(GCF-1, GCF-2, GCF-4, GCF-5+8, GCF-6+9, GCF-10, GCF-11, VCF-1, VCF-2, SCF-1 & VDCF-1)
DATE: 13.10.2019 **MAXIMUM MARKS: 100** **TIMING: 2 Hours**

MATHS, STATS & REASONING

All Questions is compulsory.

(1) Ans. c
Explanation:
$|adjA| = |A|^{n-1}$
$= 7^{3-1} = 7^2 = 49$

(2) Ans. c
Explanation :
$A = A^T$
$$\begin{bmatrix} 5 & x \\ y & 0 \end{bmatrix} = \begin{bmatrix} 5 & y \\ x & 0 \end{bmatrix}$$
$x = y$

(3) Ans. a
m x n n x m = m x m

(4) Ans. c
Explanation :
$$A = P\ (1+\frac{r_1}{100})\ (1+\frac{r_2}{100})\ (1+\frac{r_3}{100})$$
$$550 = P\ (\frac{109}{100})\ (\frac{106}{100})\ (\frac{103}{100})$$
P = 462. 16

(5) Ans. c

(6) Ans. d

(7) Ans. a

(8) Ans. b

(9) Ans. c
Explanation :
$$2^{x^2} = 3^{y^2} = 12^{z^2} = K$$
$12 = 2^2 \times 3$
$$k^{1/z^2} = k^{2/x^2} \times k^{1/y^2}$$
$$\frac{2}{x^2} + \frac{1}{y^2} = \frac{1}{z^2}$$

(10) Ans. b
Explanation :

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

$121 = 100\ (1+\frac{r}{100})^2$

r = 10%

(11) Ans. a
Explanation :

$A = P\ (1+\frac{rt}{100})$

$248 = Q\ (1+\frac{16 \times 4.5}{300})$

Q = 200

(12) Ans. a

(13) Ans. b

(14) Ans. c

(15) Ans. b
Explanation :

$SI = \frac{2000\,x\,5\,x\,6}{100} = 600$

(16) Ans. a

(17) Ans. b
Explanation :

$P = \frac{R}{r}$

$= \frac{50{,}000\,x\,1200}{12}$

= Rs. 50,00,000

(18) Ans. a

(19) Ans. b

(20) Ans. b

(21) Ans. b

(22) Ans. c

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

(24) Ans. a
Explanation:
$$\frac{x \times 2 \times 5}{100} = \frac{y \times 3 \times 5}{100} = \frac{z \times 4 \times 5}{100}$$
2x = 3y = 4z
x : y : z = 6 : 4 : 3

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

(26) Ans. d

(27) Ans. d

(28) Ans. c

(29) Ans. a

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

(31) Ans. b
Explanation :
$11c_x = 11c_{2x-4}$
x + 2x – 4 = 11
x = 5
$7c_x = 7c_5 = 21$

(32) 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

(33) Ans. a
Explanation :
x + y = 6 K
y + z = 7 K
z + x = 8 K
2(x+y+z) = 21 K
$\frac{2 \text{ x } 14}{21} = K$
K = $\frac{4}{3}$
x + y = 6 x $\frac{4}{3}$ = 8
x + y + z = 14
8 + z = 14
z = 6

(34) Ans. c

(35) Ans. a

(36) Ans. b

(37) Ans. c

(38) Ans. b

(39) Ans. c

(40) Ans. d

(41) Ans. a

(42) Ans. c
Explanation :
f'(x) = $3x^2 + 2$
$\int f'(x)dx = \int (3x^2 + 2)dx$
f(x) = $x^3 + 2x + c$
f(O) = O
O = C
f(x) = $x^3 + 2x$
f(2) = 8 + 4 = 12

(43) 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

(44) Ans. a
Explanation :

$y = \frac{1}{1-x}$ $\quad [S\infty = \frac{a}{1-r}$

$y - xy = 1$

$y - 1 = xy$

$x = \frac{y-1}{y}$

(45) Ans. a
Explanation :

$\frac{1}{7!} + \frac{1}{8 \times 7!} = \frac{N}{9 \times 8 \times 7!}$

$1 + \frac{1}{8} = \frac{N}{72}$

$\frac{9}{8} \times 72 = N$

$N = 81$

(46) Ans. a

(47) Ans. c
Explanation :

$A(x) = M(x)$

$\frac{c(x)}{x} = c'(x)$

$150 - 5x + \frac{x^2}{6} = 150 - 10x + \frac{x^2}{2}$

$5x = \frac{x^2}{2} - \frac{x^2}{6}$

$x = 15$

(48) Ans. b

(49) Ans. d

(50) Ans. c

(51) Ans. b

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

(53) 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

(54) Ans. b
Explanation:
$x^{2a-3}y^{2a} = x^{6-a}y^{5a}$
$x^{3a-9} = y^{3a}$
Taking logarithm
(3a-9)log x = 3a logy
3a logx – 3a logy = 9 logx
$a\log\frac{x}{y} = 3\log x$

(55) Ans. c

(56) Ans. b

(57) Ans. c

(58) Ans. b
Explanation:
No. of such ways = $\frac{(n-1)!}{2}$
= $\frac{5!}{2}$

(59) Ans. b

(60) Ans. b

(61) Ans. c

(62) Ans. b
Explanation :
A = P $(1+\frac{r}{100})^n$
= 8000 $(1+\frac{5}{100})^3$

(63) Ans. b
Explanation :
$ar^3 = 3$
a x ar x ar^2.....ar^6 = a^7r^{21}
= $(ar^3)^7$
= 3^7

(64) Ans. d

(65) Ans. b

(66) Ans. d

(67) Ans. c

(68) Ans. c

(69) Ans. c

(70) Ans. d

(71) Ans. c

(72) Ans. a

(73) Ans. b

(74) Ans. a

(75) Ans. a

(76) Ans. c

(77) Ans. a

(78) Ans. a
Explanation:
gof(3)
= gof(x)
=g[f(x)]
=g[x^2]
=x
gof(3)=3

(79) Ans. c
Explanation:

$$2I = \int_a^b 1.\, dx$$

$$2I = \int_2^3 1.\, dx$$

$$2I = [x]_2^3$$

2I = 1
I = 1/2

(80) Ans. b
Explanation:
log2 + 2log3 + 3log4
log2 + log9 + log64

= log1152

(81) Ans. c
Explanation :
$\propto + \beta = -7 \ , \ \propto \beta = 12$

$(\propto + \beta)^3 = \propto^3 + \beta^3 + 3 \propto \beta \ (\propto + \beta)$

-343 = $\propto^3 + \beta^3 + 3(12)\ (-7)$

$\propto^3 + \beta^3 = -91$

$\frac{\propto^2}{\beta} + \frac{\beta^2}{\propto} = \frac{\propto^3 + \beta^3}{\propto \beta} = \frac{-91}{12}$

(82) Ans. b
Explanation :
x + 2 > 0
x > -2
2x – 6 > 0
x > 3
(3, ∞)

(83) Ans. d

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

= $6_{c_2} - 6 = 9$

(85) Ans. b

(86) Ans. a

(87) Ans. b

(88) Ans. c

(89) Ans. b

(90) Ans. d
Explanation :
After 3 yrs - Rs. 2688
After 4 yrs - Rs. 2784
1 yr SI = 96 P = 2688 – 3 x 96 = 2400

SI = $\frac{Prt}{100}$

96 = $\frac{2400 \text{ x } r \text{ x } 1}{100}$

r = 4%

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

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

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

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

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

(93) Ans. c

(94) Ans. c

(95) Ans. a

(96) Ans. d

(97) Ans. c

(98) Ans. a

(99) Ans. c

(100) Ans. c

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