RAVI MATHS TUITION CENTER CH-82. PH 8056206308

11th BM 1 mark

11th Standard

Date : 14-Mar-19

Business Maths

Reg.No. : | | | | | | |

Time : 03:45:00 Hrs

Total Marks : 225

225 x 1 = 225

1) The value of x if $\begin{vmatrix} 0 & 1 & 0 \\ x & 2 & x \\ 1 & 3 & x \end{vmatrix} = 0$ is

(a) 0, -1 **(b) 0, 1** (c) -1, 1 (d) -1, -1

2) The value of $\begin{vmatrix} 2x+y & x & y \\ 2y+z & y & z \\ 2z+x & z & x \end{vmatrix}$ is

(a) xyz (b) x+y+z (c) 2x+2y+2z **(d) 0**

3) The co-factor of -7 in the determinant $\begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$ is

(a) -18 (b) 18 (c) -7 **(d) 7**

4) If $\triangle = \begin{vmatrix} 1 & 2 & 3 \\ 3 & 1 & 2 \\ 2 & 3 & 1 \end{vmatrix}$ then $\begin{vmatrix} 3 & 1 & 2 \\ 1 & 2 & 3 \\ 2 & 3 & 1 \end{vmatrix}$ is

(a) $\triangle$ **(b) -$\triangle$** (c) 3$\triangle$ (d) -3$\triangle$

5) The value of the determinant $\begin{vmatrix} a & 0 & 0 \\ 0 & a & 0 \\ 0 & 0 & c \end{vmatrix}^2$ is

(a) abc (b) 0 **(c) $a^2b^2c^2$** (d) -abc

6) If A is a square matrix of order 3, then |kA| is

(a) k|A| (b) -k|A| **(c) $k^3|A|$** (d) -k^3|A|

7) adj (AB) is equal to

(a) adj A adj B (b) adj A^T adj B^T (c) adj B adj A (d) adj B^T adj A^T

8) The inverse matrix of $\begin{pmatrix} \frac{1}{5} & \frac{5}{25} \\ \frac{2}{5} & \frac{1}{2} \end{pmatrix}$ is

(a) $\frac{7}{30}\begin{pmatrix} \frac{1}{2} & \frac{5}{12} \\ \frac{2}{5} & \frac{4}{5} \end{pmatrix}$ (b) $\frac{7}{30}\begin{pmatrix} \frac{1}{2} & \frac{-5}{12} \\ \frac{-2}{5} & \frac{1}{5} \end{pmatrix}$ **(c)** $\frac{30}{7}\begin{pmatrix} \frac{1}{2} & \frac{5}{12} \\ \frac{2}{5} & \frac{4}{5} \end{pmatrix}$ (d) $\frac{30}{7}\begin{pmatrix} \frac{1}{2} & \frac{-5}{12} \\ \frac{-2}{5} & \frac{4}{5} \end{pmatrix}$

9) If A = $\begin{pmatrix} a & b \\ c & d \end{pmatrix}$ such that ad - bc $\neq$ 0 then A^{-1} is

(a) $\frac{1}{ad-bc}\begin{pmatrix} d & b \\ -c & a \end{pmatrix}$ (b) $\frac{1}{ad-bc}\begin{pmatrix} d & b \\ c & a \end{pmatrix}$ **(c)** $\frac{1}{ad-bc}\begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$ (d) $\frac{1}{ad-bc}\begin{pmatrix} d & -b \\ c & a \end{pmatrix}$

10) The number of Hawkins-Simon conditions for the viability of an input - output analysis is

(a) 1 (b) 3 (c) 4 **(d) 2**

11) The inventor of input-output analysis is

(a) Sir Francis Galton **(b) Fisher** (c) Prof. Wassily W. Leontief (d) Arthur Caylay

12) Which of the following matrix has no inverse

(a) $\begin{pmatrix} -1 & 1 \\ 1 & -4 \end{pmatrix}$ **(b)** $\begin{pmatrix} 2 & -1 \\ -4 & 2 \end{pmatrix}$ (c) $\begin{pmatrix} cos\ a & sin\ a \\ -sin\ a & cos\ a \end{pmatrix}$ (d) $\begin{pmatrix} sin\ a & cos\ a \\ -cos\ a & sin\ a \end{pmatrix}$

13) The Inverse of matrix of $\begin{pmatrix} 3 & 1 \\ 5 & 2 \end{pmatrix}$ is

(a) $\begin{pmatrix} 2 & -1 \\ -5 & 3 \end{pmatrix}$ (b) $\begin{pmatrix} -2 & 5 \\ 1 & -3 \end{pmatrix}$ (c) $\begin{pmatrix} 3 & -1 \\ -5 & -3 \end{pmatrix}$ (d) $\begin{pmatrix} -3 & 5 \\ 1 & -2 \end{pmatrix}$

14) If A $= \begin{pmatrix} -1 & 2 \\ 1 & -4 \end{pmatrix}$ then A (adj A) is

(a) $\begin{pmatrix} -4 & -2 \\ -1 & -1 \end{pmatrix}$ (b) $\begin{pmatrix} 4 & -2 \\ -1 & 1 \end{pmatrix}$ **(c)** $\begin{pmatrix} 2 & 0 \\ 0 & 2 \end{pmatrix}$ (d) $\begin{pmatrix} 0 & 2 \\ 2 & 0 \end{pmatrix}$

15) If A and B are non-singular matrices then, which of the following is incorrect?

(a) A^2 = I implies A^{-1} = A (b) I^{-1} = I **(c) If AX = B, then X = B^{-1} A** (d) If A is square matrix of order 3 then |adj A|= $|A|^2$

16) The value of $\begin{vmatrix} 5 & 5 & 5 \\ 4x & 4y & 4z \\ -3x & -3y & -3z \end{vmatrix}$ is

(a) 5 (b) 4 **(c) 0** (d) -3

17) If A is an invertible matrix of order 2, then det (A^{-1}) be equal to

(a) det (A) (b) $\frac{1}{det(A)}$ (c) 1 (d) 0

18) If A is 3 x 3 matrix and |A|= 4, then $|A^{-1}|$ is equal to

(a) $\frac{1}{4}$ (b) $\frac{1}{16}$ (c) 2 **(d) 4**

19) If A is a square matrix of order 3 and IAI = 3 then | adj A| is equal to

(a) 81 (b) 27 (c) 3 **(d) 9**

20) The value of $\begin{vmatrix} x & x^2 & -yz & 1 \\ y & y^2 & -zx & 1 \\ z & z^2 & -xy & 1 \end{vmatrix}$ is

(a) 1 **(b) 0** (c) -1 (d) -xyz

21) If A = $\begin{vmatrix} cos\theta & sin\theta \\ -sin\theta & cons\theta \end{vmatrix}$ then |2A| is equal to

(a) 4 cos 2 θ **(b) 4** (c) 2 (d) 1

22) If $\triangle = \begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{vmatrix}$ and A_{ij} is cofactor of a_{ij}, then value of $\triangle$ is given by

(a) $a_{11} A_{31} + a_{12} A_{32} + a_{13} A_{33}$ (b) $a_{11} A_{11} + a_{12} A_{21} + a_{13} A_{31}$ (c) $a_{21} A_{11} + a_{22} A_{12} + a_{23} A_{13}$ **(d) $a_{11} A_{11} + a_{21} A_{21} + a_{31} A_{31}$**

23) If $\begin{vmatrix} x & 2 \\ 8 & 5 \end{vmatrix} = 0$ then the value of x is

(a) $\frac{-5}{6}$ (b) $\frac{5}{6}$ (c) $\frac{-16}{5}$ **(d)** $\frac{16}{5}$

24) If $\begin{vmatrix} 4 & 3 \\ 3 & 1 \end{vmatrix} = -5$ then value of $\begin{vmatrix} 20 & 15 \\ 15 & 5 \end{vmatrix}$ is

(a) -5 **(b) -125** (c) -25 (d) 0

25) If any three-rows or columns of a determinant are identical, then the value of the determinant is

(a) 0 (b) 2 (c) 1 (d) 3

26) If $nC_3 = nC_2$, then the value of nC_4 is

(a) 2 (b) 3 (c) 4 **(d) 5**

27) The value of n, when $nP_2 = 20$ is

(a) 3 (b) 6 **(c) 5** (d) 4

28) The number of ways selecting 4 players out of 5 is

(a) 4! (b) 20 (c) 25 **(d) 5**

29) If $nP_r = 720\ (nC_r)$, then r is equal to

(a) 4 (b) 5 **(c) 6** (d) 7

30) The possible out comes when a coin is tossed five times

(a) 2^5 (b) 5^2 (c) 10 (d) $\frac{5}{2}$

31) The number of diagonals in a polygon of n seates is equal to

(a) nC_2 (b) $nC_2 - 2$ **(c) $nC_2 - n$** (d) $nC_2 - 1$

32) The greatest positive integer which divide n(n + 1) (n + 2) (n + 3) for $n \in N$ is

(a) 2 (b) 6 (c) 20 **(d) 24**

33) If n is a positive integer, then the number of terms in the expansion $(x + a)^n$ is

(a) n **(b) n + 1** (c) n-1 (d) 2n

34) For all n > 0, $nC_1 + nC_2 + nC_3 + ... + nC_n$ is equal to

(a) 2n **(b) $2^n - 1$** (c) n^2 (d) $n^2 - 1$

35) The term containing x^3 in the expansion of $(x - 2y)^7$ is

(a) 3rd (b) 4th **(c) 5th** (d) 6th

36) The middle term in the expansion of $\left(x + \frac{1}{x}\right)^{10}$

(a) $10C_4\left(\frac{1}{x}\right)$ **(b) $10C_5$** (c) $10C_6$ (d) $10C_7x^4$

37) The constant term in the expansion of $\left(x + \frac{2}{x}\right)^6$

(a) 156 (b) 165 (c) 162 **(d) 160**

38) The last term in the expansion of $(3 + \sqrt{2})^8$ is

(a) 81 **(b) 16** (c) $8\sqrt{2}$ (d) $27\sqrt{3}$

39) If $\frac{kx}{(x+4)(2x-1)} = \frac{4}{x+4} + \frac{1}{2x-1}$ then k is equal to

(a) 9 (b) 11 (c) 5 (d) 7

40) The number of 3 letter words that can be formed from the letters of the word number when the repetition is allowed are

(a) 206 (b) 133 **(c) 216** (d) 300

41) The number of parallelograms that can be formed from the set of four parallel lines intersecting another set of three parallel lines is

(a) 18 (b) 12 (c) 9 (d) 6

42) There are 10 true or false questions in an examination. Then these questions can be answered in

(a) 240 ways (b) 120 ways **(c) 1024 ways** (d) 100 ways

43) The value of $(5C_o + 5C_1) + (5C_1 + 5C_2) + (5C_2 + 5C_3) + (5C_3 + 5C_4) + (5C_4 + 5C_5)$ is

(a) $2^6 - 2$ (b) $2^5 - 1$ (c) 2^8 (d) 2^7

44) The total number of 9 digit number which have all different digit is

(a) 10! (b) 9! **(c) $9 \times 9!$** (d) $10 \times 10!$

45) The number of ways to arrange the letters of the word "CHEESE" is

(a) 120 (b) 240 (c) 720 (d) 6

46) 13 guests have participated in a dinner. The number of handshakes happened in the dinner is

(a) 715 **(b) 78** (c) 286 (d) 13

47) Number of words with or without meaning that can be formed using letters of the word "EQUATION" , with no repetition of letters is

(a) 7! (b) 3! **(c) 8!** (d) 5!

48) Sum of Binomial co-efficient in a particular expansion is 256, then number of terms in the expansion is

(a) 8 (b) 7 (c) 6 **(d) 9**

49) The number of permutation of n different things taken r at a time, when the repetition is allowed is

(a) r^n **(b) n^r** (c) $\frac{n!}{(n-r)!}$ (d) $\frac{n!}{(n+r)!}$

50) Sum of the binomial co-efficients is

(a) 2^n (b) n^2 (c) 2n (d) n + 17

51) If m_1 and m_2 are the slopes of the pair of lines given by $ax^2 + 2hxy + by^2 = 0$, then the value of $m_1 + m_2$ is

(a) 2h/b **(b) -2h/b** (c) 2h/a (d) -2h/a

52) The angle between the pair of straight lines $x^2 - 7xy + 4y^2 = 0$

(a) $tan^{-1}\left(\frac{1}{3}\right)$ (b) $tan^{-1}\left(\frac{1}{2}\right)$ **(c)** $tan^{-1}\left(\frac{\sqrt{33}}{5}\right)$ (d) $tan^{-1}\left(\frac{5}{\sqrt{33}}\right)$

53) If the lines 2x - 3y - 5 = 0 and 3x - 4y - 7 = 0 are the diameters of a circle, then its centre is

(a) (-1, 1) (b) (1,1) **(c) (1, -1)** (d) (-1, -1)

54) The x - intercept of the straight line 3x + 2y - 1 = 0 is

(a) 3 (b) 2 **(c) 1/3** (d) 1/2

55) The slope of the line 7x + 5y - 8 = 0 is

(a) 7/5 **(b) -7/5** (c) 5/7 (d) -9/7

56) The locus of the point P which moves such that P is at equidistance from their coordinate axes is

(a) $y = \frac{1}{x}$ (b) y=-x **(c) y=x** (d) $y = -\frac{1}{x}$

57) The locus of the point P which moves such that P is always at equidistance from the line x + 2y+ 7 = 0 is

(a) x+2y+2=0 (b) x - 2y + 1 = 0 (c) 2x - y + 2 = 0 (d) 3x + y + 1=0

58) If $kx^2 + 3xy - 2y^2 = 0$ represent a pair of lines which are perpendicular then k is equal to

(a) 1/2 (b) -1/2 **(c) 2** (d) -2

59) (1, - 2) is the centre of the circle $x^2 + y^2 + ax + by - 4 = 0$, then its radius

(a) 3 (b) 2 (c) 4 (d) 1

60) The length of the tangent from (4,5) to the circle $x^2 + y^2 = 16$ is

(a) 4 **(b) 5** (c) 16 (d) 25

61) The focus of the parabola $x^2 = 16y$ is

(a) (4,0) (b) (-4,0) **(c) (0,4)** (d) (0,-4)

62) Length of the latus rectum of the parabola $y^2 = - 25x$ is

(a) 25 (b) -5 (c) 5 (d) -25

63) The centre of the circle $x^2 + y - 2x + 2y - 9 = 0$ is

(a) (1,1) (b) (-1,-1) (c) (-1,1) **(d) (1, -1)**

64) The equation of the circle with centre on the x axis and passing through the origin is

(a) $x^2 - 2ax + y = 0$ (b) $y^2 - 2ay + x^2 = 0$ (c) $x^2+y^2=a^2$ (d) $x^2 - 2ay + y = 0$

65) If the centre of the circle is (-a, -b) and radius $\sqrt{a^2 - b^2}$ then the equation of circle is

(a) $x^2+y^2+2ax+2by+2b^2=0$ (b) $x^2+y^2+2ax+2by-2b^2=0$ (c) $x^2 + y^2 - 2ax - 2by - 2b^2 = 0$ (d) $x^2 + y - 2ax - 2by + 2b^2 = 0$

66) Combined equation of co-ordinate axes is

(a) $x^2-y^2=0$ (b) $x^2+y^2=0$ (c) $xy=c$ **(d) $xy=0$**

67) $ax^2 + 4xy + 2y^2 = 0$ represents a pair of parallel lines then 'a' is

(a) 2 (b) -2 (c) 4 (d) -4

68) In the equation of the circle $x^2 + y^2 = 16$ then y-intercept is (are)

(a) 4 (b) 16 **(c) ±4** (d) ±16

69) If the perimeter of the circle is 8π units and centre is (2,2) then the equation of the circle is

(a) $(x - 2)^2 + (y - 2)^2 = 4$ **(b) $(x - 2)^2 + (y - 2)^2 = 16$** (c) $(x - 4)^2 + (y - 4)^2 = 2$ (d) $x^2 + y^2 = 4$

70) The equation of the circle with centre (3,-4) and touches the x - axis

(a) $(x - 3)^2 + (y - 4)^2 = 4$ **(b) $(x - 3)^2 + (y + 4)^2 = 16$** (c) $(x-3)^2+(y- 4)^2=16$ (d) $x^2+y^2=16$

71) If the circle touches x axis, y axis and the line x = 6 then the length of the diameter of the circle is

(a) 6 (b) 3 (c) 12 (d) 4

72) The eccentricity of the parabola is

(a) 3 (b) 2 (c) 0 **(d) 1**

73) The double ordinate passing through the focus is

(a) focal chord **(b) latus rectum** (c) directrix (d) axis

74) The distance between directrix and focus of a parabola $y^2 = 4ax$ is

(a) a **(b) 2a** (c) 4a (d) 3a

75) The equation of directrix of the parabola $y^2 = - x$ is

(a) 4x+ 1 =0 **(b) 4x - 1 = 0** (c) x - 4=0 (d) x + 4 = 0

76) The degree measure of $\frac{\pi}{8}$ is

(a) $20^o60'$ **(b) $22^o30'$** (c) $20^o60'$ (d) $20^o30'$

77) The radian measure of $37^o30'$ is

(a) $\frac{5\pi}{24}$ (b) $\frac{3\pi}{24}$ (c) $\frac{7\pi}{24}$ (d) $\frac{9\pi}{24}$

78) If $\tan\theta = \frac{1}{\sqrt{5}}$ and θ lies in the first quadrant, then $\cos\theta$ is

(a) $\frac{1}{\sqrt{6}}$ (b) $\frac{-1}{\sqrt{6}}$ **(c)** $\frac{\sqrt{5}}{\sqrt{6}}$ (d) $\frac{-\sqrt{5}}{\sqrt{6}}$

79) The value of $\sin 15^o$ is

(a) $\frac{\sqrt{3}+1}{2\sqrt{2}}$ **(b)** $\frac{\sqrt{3}-1}{2\sqrt{2}}$ (c) $\frac{\sqrt{3}}{\sqrt{2}}$ (d) $\frac{\sqrt{3}}{2\sqrt{2}}$

80) The value of $\sin(-420^o)$ is

(a) $\frac{\sqrt{3}}{2}$ **(b)** $-\frac{\sqrt{3}}{2}$ (c) $\frac{1}{2}$ (d) $\frac{-1}{2}$

81) The value of $\cos(-480^o)$ is

(a) $\sqrt{3}$ (b) $-\frac{\sqrt{3}}{2}$ (c) $\frac{1}{2}$ **(d)** $\frac{-1}{2}$

82) The value of $\sin 28^o \cos 17^o + \cos 28^o \sin 17^o$ is

(a) $\frac{1}{\sqrt{2}}$ (b) 1 (c) $\frac{-1}{\sqrt{2}}$ (d) 0

83) The value of $\sin 15^o \cos 15^o$ is

(a) 1 (b) $\frac{1}{2}$ (c) $\frac{\sqrt{3}}{2}$ **(d)** $\frac{1}{4}$

84) The value of sec A $\sin(270^o+A)$ is

(a) -1 (b) $\cos^2 A$ (c) $\sec^2 A$ (d) 1

85) If sin A+ cos A=1, then sin 2A is equal to

(a) 1 (b) 2 **(c) 0** (d) $\frac{1}{2}$

86) The value of $\cos^2 45^o - \sin^2 45^o$ is

(a) $\frac{\sqrt{3}}{2}$ (b) $\frac{1}{2}$ **(c) 0** (d) $\frac{1}{\sqrt{2}}$

87) The value of $1-2\sin^2 45^o$ is

(a) 1 (b) $\frac{1}{2}$ (c) $\frac{1}{4}$ **(d) 0**

88) The value $4\cos^3 40^o - 3\cos 40^o$ is

(a) $\frac{\sqrt{3}}{2}$ **(b)** $\frac{-1}{2}$ (c) $\frac{1}{2}$ (d) $\frac{1}{\sqrt{2}}$

89) The value of $\frac{2\tan 30^o}{1+tan^2 30}$ is

(a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{3}}$ (c) $\frac{\sqrt{3}}{2}$ **(d)** $\sqrt{3}$

90) If $\sin A = \frac{1}{2}$ then $4\cos^3 A - 3\cos A$ is

(a) 1 **(b) 0** (c) $\frac{\sqrt{3}}{2}$ (d) $\frac{1}{\sqrt{2}}$

91) The value of $\frac{3\tan 10^o - \tan^3 10}{1-3\tan^2 10}$ is

(a) $\frac{1}{\sqrt{3}}$ **(b)** $\frac{1}{2}$ (c) $\frac{\sqrt{3}}{2}$ (d) $\frac{1}{\sqrt{2}}$

92) The value of $cosec^{-1}\left(\frac{2}{\sqrt{3}}\right)$ is

(a) $\frac{\pi}{4}$ (b) $\frac{\pi}{2}$ **(c)** $\frac{\pi}{3}$ (d) $\frac{\pi}{6}$

93) $\sec^{-1}\frac{2}{3} + cosec^{-1}\frac{2}{3} =$

(a) $\frac{-\pi}{2}$ **(b)** $\frac{\pi}{2}$ (c) π (d) $-\pi$

94) If α and β be between 0 and $\frac{\pi}{2}$ and if $\cos(\alpha+\beta) = \frac{12}{13}$ and $\sin(\alpha-\beta) = \frac{3}{5}$ then $\sin 2\alpha$ is

(a) $\frac{16}{15}$ (b) 0 **(c)** $\frac{56}{65}$ (d) $\frac{64}{65}$

95) If $\tan A = \frac{1}{2}$ and $\tan B = \frac{1}{3}$ then tan(2A+B) is equal to

(a) 1 (b) 2 **(c) 3** (d) 4

96) $\tan\left(\frac{\pi}{4} - x\right)$ is

(a) $\left(\frac{1+\tan x}{1-\tan x}\right)$ **(b)** $\left(\frac{1-\tan x}{1+\tan x}\right)$ (c) 1-tan x (d) 1+tan x

97) $\sin\left(\cos^{-1}\frac{3}{5}\right)$ is

(a) $\frac{3}{5}$ (b) $\frac{5}{3}$ **(c)** $\frac{4}{5}$ (d) $\frac{5}{4}$

98) The value of $\frac{1}{cosec(-45^o)}$ is

(a) $\frac{-1}{\sqrt{2}}$ (b) $\frac{1}{\sqrt{2}}$ (c) $\sqrt{2}$ (d) $-\sqrt{2}$

99) If p sec 50^o=tan 50^o then p is

(a) cos 50^o **(b) sin 50^o** (c) tan 50^o (d) sec 50^o

100) $\left(\frac{\cos x}{cosecx}\right) - \sqrt{1-\sin^2 x}\sqrt{1-\cos^2 x}$ is

(a) $\cos^2 x - \sin^2 x$ (b) $\sin^2 x - \cos^2 x$ (c) 1 **(d) 0**

101) If $f(x) = x^2 - x + 1$, then f (x + 1) is

(a) x^2 (b) x (c) 1 **(d) $x^2 + x + 1$**

102) Let $f(x) = \begin{cases} x^2 - 4x & if x \geq 2 \\ x+2 & if x < 2 \end{cases}$, then f(5) is

(a) -1 (b) 2 **(c) 5** (d) 7

103) For $f(x) = \begin{cases} x^2 - 4x & if x \geq 2 \\ x+2 & if x < 2 \end{cases}$ then f(0) is

(a) 2 (b) 5 (c) -1 (d) 0

104) If $f(x) = \frac{1-x}{1+x}$ then f(-x) is equal to

(a) -f(x) **(b)** $\frac{1}{f(x)}$ (c) $\frac{-1}{f(x)}$ (d) f(x)

105) The graph of the line y = 3 is

(a) Parallel to x-axis (b) Parallel to y-axis (c) Passing through the origin (d) Perpendicular to x-axis

106) The graph of $y = 2x^2$ is passing through

(a) (0,0) (b) (2,1) (c) (2,0) (d) (0,2)

107) The graph of $y = e^x$ intersect the y-axis at

(a) (0,0) (b) (1,0) **(c) (0,1)** (d) (1,1)

108) The minimum value of the function f(x)= Ixl is

(a) 0 **(b) -1** (c) +1 (d) $-\infty$

109) Which one of the following functions has the property f (x) = $f\left(\frac{1}{x}\right)$

(a) $f(x) = \frac{x^2-1}{x}$ (b) $f(x) = \frac{1-x^2}{x}$ (c) f(x) = x **(d)** $f(x) = \frac{x^2+1}{x}$

110) If f(x) = 2x and get g(x) = $\frac{1}{2^x}$ then (fg)(x) is

(a) 1 (b) 0 (c) 4^x (d) $\frac{1}{4^x}$

111) Which of the following function is neither even nor odd?

(a) $f(x) = x^3 + 5$ (b) $f(x) = x^5$ (c) $f(x) = x^{10}$ (d) $f(x) = x^2$

112) f(x) = - 5 , for all $x \epsilon R$, is a

(a) an identity function (b) modulus function (c) exponential function **(d) constant function**

113) The range of f(x) = |x|, for all $x \epsilon R$, is

(a) $(0, \infty)$ **(b) $(0, \infty)$** (c) $(-\infty, \infty)$ (d) $(1, \infty)$

114) The graph of $f(x) = e^x$ is identical to that of

(a) $f(x) = a^x$, a > 1 (b) $f(x) = a^x$, a < 1 (c) $f(x) = a^x$, 0 < a < 1 (d) y = ax +b, $a \neq 0$

115) If $f(x) = x^2$ and g(x) = 2x + 1 then (fg)(0) is

(a) 0 (b) 2 (c) 1 (d) 4

116) $\lim_{x\to\infty} \frac{\tan\theta}{\theta} =$

(a) 1 (b) ∞ (c) $-\infty$ (d) θ

117) $\lim_{x\to 0} \frac{e^x-1}{x} =$

(a) e (b) $nx^{(n-1)}$ **(c) 1** (d) 0

118) For what value of x, f(x) = $\frac{x+2}{x-1}$ is not continuous?

(a) -2 **(b) 1** (c) 2 (d) -1

119) A function f(x) is continuous at x = a if $\lim_{x\to a} f(x)$ is equal to

(a) f(-a) (b) $f(\frac{1}{a})$ (c) 2f(a) **(d) f(a)**

120) $\frac{d}{dx}(\frac{1}{x})$ is equal to

(a) $-\frac{1}{x^2}$ (b) $-\frac{1}{x}$ (c) log x (d) $\frac{1}{x^2}$

121) $\frac{d}{dx}(5e^x - 2logx)$ is equal to

(a) $5e^x - \frac{2}{x}$ (b) $5e^x - 2x$ (c) $5e^x - \frac{1}{x}$ (d) 2 logx

122) If y = x and z = $\frac{1}{x}$ then $\frac{dy}{dz} =$

(a) x^2 (b) 1 **(c) $-x^2$** (d) $-\frac{1}{x^2}$

123) If $y = e^{2x}$ then $\frac{d^2y}{dx^2}$ at x = 0 is

(a) 4 (b) 9 (c) 2 (d) 0

124) $\frac{d}{dx}(a^x) =$

(a) $\frac{1}{x \log \frac{a}{e}}$ (b) a^a (c) $x \log \frac{a}{e}$ **(d)** $a^x \log \frac{a}{e}$

125) If y = log x then y_2 =

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

126) Average fixed cost of the cost function C(x) = $2x^3 + 5x^2 - 14x + 21$ is

(a) $\frac{2}{3}$ (b) $\frac{5}{x}$ (c) $\frac{-14}{x}$ **(d)** $\frac{21}{x}$

127) Marginal revenue of the demand function p= 20–3x is

(a) 20–6x (b) 20–3x (c) 20+6x (d) 20+3x

128) If demand and the cost function of a firm are p= 2–x and c = $2x^2 + 2x + 7$ then its profit function is

(a) $x^2 + 7$ **(b) $x^2 - 7$** (c) $-x^2 + 7$ (d) $-x^2 - 7$

129) If the demand function is said to be inelastic, then

(a) $|n_d| > 1$ (b) $|n_d| = 1$ **(c) $|n_d| < 1$** (d) $|n_d| = 0$

130) The elasticity of demand for the demand function x = $\frac{1}{p}$ os

(a) 0 **(b) 1** (c) $-\frac{1}{p}$ (d) ∞

131) Relationship among MR, AR and ηd is

(a) $n_d = \frac{AR}{AR - MR}$ (b) n_4 = AR - MR (c) MR = AR = n_4 (d) $AR = \frac{MR}{n_4}$

132) For the cost function C = $\frac{1}{25}e^{25}$, the marginal cost is

(a) $\frac{1}{25}$ **(b)** $\frac{1}{5}e^{5x}$ (c) $\frac{1}{125}e^{5x}$ (d) $25e^{5x}$

133) Instantaneous rate of change of y = $2x^2 + 5x$ with respect to x at x = 2 is

(a) 4 (b) 5 **(c) 13** (d) 9

134) If the average revenue of a certain firm is Rs 50 and its elasticity of demand is 2, then their marginal revenue is

(a) Rs 50 **(b) Rs 25** (c) Rs 100 (d) Rs 75

135) Profit P(x) is maximum when

(a) MR = MC (b) MR = 0 (c) MC = AC (d) TR = AC

136) The maximum value of f(x)= sinx is

(a) 1 (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{1}{\sqrt{2}}$ (d) $-\frac{1}{\sqrt{2}}$

137) If f(x,y) is a homogeneous function of degree n, then $x\frac{\partial f}{\partial x} + y\frac{\partial f}{\partial y}$ is equal to

(a) (n–1)f (b) n(n–1)f **(c) nf** (d) f

138) if $u = 4x^2 + 4xy + y^2 + 32 + 16$, then $\frac{\partial^2 u}{\partial y \partial x}$ is equal to

(a) 8x + 4y + 4 **(b) 4** (c) 2y + 32 (d) 0

139) If $u = x^3 + 3xy^2 + y^3$ then $\frac{\partial^2 u}{\partial y \partial x}$

(a) 3 **(b) 6y** (c) 6x (d) 2

140) If $u = e^{x^2}$ then $\frac{\partial u}{\partial x}$ is equal to

(a) $2xe^{x^2}$ (b) e^{x^2} (c) $2e^{x^2}$ (d) 0

141) Average cost is minimum when

(a) Marginal cost = marginal revenue **(b) Average cost = marginal cost** (c) Average cost = Marginal revenue

(d) Average Revenue = Marginal cost

142) A company begins to earn profit at

(a) Maximum point **(b) Breakeven point** (c) Stationary point (d) Even point

143) The demand function is always

(a) Increasing function **(b) Decreasing function** (c) Non-decreasing function (d) Undefined function

144) if q = 1000 + $8p_1$ - p_2 then, $\frac{\partial q}{\partial p_1}$ is

(a) -1 **(b) 8** (c) 1000 (d) 1000 - p_2

145) If R = 5000 units / year, C_1 = 20 paise , C_3 = Rs 20 then EOQ is

(a) 5000 (b) 100 **(c) 1000** (d) 200

146) The dividend received on 200 shares of face value Rs.100 at 8% dividend value is

(a) 1600 (b) 1000 (c) 1500 (d) 800

147) What is the amount related is selling 8% stacking 200 shares of face value 100 at 50.

(a) 16,000 **(b) 10,000** (c) 7,000 (d) 9,000

148) A man purchases a stock of Rs 20,000 of face value 100 at a premium of 20%, then investment is

(a) Rs 20,000 (b) Rs 25,000 **(c) Rs 22,000** (d) Rs 30,000

149) A man received a total dividend of Rs 25,000 at 10% dividend rate on a stock of face value Rs.100, then the number of shares purchased.

(a) 3500 (b) 4500 **(c) 2500** (d) 300

150) The brokerage paid by a person on this sale of 400 shares of face value Rs.100 at 1% brokerage

(a) Rs 600 (b) Rs 500 (c) Rs 200 **(d) Rs 400**

151) Market price of one share of face value 100 available at a discount of $9\frac{1}{2}\%$ with brokerage $\frac{1}{2}\%$ is

(a) Rs 89 (b) Rs 90 **(c) Rs 91** (d) Rs 95

152) A person brought a 9% stock of face value Rs 100, for 100 shares at a discount of 10%, then the stock purchased is

(a) Rs 9000 **(b) Rs 6000** (c) Rs 5000 (d) Rs 4000

153) The Income on 7 % stock at 80 is

(a) 9% **(b) 8.75%** (c) 8% (d) 7%

154) The annual income on 500 shares of face value 100 at 15% is

(a) Rs 7,500 **(b) Rs 5,000** (c) Rs 8,000 (d) Rs 8,500

155) Rs 5000 is paid as perpetual annuity every year and the rate of C.I 10 %. Then present value P of immediate annuity is

(a) Rs 60,000 (b) Rs 50,000 **(c) Rs 10,000** (d) Rs 80,000

156) If 'a' is the annual payment, 'n' is the number of periods and 'i' is compound interest for Rs 1 then future amount of the annuity is

(a) A = $\frac{a}{i}(1+i)(1+i)^n - 1]$ **(b) A =** $\frac{a}{i}[(1+i)^n - 1]$ (c) P = $\frac{a}{i}$ (d) P = $\frac{a}{i}(1+i)[1-(1+i)^{-n}]$

157) A invested some money in 10% stock at 96. If B wants to invest in an equally good 12% stock, he must purchase a stock worth of

(a) Rs 80 (b) Rs 115.20 (c) Rs 120 (d) Rs 125.40

158) An annuity in which payments are made at the beginning of each payment period is called

(a) Annuity due (b) An immediate annuity **(c) perpetual annuity** (d) none of these

159) The present value of the perpetual annuity of Rs 2000 paid monthly at 10 % compound interest is

(a) Rs 2,40,000 (b) Rs 6,00,000 **(c) 20,40,000** (d) Rs 2,00,400

160) Example of contingent annuity is

(a) Life insurance premium (b) An endowment fund to give scholarships to a student **(c) Personal loan from a bank**

(d) All the above

161) Which of the following is positional measure?

(a) Range (b) Mode (c) Mean deviation **(d) Percentiles**

162) When calculating the average growth of economy, the correct mean to use is?

(a) Weighted mean (b) Arithmetic mean **(c) Geometric mean** (d) Harmonic mean

163) When an observation in the data is zero, then its geometric mean is

(a) Negative (b) Positive **(c) Zero** (d) Cannot be calculated

164) The best measure of central tendency is

(a) Arithmetic mean (b) Harmonic mean (c) Geometric mean (d) Median

165) The harmonic mean of the numbers 2,3,4 is

(a) $\frac{12}{13}$ (b) 2 **(c)** $\frac{36}{13}$ (d) $\frac{13}{36}$

166) The geometric mean of two numbers 8 and 18 shall be

(a) 12 (b) 13 (c) 15 (d) 11.08

167) The correct relationship among A.M.,G.M.and H.M.is:

(a) A.M.< G.M.< H.M. (b) G.M.≥A.M.≥H.M. (c) H.M.≥G.M.≥A.M. **(d) A.M.≥G.M.≥H.M.**

168) Harmonic mean is the reciprocal of

(a) Median of the values. (b) Geometric mean of the values. **(c) Arithmetic mean of the reciprocal of the values.**

(d) Quartiles of the values.

169) Median is same as

(a) Q_1 **(b)** $\mathbf{Q_2}$ (c) Q_3 (d) D_2

170) The median of 10,14,11,9,8,12,6 is

(a) 10 (b) 12 (c) 14 (d) 9

171) The mean of the values 11,12,13,14 and 15 is

(a) 15 (b) 11 (c) 12.5 **(d) 13**

172) If the mean of 1,2,3,.....n is $\frac{6n}{11}$, then the value of n is

(a) 10 (b) 12 **(c) 11** (d) 13

173) Harmonic mean is better than other means if the data are for

(a) Speed or rates. (b) Heights or lengths. (c) Binary values like 0 and 1. (d) Ratios or proportions.

174) The first quartile is also known as

(a) median. **(b) lower quartile.** (c) mode. (d) third decile

175) If $Q_1 = 30$ and $Q_3 = 50$, the coefficient of quartile deviation is

(a) 20 (b) 40 (c) 10 **(d) 0.25**

176) If median = 45 and its coefficient is 0.25, then the mean deviation about median is

(a) 11.25 (b) 180 (c) 0.0056 (d) 45

177) The two events A and B are mutually exclusive if

(a) $P(A \cap B) = 0$ **(b)** $P(A \cap B) = 1$ (c) $P(A \cup B) = 0$ (d) $P(AUB) = 1$

178) The events A and B are independent if

(a) $P(A \cap B) = 0$ **(b)** $P(A \cap B) = P(A) \times P(B)$ (c) $P(A \cup B) = P(A) + P(B)$

(d) $P(A \cup B) = P(A) \times P(B)$

179) If two events A and B are dependent then the conditional probability of P(B/A) is

(a) $P(A)P(B/A)$ (b) $\frac{P(A \cup B)}{P(B)}$ **(c)** $\frac{P(A \cap B)}{P(A)}$ (d) $P(A)P(A/B)$

180) The probability of drawing a spade from a pack of card is

(a) 1/52 (b) 1/13 (c) 4/13 **(d) 1/4**

181) If the outcome of one event does not influence another event then the two events are

(a) Mutually exclusive (b) Dependent (c) Not disjoint **(d) Independent**

182) Let a sample space of an experiment be S = { E_1,E_2,....., En} Then $\sum_{i=1}^{n} P(E_t)$ is equal to

(a) 0 **(b) 1** (c) $\frac{1}{2}$ (d) $\frac{1}{3}$

183) The probability of obtaining an even prime number on each die, when a pair of dice is rolled is

(a) 1/36 (b) 0 (c) 1/3 (d) 1/6

184) Probability of an impossible event is

(a) 1 **(b) 0** (c) 0.2 (d) 0.5

185) Probability that at least one of the events A, B occur is

(a) $P(A \cup B)$ (b) $P(A \cap B)$ (c) P(A/B) (d) $(A \cup B)$

186) Example for positive correlation is

(a) Income and expenditure (b) Price and demand (c) Repayment period and EMI (d) Weight and Income

187) If the values of two variables move in same direction then the correlation is said to be

(a) Negative **(b) positive** (c) Perfect positive (d) No correlation

188) If the values of two variables move in opposite direction then the correlation is said to be

(a) Negative (b) Positive (c) Perfect positive (d) No correlation

189) Correlation co-efficient lies between

(a) 0 to ∞ **(b) -1 to +1** (c) -1 to 0 (d) -1 to ∞

190) If r(X,Y) = 0 the variables X and Y are said to be

(a) Positive correlation (b) Negative correlation **(c) No correlation** (d) Perfect positive correlation

191) The correlation coefficient from the following data N=25, ΣX=125, ΣY=100, ΣX^2=650, ΣY^2=436, ΣXY=520

(a) 0.667 (b) -0.006 (c) -0.667 (d) 0.70

192) From the following data, N=11, ΣX=117, ΣY=260, ΣX^2=1313, ΣY^2=6580,ΣXY=2827 the correlation coefficient is

(a) 0.3566 (b) -0.3566 (c) 0 (d) 0.4566

193) The correlation coefficient is

(a) r(X,Y)=$\frac{\sigma_x \sigma_y}{cov(x,y)}$ **(b) r(X,Y)=**$\frac{cov(x,y)}{\sigma_x \sigma_y}$ (c) r(X,Y)=$\frac{cov(x,y)}{\sigma_y}$ (d) r(X,Y)=$\frac{cov(x,y)}{\sigma_x}$

194) The variable whose value is influenced or is to be predicted is called

(a) dependent variable (b) independent variable (c) regressor (d) explanatory variable

195) The variable which influences the values or is used for prediction is called

(a) Dependent variable **(b) Independent variable** (c) Explained variable (d) Regressed

196) The correlation coefficient

(a) r=±$\sqrt{b_{xy} \times b_{yx}}$ (b) r=$\frac{1}{b_{xy} \times b_{yx}}$ (c) r=b_{xy} x b_{yx} (d) r=±$\sqrt{\frac{1}{b_{xy} \times b_{yx}}}$

197) The regression coefficient of X on Y

(a) $\mathbf{b_{xy}}$**=**$\frac{N\Sigma dxdy-(\Sigma dx)(\Sigma dy)}{N\Sigma dy^2-(\Sigma dy)^2}$ (b) b_{yx}=$\frac{N\Sigma dxdy-(\Sigma dx)(\Sigma dy)}{N\Sigma dy^2-(\Sigma dy)^2}$ (c) b_{xy}=$\frac{N\Sigma dxdy-(\Sigma dx)(\Sigma dy)}{N\Sigma dx^2-(\Sigma dx)^2}$

(d) b_{xy}=$\frac{N\Sigma xy-(\Sigma x)(\Sigma y)}{\sqrt{N\Sigma x^2-(\Sigma x)^2} \times \sqrt{N\Sigma y^2-(\Sigma y)^2}}$

198) The regression coefficient of Y on X

(a) b_{xy}=$\frac{N\Sigma dxdy-(\Sigma dx)(\Sigma dy)}{N\Sigma dy^2-(\Sigma dy)^2}$ (b) b_{yx}=$\frac{N\Sigma dxdy-(\Sigma dx)(\Sigma dy)}{N\Sigma dy^2-(\Sigma dy)^2}$ **(c)** $\mathbf{b_{yx}}$**=**$\frac{N\Sigma dxdy-(\Sigma dx)(\Sigma dy)}{N\Sigma dx^2-(\Sigma dx)^2}$

(d) b_{xy}=$\frac{N\Sigma xy-(\Sigma x)(\Sigma y)}{\sqrt{N\Sigma x^2-(\Sigma x)^2} \times \sqrt{N\Sigma y^2-(\Sigma y)^2}}$

199) When one regression coefficient is negative, the other would be

(a) Negative (b) Positive (c) Zero (d) None of them

200) If X and Y are two variates, there can be atmost

(a) One regression line **(b) two regression lines** (c) three regression lines (d) more regression lines

201) The lines of regression of X on Y estimates

(a) X for a given value of Y (b) Y for a given value of X (c) X from Y and Y from X (d) none of these

202) Scatter diagram of the variate values (X,Y) give the idea about

(a) functional relationship (b) regression model (c) distribution of errors (d) no relation

203) If regression co-efficient of Y on X is 2, then the regression co-efficient of X on Y is

(a) $\leq \frac{1}{2}$ (b) 2 (c) $> \frac{1}{2}$ (d) 1

204) If two variables moves in decreasing direction then the correlation is

(a) positive (b) negative (c) perfect negative (d) no correlation

205) The person suggested a mathematical method for measuring the magnitude of linear relationship between two variables say X and Y is

(a) Karl Pearson (b) Spearman (c) Croxton and Cowden (d) Ya Lun Chou

206) The lines of regression intersect at the point

(a) (X,Y) **(b)** $\left(\bar{X}, \bar{Y}\right)$ (c) (0,0) (d) (σ_x, σ_y)

207) The term regression was introduced by

(a) R.A Fisher **(b) Sir Francis Galton** (c) Karl Pearson (d) Croxton and Cowden

208) If r=–1, then correlation between the variables

(a) perfect positive **(b) perfect negative** (c) negative (d) no correlation

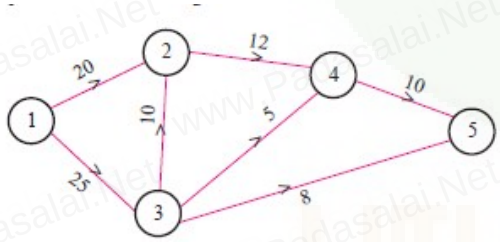
209) The coefficient of correlation describes

(a) the magnitude and direction (b) only magnitude (c) only direction (d) no magnitude and no direction

210) Cov(x,y)=–16.5, $\sigma_x^2 = 2.89, \sigma_y^2$=100. Find correlation coefficient

(a) -0.12 (b) 0.001 (c) -1 **(d) -0.97**

211) The critical path of the following network is



(a) 1 – 2 – 4 – 5 (b) 1– 3– 5 (c) 1 – 2 – 3 – 5 **(d) 1 – 2 – 3 – 4 – 5**

212) Maximize: $z=3x_1+4x_2$ subject to $2x_1+x2\leq40$, $2x_1+5x_2\leq180$, $x_1,x_2\geq0$ in the LPP, which one of the following is feasible corner point?

(a) $x_1=18, x_2=24$ (b) $x_1=15, x_2=30$ **(c) $x_1=2.5, x_2=35$** (d) $x_1=20, x_2=19$

213) One of the conditions for the activity (i, j) to lie on the critical path is

(a) $\mathbf{E_j-E_i=L_j-L_i=t_{ij}}$ (b) $E_i-E_j=L_j-L_i=t_{ij}$ (c) $E_j-E_i=L_i-L_j=t_{ij}$ (d) $E_j-E_i=L_j-L_i\neq t_{ij}$

214) In constructing the network which one of the following statement is false?

(a) Each activity is represented by one and only one arrow. (i.e) only one activity can connect any two nodes

(b) Two activities can be identified by the same head and tail events

(c) Nodes are numbered to identify an activity uniquely. Tail node (starting point) should be lower than the head node (end point) of an activity

(d) Arrows should not cross each other

215) In a network while numbering the events which one of the following statement is false?

(a) Event numbers should be unique (b) Event numbering should be carried out on a sequential basis from left to right

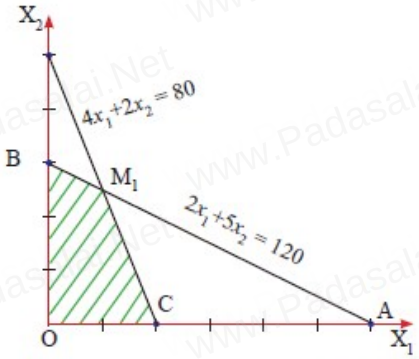
(c) The initial event is numbered 0 or 1

(d) The head of an arrow should always bear a number lesser than the one assigned at the tail of the arrow

216) A solution which maximizes or minimizes the given LPP is called

(a) a solution (b) a feasible solution **(c) an optimal solution** (d) none of these

217) In the given graph the coordinates of M_1 are



(a) $x_1=5, x_2=30$ (b) $x_1=20, x_2=16$ **(c) $x_1=10, x_2=20$** (d) $x_1=20, x_2=30$

218) The maximum value of the objective function Z = 3x + 5y subject to the constraints x > 0 , y > 0 and 2x + 5y ≤10 is

(a) 6 **(b) 15** (c) 25 (d) 31

219) The minimum value of the objective function Z = x + 3y subject to the constraints 2x + y ≤20, x + 2y ≤ 20,x > 0 and y > 0 is

(a) 10 (b) 20 **(c) 0** (d) 5

220) Which of the following is not correct?

(a) Objective that we aim to maximize or minimize (b) Constraints that we need to specify

(c) Decision variables that we need to determine **(d) Decision variables are to be unrestricted**

221) In the context of network, which of the following is not correct

(a) A network is a graphical representation (b) A project network cannot have multiple initial and final nodes

(c) An arrow diagram is essentially a closed network

(d) An arrow representing an activity may not have a length and shape

222) The objective of network analysis is to

(a) Minimize total project cost **(b) Minimize total project duration**

(c) Minimize production delays, interruption and conflicts (d) All the above

223) Network problems have advantage in terms of project

(a) Scheduling (b) Planning (c) Controlling **(d) All the above**

224) In critical path analysis, the word CPM mean

(a) Critical path method (b) Crash project management (c) Critical project management

(d) Critical path management

225) Given an L.P.P maximize $Z=2x_1+3x_2$ subject to the constrains $x_1+x_2\leq 1$, $5x_1+5x_2\geq 0$ and $x_1\geq 0$, $x_2\geq 0$ using graphical method, we observe

(a) No feasible solution (b) unique optimum solution (c) multiple optimum solution (d) none of these