 to 10 <sup>2</sup>	b) 10 <sup>-2</sup> to 10 <sup>2</sup>	c) 10 <sup>-2</sup> to 10 <sup>4</sup>	d) 10 <sup>4</sup> to 10 <sup>6</sup>
89. Lambert-Beer law is g	iven by the equation		
a) $\log \frac{I}{I_0} = - \varepsilon C x$	b) $\log \frac{I}{I_o} = \mathcal{E} C x$	c) $\log \frac{I}{I_0} = - \in C$	d) $\log \frac{I}{I_0} = -b x$
90. In a photochemical rea	action 75 molecules are re	eacted to give products	by absorption of 25
photons of suitable rac	diation. The quantum yield	l is	
a) 0		\ <b>~</b> _	-