(GCF-19, GCF-20, VCF-4, SCF-6 & SCF-7)

DATE: 13.02.2020 **MAXIMUM MARKS: 100** **TIMING: 2 Hours**

MATHS, STATS & REASONING

All Questions is compulsory.

1. Ans. a
Explanation:
$A^1 = \frac{1}{|A|}$ adj A
$= \frac{1}{(6-5)}\begin{bmatrix} 3 & -5 \\ -1 & 2 \end{bmatrix}$
$= \begin{bmatrix} 3 & -5 \\ -1 & 2 \end{bmatrix}$

2. Ans. c
Explanation:
$D = P\left(\frac{R}{100}\right)^2$
$768 = P\left(\frac{8}{100}\right)^2$
P = 1,20,000

3. Ans. d
Explanation:
$E = \left[\left(1+\frac{r}{100}\right)^n - 1\right]\times 100$
$= \left[\left(1+\frac{6}{200}\right)^2 - 1\right]\times 100 = 6.09\%$

4. Ans. b
Let the sum be Rs. x. Then, $\left(\frac{X\times 10\times 7}{100\times 2}\right) - \left(\frac{X\times 12\times 5}{100\times 2}\right) = 40$
$\Leftrightarrow \frac{7x}{20} - \frac{3x}{10} = 40 \Leftrightarrow x = (40x20) = 800.$
Hence, the sum is Rs. 800.

5. Ans. b
Explanation:
$T_5 = a+4d = 14$ ..... (i)
$T_{12} = a+11d = 35$ ..... (ii)
On solving equation (i) and (ii)
a=2

6. Ans. c
Explanation:
The no. of ways $= {}^4P_3 \times 4!$
$= 24 \times 24 = 576$

7. Ans. b
Explanation:
$-2x+3y \geq 6$ Cuts on X axis (−3, 0)
Y axis (0, 2)
and y is more than x so option (B) is Correct.

8. Ans. d
Explanation:
$r = -3$
$S_\infty = \frac{a}{1-r}, -1 < r < 1$

9. Ans. d
Explanation:
$A = P\left(1+\frac{r}{100}\right)^n$
$1 = P\left(1+\frac{10}{100}\right)^2$
$P = 0.83$

10. Ans. c
Explanation:
$|A\ A^T| = |A|\,|A^T|$
$= |A|\,|A|$
$= 5 \times 5 = 25$

11. Ans. d
Exp. SI for 2 years = 5,680 – 5,200 = 480
SI for 5 years = $\frac{480}{2}\times 5 = 1{,}200$
P = 5,200 – 1,200 = Rs. 4,000
Rate = $\frac{100\times 1{,}200}{4{,}000\times 5} = 6\%$

12. Ans. b
Exp. $x\left(1+\frac{10}{100}\right)^8 = (8{,}840 - x)\left(1+\frac{10}{100}\right)^{10}$
X = 4,840
B = 8,840 – 4,840 = Rs. 4,000

13. Ans. a
Explanation:

$$P=\frac{R}{r}\ [1-(1+r)^{-n}]$$

$$5,00,000=\frac{R}{.08}\ [1-(1+0.8)^{-3}]$$

R = Rs. 1,94,016.75

14. Ans. b
Exp. $= \log_{60}3 + \log_{60}4 + \log_{60}5$
$= \log_{60}60=1$

15. Ans. c
Explanation:
$1Rs.\ :\ 50P\ :\ 25P$
$4x,\ 5x,\ 6x$

$$4x+\frac{250x}{100}+\frac{150x}{100}=120$$

$$x=15$$

The number of coins of 25 paisa = 6 x 15 = 90

16. Ans. d
Explanation:

Different words can be formed $=\frac{11!}{4!4!2!}$

S = 4, P = 2, I = 4

17. Ans. b
Explanation:
3 × 2 Matrix multiply by 2 × 3 matrix then order of matrix will be 3 × 3 matrix.

18. Ans. b
Explanation:

$$P=\frac{R}{r}=\frac{30,000}{0.58}=5,17,241.38$$

19. Ans. c
Explanation:

$$A = P\left(1+\frac{r}{100}\right)^n$$

$$\frac{25}{16}P=P(1+\frac{r}{100})^2$$

$$\left(\frac{5}{4}\right)^2=(1+\frac{r}{100})^2$$

$$\frac{5}{4}=1+\frac{r}{100}$$

r = 25%

20. Ans. b
Explanation :
$$\frac{10000 \text{ x } 2 \text{ x } r}{100} + \frac{6000 \text{ x } 3 \text{ x } r}{100} = 1900$$
r= 5%

21. Ans. a
Explanation :
Black Red + White Ball
3 6
$3c_1 \times 6c_2 + 3c_2 \times 6c_1 + 3c_3 = 64$

22. Ans. c
Explanation :
(A-B) $\cup$ c
{2, 6, 9} $\cup$ {2, 6, 8}
= {2, 6, 8, 9}

23. Ans. d
Explanation :
$\log_3 x + \log_3 x = \frac{3}{2}$
$\log_3 x \times \frac{3}{2} = \frac{3}{2}$
$\log_3 x = 1$
$x = 3$

24. Ans. a
Explanation :
Let cost of one chair and one table are x and y respectively, then
5x + 3y = 350……..(i)
3x + 5y = 370……..(ii)
on solving eq^n (i) and eq^n (ii)
x = 40, y = 50
Cost of one table and two chairs is Rs. 130

25. Ans. d
Explanation:
No. of different ways can be failed $=2^4-1$

26. Ans. a
Explanation:
If (b+c), (c+a),(a+b) are in A.p.
Then 2(c+a) = b+c+a+b
2b = a+c

27. Ans. b
Explanation :
$ar^3 = 3$
$a \times ar \times ar^2 \ldots\ldots ar^6 = a^7 r^{21}$
$= (ar^3)^7$
$= 3^7$

28. Ans. d

29. Ans. a
Explanation :
No. of diagonals = $n_{c_2} - n$

30. Ans. a
Explanation :
3 logy + 5 logx = 8 log(x+y)

$$\frac{3}{y}\frac{dy}{dx} + \frac{5}{x} = \frac{8}{x+y}[1+\frac{dy}{dx}]$$

$$\frac{dy}{dx}[\frac{3}{y} = \frac{8}{x+y}] = \frac{8}{x+y} - \frac{5}{x}]$$

$$\frac{dy}{dx} = \frac{y}{x}$$

31. Ans. a
Explanation :
n(AxB) = n(A) x n(B)
= 5 x 3 = 15

32. Ans. a

33. Ans. a

34. Ans. c

35. Ans. b

36. Ans. a

37. Ans. c

38. Ans. a

39. Ans. a

40. Ans. d

41. Ans. b

42. Ans. c

43. Ans. c

44. Ans. b

45. Ans. c

46. Ans. a

47. Ans. b

48. Ans. d

49. Ans. a

50. Ans. d

51. Ans. b

52. Ans. c

53. Ans. d

54. Ans. b

55. Ans. c

56. Ans. d

57. Ans. a

58. Ans. b

59. Ans. a

60. Ans. a

61. Ans. b

62. Ans. c

63. Ans. a

64. Ans. b

65. Ans. c

66. Ans. c

67. Ans. a

68. Ans. a

69. Ans. a

70. Ans. b

71. Ans. d

72. Ans. a
Explanation:

$5x+7y-22=0$

$6x+2y-22=0$

$r=\sqrt{\frac{10}{42}}$

$byx=\frac{-5}{7}$

$bxy=-\frac{2}{6}$ $-\frac{5}{7}=-\frac{\sqrt{\frac{10}{42}}\times\sqrt{15}}{\sigma x}$ $\sigma x=2.64\ 6$

73. Ans. b
Explanation:
Coefficient of range = $\frac{L-S}{L+S}$
Where $L\rightarrow$ for largest value
$S\rightarrow$ for smallest value
Coefficient of range = $\frac{40-10}{40+10}=\frac{30}{50}=\frac{3}{5}$

74. Ans. b
Explanation:
G.M. = $(2 \text{ x } 2^2 \text{x } 2^3 \text{x } 2^4 \text{x} 2^5 \text{x} 2^6)^{1/6}$
$=2^{7/2}$

75. Ans. b
Explanation:
Revised salary = $\frac{200}{110}\times 325=590.90$
It means worker is in loss.

76. Ans. d
Explanation :
Regression coefficient are independent of change of origin but not scale (As per Fundamental Principle)

77. Ans. a

78. Ans. a

79. Ans. c

80. Ans. b
Explanation:
Less than ogive & more than Ogive intersect at a point called MEDIAN or we can say second quartile.

81. Ans. b
Explanation:
माध्य से लिये गये विचलनों का बीजगणितीय योग शून्य होता है।

उदाहरण	X_i	$X_i - \overline{X}$	$\overline{X} = \frac{\Sigma X_i}{n}$
	10	−10	
	20	0	$= \frac{10+20+30}{3}$
	30	10	
		0	= 20

अतः $\Sigma\ X_i - \overline{X} = 0$

82. Ans. b

83. Ans. a
Explanation:
Laspeyre's Price Index is based on base year Quantity.
Since Formula is $L = \frac{\Sigma P_1 Q_0}{\Sigma P_0 Q_0} \times 100$
Hence Q_0 is constant.

84. Ans. b

85. Ans. a

86. Ans. a

87. Ans. b

88. Ans. b

89. Ans. b

90. Ans. d

91. Ans. c

92. Ans. d

93. Ans. c

94. Ans. b

95. Ans. c

96. Ans. c

97. Ans. a

98. Ans. c

99. Ans. b

100. Ans. a

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