(GCF-11, 12 & 13, CA FOUNDATION GD & PD)

DATE: 10.04.2021 MAXIMUM MARKS: 100 TIMING: 3 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 :

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

(16) Ans. A

(17) Ans. B
Explanation :

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

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

= 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
$\frac{2 \text{ x } 14}{21} = K$
$K = \frac{4}{3}$
$x + y = 6 \text{ x } \frac{4}{3} = 8$
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 :

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

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

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

$N = 81$

(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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