MP MCA - 1999

1. The system of equations $2x - 2y = 6$, $kx - 3y = 5$ is consistent if
   (a) $k = 3$ (b) $k \neq 3$
   (c) $k = 1$ (d) $k \neq 1$
2. If the system of equations is inconsistent then lines are
   (a) concurrent (b) Intersect
   (c) parallel (d) none of these
3. If ${}^nC_{2p} = {}^nC_q$ and $q = n/3$, then the value of p is
   (a) $n/3$ (b) $2n/3$
   (c) $3n/3$ (d) $2n$
4. The total number of terms, in the expansion of $(x+y)^{100} + (x-y)^{100}$ after simplification is :
   (a) 50 (b) 51
   (c) 202 (d) 54
5. The number of terms as the expansion of $(2x+3y+4z)^n$ is :
   (a) $(n+1)$ (b) $\frac{(n+3)(n+1)}{2}$
   (c) $\frac{(n+1)(n+2)}{2}$ (d) $\frac{(n+2)(n+3)}{2}$
6. The integral part of $(\sqrt{2}+1)^6$ is :
   (a) 197 (b) 198
   (c) 196 (d) 199
7. If a, b and c are distinct positive real number, then the expression $(b + c - a)(c + a - b)(a + b - c) - abc$ is :
   (a) positive (b) non-positive
   (c) negative (d) non-negative
8. The value of $\frac{1^2}{1!} + \frac{2^2}{2!} + \frac{3^2}{3!} + \ldots\ldots + \frac{n^2}{n!} =$
   (a) $2e$ (b) $3e$
   (c) $3e - 1$ (d) $2e - 1$
9. The value of $1 + \frac{(\log_e n)^2}{2!} + \frac{(\log_e n)^4}{4!} + \ldots\ldots =$
   (a) n (b) $1/n$
   (c) $\frac{1}{2}(n + n^{-1})$ (d) $\frac{1}{2}(e^n + e^{-n})$
10. The sum of the series $\log_4 2 - \log_8 2 + \log_{16} 2 - \ldots\ldots$
    (a) e^2 (b) $1 + \log_e 2$
    (c) $1 - \log_e 2$ (d) $\log_e 3 - 2$
11. If $e^x = (1-x)(B_0 + B_1 x) + B_2 x^2 + \ldots\ldots + B_n x^n + \ldots\ldots)$ then $B_n - B_{n-1}$ equals :
    (a) $\frac{1}{(n-1)!}$ (b) $\frac{1}{n!}$
    (c) $\frac{1}{n!} - \frac{1}{(n-1)!}$ (d) 1
12. $\begin{vmatrix} b+c & a-c & a-b \\ b-c & c+a & b-a \\ c-b & c-a & a+b \end{vmatrix}$
    (a) $8abc$ (b) $-8abc$
    (c) $6abc$ (d) $-6abc$
13. If A is an n-rowed square matrix of rank $(n-1)$, then
    (a) $adj\, A = 0$ (b) $adj\, A \neq 0$
    (c) $adj\, A = I_n$ (d) $adj\, A \neq I_n$
14. If $|A| = 5$, A is matrix of order 3×3 then $|adj\, A| =$
    (a) 5 (b) 25
    (c) 125 (d) none of these
15. If A is orthogonal matrix, then
    (a) $|A| = 0$ (b) $|A| = \pm 1$
    (c) $|A| = \pm 2$ (d) $|A| = 1$
16. If A is a non-zero column matrix of the type $n \times 1$ and B a non-zero matrix of the type $1 \times n$ then $\rho(AB)$ is :
    (a) 0 (b) n
    (c) 1 (d) none of these
17. If A and B are two matrices such that $A + B$ and AB are both defined, then A and B are :
    (a) both null matrices

(b) both identity matrices
(c) both square matrix of the same order
(d) none of these

18. If A is skew-symmetric matrix and n is odd positive integer, then An is :
(a) a symmetric matrix
(b) skew-symmetric matrix
(c) adiagonal matrix
(d) a unit matrix

19. The value of $\frac{d}{dx}\tan^{-1}(\cot x)$ is :
(a) 1 (b) –1
(c) cosec x (d) -cosec x

20. The derivative of $\log|x|$ is :
(a) $\frac{1}{x}, x>0$ (b) $\frac{1}{|x|}, x\neq 0$
(c) $\frac{1}{x}, x\neq 0$ (d) $\frac{1}{x}<0$

21. If variable x and y are related by the equation $x=\int_0^y \frac{1}{\sqrt{1+9u^2}}du$, then $\frac{du}{dx}$ is equal to :
(a) $\frac{1}{\sqrt{1+9y^2}}$ (b) $\sqrt{1+9y^2}$
(c) $1+9y^2$ (d) $\frac{1}{1+9y^2}$

22. Differentiation of $\frac{\tan^{-1}x}{1+\tan^{-1}x}$ with respect to $\tan^{-1}x$, is :
(a) $\frac{1}{(1+\tan^{-1}x)^2}$ (b) $\frac{1}{1+\tan^{-1}x}$
(c) $\tan^{-1}x$ (d) $\frac{1}{\tan^{-1}x}$

23. If $z=\sin^{-1}\left(\frac{x^{1/5}+y^{1/5}}{y^{+1/4}+y^{+1/4}}\right)$ then $x\frac{\partial z}{\partial x}+y\frac{\partial z}{\partial y}=$
(a) $-\frac{1}{20}\sin z$ (b) $-\frac{1}{20}\cos z$
(c) $-\frac{1}{20}\tan z$ (d) $\frac{1}{20}\tan z$

24. The degree of homogeneous equation $f(x,y)=\frac{x^{1/4}+y^{1/4}}{x^{1/3}-y^{1/3}}$ is :
(a) 1/12 (b) –1/12
(c) 12 (d) –12

25. If y is a polynomial of degree n with its leading coefficient 2, then $D^{n-1}(y)=$
(a) 2 (n!) (b) 2 (n!) x
(c) 2 (n –1)! x (d) none of these

26. If $x=y\sqrt{1+y^2}$ then $\frac{dy}{dx}=$
(a) $\frac{\sqrt{1+y^2}}{(1+2y^2)}$ (b) $\frac{1+y^2}{\sqrt{(1+2y^2)}}$
(c) $\frac{\sqrt{1-y^2}}{(1+2y^2)}$ (d) $\frac{1-y^2}{(1+2y^2)}$

27. The maximum slope of the curve $y=x^3+3x^2+2x-27$ is :
(a) 5 (b) –5
(c) 1/5 (d) –1/5

28. If $x+y=8$ then the minimum value of $z=x^2+y^2$ is :
(a) 31 (b) 32
(c) 8 (d) 4

29. $\int\left(\frac{x+\sin x}{1-\cos x}\right)dx=$
(a) $x\tan x/2+c$
(b) $\log(1-\cos x)+c$
(c) $\log(\tan x/2+\sec x/2)+c$
(d) $\log(\tan x/2-\sec x/2)$

30. $\int\frac{1}{\sin^2 x\cos^2 x}dx=$
(a) $-\cot x+\tan x$ (b) $-\cot x-\tan x$
(c) $\cot x-\tan x$ (d) $\cot x+\tan x$

31. The integral $\int\frac{\cot 4x+1}{\cot x-\tan x}dx$ is equal to :
(a) $-\frac{1}{4}\cos 4x+c$ (b) $+\frac{1}{4}\cos 4x$
(c) $-\frac{1}{2}\sin 2x+c$ (d) none of these

32. If $\int\frac{\cos^4 x}{\sin^2 x}dx=k\cot x+M\sin 2x+L\frac{x}{2}+C$, then
(a) L = 3 (b) K = -2
(c) L = -3 (d) M = -4

33. The value of the integral $\int_{-1}^{1}\log(x+\sqrt{x^2+1})dx$ is
(a) 1 (b) –1
(c) 0 (d) none of these

34. The solution of the equation $\int_{\log 2}^{x} \frac{dx}{\sqrt{e^x - 1}} = \frac{\pi}{6}$ is given by

(a) $x = \log_e 4$ (b) $x = -\log_e 4$
(c) $x = \log_e 2$ (d) $x = 3\log_e 2$

35. $\int e^{\tan^{-1} x}\left(\frac{1+x+x^2}{1+x^2}\right)dx$ is equal to :

(a) $xe^{\tan^{-1} x} + c$ (b) $x^2 e^{\tan^{-1} x} + c$
(c) $\frac{1}{x} e^{\tan^{-1} x} + c$ (d) $e^{\tan^{-1} x} + c$

36. The value of k, where $\int_{-\pi/2}^{\pi/2} \sin^6\theta\, d\theta = k\frac{\pi}{2}$, is :

(a) 5/16 (b) 5/32
(c) 5/8 (d) 15/8

37. If $\int_{-1}^{1} x^m (1-x)^m\, d\theta = k\int_0^{\pi/2} \sin^{2m+1} 2\theta\, d\theta$, the value of k is :

(a) $\frac{1}{2^{2m}}$ (b) $\frac{1}{2^{2m+1}}$
(c) $\frac{1}{2^{2m-1}}$ (d) $\frac{1}{2^{2m+2}}$

38. Area of the curve $a^2y^2 = x^2(a^2 - x^2)$ is :

(a) $\frac{3}{4}a^2$ (b) $\frac{4}{3}a^2$
(c) $\frac{2}{3}a^2$ (d) $\frac{8}{3}a^2$

39. The area of the loop of the curve $y^2 = x^2(a+x)$, $a > 0$ is :

(a) $\frac{4}{15}a^{5/2}$ (b) $\frac{4}{15}a^{3/2}$
(c) $\frac{4}{15}a^{7/2}$ (d) $\frac{8}{15}a^{5/2}$

40. Show that the area of the curved surface obtained by revolving about x-axis, the arc of the parabola $y^2 = 4x$ between the points $x = 0$ and $x = 8a$, is

(a) $\frac{208}{3}\pi$ (b) $\frac{416}{3}\pi$
(c) $\frac{104}{3}\pi$ (d) $\frac{288}{6}\pi$

41. The volume of the solid generated by the revolution of the curve $x = a\cos^3 t$, $y = a\sin^3 t$, about x-axis is

(a) $\frac{32}{105}\pi a^3$ (b) $\frac{64}{105}\pi a^3$
(c) $\frac{32}{5}\pi a^3$ (d) $\frac{32}{35}\pi a^3$

42. If $f(x) = \begin{vmatrix} \cos x & 1 & 0 \\ 1 & 2\cos x & 1 \\ 0 & 1 & 2\cos x \end{vmatrix}$, then $\int_0^{\pi/2} f(x)\, dx =$

(a) -1/3 (b) 1/4
(c) 1/2 (d) none of these

43. If $y = \sin mx$, then the value of the determinate $\begin{vmatrix} y & y_1 & y_2 \\ y_3 & y_4 & y_5 \\ y_6 & y_7 & y_8 \end{vmatrix}$ where $y_n = \frac{d^n y}{dx^n}$ is :

(a) m^9 (b) m^2
(c) m^3 (d) none of these

44. The general solution of the differential equation $(1+y^2)dx + (1+x^2)dy = 0$ is :

(a) $x - y = c(1 - xy)$ (b) $x - y = (1 + xy)$
(c) $x + y = c(1 - xy)$ (d) $x + y = c(1 + xy)$

45. The differential equation of all circles in the first quadrant which touch the coordinate axis is of order

(a) 1 (b) 2
(c) 3 (d) none of these

46. The order and the degree of the differential equation $\frac{d^2y}{dx^2} + a^2 y = 0$ is :

(a) 2, 2 (b) 2, 1
(c) 1, 1 (d) 1, 2

47. The equation of curve passing through (2, 7/2) and having gradient $1 - \frac{1}{x^2}$ at (x, y) is :

(a) $y = x^2 + x + 1$ (b) $xy = x^2 + x + 1$
(c) $xy = x + 1$ (d) $yx = y^2 + y + 1$

48. Solution of the difference equation $y_{x+2} - 4y_{x+1} + 13y_x = 0$, is :

(a) $y_x = 13^{x/2}(c_1\cos\theta + c_2\sin\theta x)$ where $\theta = \tan^{-1}(3/2)$

(b) $y_x = 13^x(c_1\cos\theta + c_2\sin\theta x)$ where $\theta = \tan^{-1}(3/2)$

(c) $y_x = 13^x(c_1\cos\theta + c_2\sin\theta)$ where $\theta = \tan^{-1}(3/2)$

(d) $y_x = 13^{x/2}(c_1 \cos\theta + c_2 \sin\theta)$ where $\theta = \tan^{-1}(3/2)$

49. Solution of the difference equation $(x+1)y_{x+1} - x y_x = 0$ is :
(a) $y = cx^{-1}$ (b) $y_x = cx$
(c) $y_x = cx^{-2}$ (d) $y_x = cx^{-3}$

50. If $x = -1 + \cos\theta$, $y = 3 + \sin\theta$ then the centre of the conics is :
(a) (1, 3) (b) (-1, 3)
(c) (1, -3) (d) (-1, -3)

51. If the tangents at P and Q on a parabola, meet at T, then SP, ST and SQ are in
(a) AP (b) GP
(c) HP (d) none of these

52. If the two circles $x^2 - 2ax + y^2 + c^2 = 0$ and $x^2 + y^2 - 2by + c^2 = 0$ touch each other, then the value of c is :
(a) $\frac{ab}{\sqrt{a^2+b^2}}$ (b) $\frac{a^2b^2}{a^2+b^2}$
(c) $\frac{\sqrt{a^2+b^2}}{ab}$ (d) $\frac{a^2+b^2}{a^2b^2}$

53. If the line $y = 3x + \lambda$ touches the hyperbola $2x^2 - y^2 = 1$ the value of λ is :
(a) $\sqrt{11/2}$ (b) $\sqrt{7/2}$
(c) $\sqrt{5/2}$ (d) $\sqrt{9/2}$

54. If equation of the circle is $x^2 + 2x + y^2 + 3y = 0$, then the locus of intersection point of perpendicular tangents is :
(a) $x^2 + 2x + y^2 + 13/4 + 3y = 0$
(b) $x^2 + 2x + y^2 - 13/4 + 3y = 0$
(c) $x^2 + 2x + y^2 - 26/4 + 3y = 0$
(d) $x^2 + 2x + y^2 + 26/4 + 3y = 0$

55. The equation of two circles are $x^2 + y^2 - 6x + 5y - 18 = 0$ and $x^2 + y^2 + 2x - y - 8 = 0$ the minimum distance from point (3, 5) to the radical axis is :
(a) 8/5 (b) 3/5
(c) 2/5 (d) none of these

56. The equation of the ellipse whose focus is (1, 0) the directrix is x + y + 1 = 0 and eccentricity equal to $1/\sqrt{2}$, is :
(a) $3x^2 - 3xy + 3y^2 - 3x - 3y + 3 = 0$
(b) $3x^2 - 2xy + 3y^2 - 10x - 2y + 3 = 0$
(c) $4x^2 - 2xy + 4y^2 - 10x - 2y + 4 = 0$
(d) $5x^2 - 3xy + 5y^2 - 11x - 3y + 5 = 0$

57. In a rectangular hyperbola
(a) $\Delta \neq 0$, $h^2 > ab$, $a + b = 0$
(b) $\Delta \neq 0$, $h^2 = ab$, $a + b = 0$
(c) $\Delta \neq 0$, $h^2 < ab$, $a + b = 0$
(d) $\Delta = 0$, $h^2 > ab$, $a + b = 0$

58. Simpson's one third rule for evaluation of $\int_a^b f(x)\,dx$ requires the interval [a, b] to be divided into
(a) an even number of sub interval of equal within
(b) (2n + 1) of sub interval of equal within
(c) any number of sub-interval of equal width
(d) any-number of sub-intervals

59. Trapezoidal rule for evaluation of $\int_a^b f(x)\,dx$ requires the interval (a, b) to be divided into
(a) 2n sub-interval of equal width
(b) (2n + 1) sub-intervals of equal width
(c) any number of sub-interval of equal width
(d) 3n sub intervals of equal width

60. If the mean of a set of observations $x_1, x_2, \ldots, x_n$ is $\bar{x}$ then the mean of the observations $x_i + 2i$, i = 1, 2,....,n is
(a) $\bar{x} + 2$ (b) $\bar{x} + 2n$
(c) $\bar{x} + (n+1)$ (d) $\bar{x} + n$

61. In a symmetrical distribution
(a) mean = mode = median
(b) mean > mode > median
(c) mode > mean > median
(d) median > mean > mode

62. The mode is calculated by the following
(a) 3 median –2 mean (b) 3 median + 2 mean
(c) 5 median –3 mean (d) none of the above

63. If the mean and mode of a data collection are 5 and 2 respectively, then median is :
(a) 4 (b) 5
(c) 3 (d) 2

64. The variance of first n natural number is
(a) $\frac{n^2+1}{12}$ (b) $\frac{n^2-1}{12}$
(c) $\sqrt{\left(\frac{n^2-1}{12}\right)}$ (d) $\sqrt{\left(\frac{n^2+1}{12}\right)}$

65. Pearson's coefficient of skewness is :
(a) $\frac{M - M_0}{\sigma}$ (b) $\frac{3(M - M_0)}{\sigma}$
(c) $\frac{M - M_d}{\sigma}$ (d) $\frac{M - M_0}{3\sigma}$

66. The sum of the squares of deviation of a set of values is minimum when deviation is taken about
(a) AM (b) GM
(c) HM (d) Median

67. If in Poisson distribution $\mu_2 = 4.2$, μ_3 will be
(a) 2.4 (b) 4.2
(c) 6.8 (d) 2.3

68. If mean of the poisson distribution is 9/4 the S.D. is
(a) 3/2 (b) 9/4
(c) 3 (d) 2/3

69. Suppose straight line of form $y = 1 + bx$ is fitted to four points (0, 2), (1, 2), (2, 0) and (3, –1) by method of least squares, then value of b is :
(a) –1/4 (b) –1/2
(c) –5/15 (d) –1

70. Limits for the coefficient of correlation are
(a) $-\infty < r < \infty$ (b) $-\infty < 1 \ / r < \infty$
(c) $-1 \le r \le 1$ (d) $-1 < r < 1$

71. The coefficient of correlation is independent of
(a) scale (b) origin
(c) scale and origin (d) none of these

72. The Karl pearson' s coefficient of correlation is defined as
(a) $r = \frac{\Sigma xy}{\sigma_x^2 \sigma_y^2}$ (b) $r = \frac{\Sigma xy}{\Sigma x^2 . \Sigma y^2}$
(c) $r = \frac{\Sigma xy}{\sigma_x \sigma_y}$ (d) $r = \frac{\Sigma xy}{\sqrt{\Sigma x^2 \Sigma y^2}}$

73. The coefficient of correlation is which of the mean between two regression coefficients.
(a) HM (b) GM
(c) AM (d) 2AM

74. If A and B are independent even then P(A/B) =
(a) P(A) (b) P(B)
(c) P(A) . P(B) (d) none of these

75. If an urn contains 10 black and 10 white balls then the probability of drawing two balls of the same colour is :
(a) 9/20 (b) 9/19
(c) 1/2 (d) 1/4

76. If the probability that a man aged 60 will live to 70 is .65, then the probability that out of 10 men, now aged 60, at least 7 will live to 70 is :
(a) 0.3137 (b) 0.5137
(c) 0.6137 (d) none of these

77. If $P(x) = \frac{1}{2\sqrt{6\pi}} e^{\frac{-(x-3)^2}{24}}$ then the mean and variance are
(a) 3, 6 (b) 3, 12
(c) 3, 24 (d) none of these

78. 10% of bolts produced by a machine are defective. If 5 bolts are drawn at random, what is the probability of one bolt being defective
(a) $\frac{1}{2}\left(\frac{9}{10}\right)^5$ (b) $\left(\frac{9}{10}\right)^4$
(c) $\frac{1}{2}\left(\frac{9}{10}\right)^4$ (d) none of these

79. The mean of Poisson distribution is 10, then β_1 and β_2 are
(a) 0.3, 3.1 (b) 0.1, 3.1
(c) 3.1, 0.3 (d) none of these

80. Greatest ordinate in normal distribution is :
(a) $\frac{1}{\sigma\sqrt{2\pi}}$ (b) $\frac{1}{\sqrt{2\pi\sigma}}$
(c) $\frac{1}{2\pi\sqrt{\sigma}}$ (d) $\frac{1}{2\pi\sigma}$

81. Index number reveals
(a) Change in quantity only
(b) Change in price only
(c) Change in a group of related varicables
(d) none of these

82. The value of index number using Fisher formula is given that

	Base Year		Current Year	
Commodity	p_0	q_0	p_1	q_1
A	2	20	5	15
B	4	4	8	5
C	1	10	1	12
D	5	5	10	6

(a) 169.32 (b) 219.12
(c) 119.12 (d) none of these

83. If the equation of trend with 1978 as origin is
$y = 58 + 3.2 x$
The equation of the trend with 1976 as origin will be :
(a) $y = 64.4 + 3.2 x$ (b) $y = 64.4 - 3.2 x$
(c) $y = 51.6 + 3.2 x$ (d) $y = 51.6 - 3.2 x$

84. The trend annual sales of a company is $y = 148 + 24.4x$, where origin is 1990, x unit = 1 year, y unit = annual sales, The monthly sales trend is
(a) $y = 12.33 + 0.54 x$ (b) $y = 12.33 + 0.17 x$
(c) $y = 26 + 5.2 x$ (d) $y = 13 + 0.8 x$

85. Given equation $y = 25(2.8)^x$ with 1979 as origin and x unit as one year. If you shift origin forward by 2 years then new trend equation is :
(a) $y = 196 (2.8)^x$ (b) $y = 50 (2.8)^x$
(c) $y = 25 (2.8)^x$ (d) $y = 625 (2.8)^x$

86. The most papular language for interactive use, is:
(a) Cobol (b) Pascal
(c) Basic (d) Fortron

87. The most commercial language is :
(a) Cobol (b) word-star
(c) Fortron (d) Pascal

88. Arranging data on a specific order is called
(a) merging (b) sorting
(c) classification (d) verification

89. Rectangles are used for
(a) Assignment (b) Arithmatic operation
(c) Input (d) output

90. Which is not an inpur device ?
(a) CRT (b) Optimal scanners
(c) COM (d) Voice

91. Which is widely used in academic testing
(a) MICR (b) POS
(c) OCR (d) OMR

92. Conversion of binary number $(101101)_2$ to its decimal number is :
(a) $(45)_{10}$ (b) $(43)_{10}$
(c) $(40)_{10}$ (d) $(47)_{10}$

93. Conversion of an octal number $(106)_8$ to binary number is :
(a) $(111010)_2$ (b) $(1000110)_2$
(c) $(1100110)_2$ (d) $(10000110)_2$

94. The perfect number is :
(a) 15 (b) 12
(c) 6 (d) 18

95. Numbers of prime numbers between 1 to 100 is
(a) 25 (b) 26
(c) 27 (d) 28

96. 4, 8, 24, 48, ..., 288
(a) 144 (b) 168
(c) 192 (d) 146

97. Statement : Intelligent people have great insight
Conclusions : (I) ' X' is intelligent
(II) ' X' has great insight
(a) only I is implied (b) only II inplied
(c) both I and II
(d) either I or II is implied

98. Statements : Some doctors are poets
Some poet are rich
Conclusions : (I) Some poet are not rich
(II) Some doctors are not poet
(a) If only conclusion I follows
(b) In only conclusion II follows
(c) If either I or II follows
(d) If neither I nor II follows

99. If m stands for men in a party and w for women, which of the following shows that they are in equal numbers
(a) $m^2 - w^2 = 9$ (b) $w^2 \times w = m^3$
(c) $m^2 - m = w^2$ (d) $w + m = m^3$

100. Which is one of the correct
(a) $\left|x + \frac{1}{x}\right| \le |x|$ (b) $\left|x - \frac{1}{2}\right| \ge \frac{1}{2}$
(c) $x + \frac{1}{x} \ge 2$ for all $x > 0$ (d) none of these

ANSWERS

1. b	2. a	3. a	4. b	5. c	6. a	7. a	8. a	9. d
10. c	11. b	12. a	13. a	14. b	15. b	16. c	17. c	18. b
19. b	20. c	21. b	22. a	23. a	24. b	25. c	26. a	27. a
28. b	29. a	30. a	31. d	32. a	33. c	34. a	35. d	36. c
37. a	38. b	39. a	40. a	41. a	42. a	43. d	44. c	45. a
46. b	47. b	48. d	49. a	50. b	51. c	52. a	53. b	54. b
55. c	56. b	57. a	58. a	59. c	60. c	61. a	62. a	63. a
64. b	65. a	66. a	67. a	68. a	69. b	70. c	71. c	72. d
73. b	74. a	75. b	76. b	77. b	78. c	79. b	80. a	81. c
82. b	83. c	84. b	85. a	86. c	87. a	88. b	89. a	90. c
91. d	92. a	93. b	94. c	95. a	96. a	97. c	98. d	99. b
100. c								