

CAT 2020 Slot 3 – Quantitative Ability

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CAT 2020 Slot 3 – Quantitative Ability

Number of Questions: 26

Duration: 40min

Section Marks: $26 \times 3 = 78$ Marks



“Click” Question Number to view question

Qn 1

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If $x_1 = -1$ and $x_m = x_{m+1} + (m + 1)$ for every positive integer m , then x_{100} equals

- A) -5050
- B) -5051
- C) -5150
- D) -5151

Click to see the correct answer

Answer

Click to view video Solution
for this question

Video Solution

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Original CAT 2020 Question Paper

Qn 2

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Let N , x and y be positive integers such that $N = x + y$, $2 < x < 10$ and $14 < y < 23$. If $N > 25$, then how many distinct values are possible for N ? (TITA)

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Answer

Video Solution

Qn 3

Let $\log_a 30 = A$, $\log_a \frac{5}{3} = -B$ and $\log_2 a = \frac{1}{3}$, then $\log_3 a$ equals

A) $\frac{2}{A+B-3}$

B) $\frac{A+B-3}{2}$

C) $\frac{A+B}{2} - 3$

D) $\frac{2}{A+B} - 3$

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Answer

Video Solution

Qn 4

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A contractor agreed to construct a 6 km road in 200 days. He employed 140 persons for the work. After 60 days, he realized that only 1.5 km road has been completed. How many additional people would he need to employ in order to finish the work exactly on time?

(TITA)

Click to see the correct answer

Answer

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Video Solution

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Original CAT 2020 Question Paper

Qn 5

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The area, in sq. units, enclosed by the lines $x = 2$, $y = |x - 2| + 4$, the X-axis and the Y-axis is equal to

- A) 12
- B) 8
- C) 6
- D) 10

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Answer

Video Solution

Qn 6

online.2IIM.com

Dick is thrice as old as Tom and Harry is twice as old as Dick. If Dick's age is 1 year less than the average age of all three, then Harry's age, in years, is (TITA)

Answer

Video Solution

2IIM

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Original CAT 2020 Question Paper

Qn 7

online.2IIM.com

How many of the integers 1, 2, ... , 120, are divisible by none of 2, 5 and 7?

- A) 41
- B) 42
- C) 40
- D) 43

online.2IIM.com

Answer

Video Solution

Qn 8

online.2IIM.com

In the final examination, Bishnu scored 52% and Asha scored 64%. The marks obtained by Bishnu is 23 less, and that by Asha is 34 more than the marks obtained by Ramesh. The marks obtained by Geeta, who scored 84%, is

- A) 399
- B) 439
- C) 357
- D) 417

Answer

Video Solution

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Qn 9

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If $f(x+y) = f(x)f(y)$ and $f(5) = 4$, then $f(10) - f(-10)$ is equal to

- A) 3
- B) 0
- C) 14.0625
- D) 15.9375

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Answer

Video Solution

Qn 10

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$$\frac{2 \times 4 \times 8 \times 6}{(\log_2 4)^2 (\log_4 8)^3 (\log_8 16)^4} \text{ equals (TITA)}$$

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Answer

Video Solution

Qn 11

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If a, b, c are non-zero and $14^a = 36^b = 84^c$, then $6b\left(\frac{1}{c} - \frac{1}{a}\right)$ is equal to

(TITA)

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Answer

Video Solution

Qn 12

Let m and n be natural numbers such that n is even and $0.2 < \frac{m}{20}, \frac{n}{m}, \frac{n}{11} < 0.5$.

Then $m - 2n$ equals

- A) 4
- B) 2
- C) 1
- D) 3

Answer

Video Solution

Qn 13

Anil, Sunil, and Ravi run along a circular path of length 3 km, starting from the same point at the same time, and going in the clockwise direction. If they run at speeds of 15 km/hr, 10 km/hr, and 8 km/hr, respectively, how much distance in km will Ravi have run when Anil and Sunil meet again for the first time at the starting point?

- A) 4.6
- B) 4.2
- C) 4.8
- D) 5.2

Answer

Video Solution

Qn 14

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A man buys 35 kg of sugar and sets a marked price in order to make a 20% profit. He sells 5 kg at this price, and 15 kg at a 10% discount. Accidentally, 3 kg of sugar is wasted. He sells the remaining sugar by raising the marked price by p percent so as to make an overall profit of 15%. Then p is nearest to

- A) 35
- B) 31
- C) 22
- D) 25

Answer

Video Solution

Qn 15

Let k be a constant. The equations $kx + y = 3$ and $4x + ky = 4$ have a unique solution if and only if

- A) $|k| = 2$
- B) $k \neq 2$
- C) $|k| \neq 2$
- D) $k = 2$

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Answer

Video Solution

Qn 16

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How many integers in the set $\{100, 101, 102, \dots, 999\}$ have at least one digit repeated? (TITA)

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Answer

Video Solution

Qn 17

A batsman played $n + 2$ innings and got out on all occasions. His average score in these $n + 2$ innings was 29 runs and he scored 38 and 15 runs in the last two innings. The batsman scored less than 38 runs in each of the first n innings. In these n innings, his average score was 30 runs and lowest score was x runs. The smallest possible value of x is

- A) 1
- B) 3
- C) 2
- D) 4

Answer

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Qn 18

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Two alcohol solutions, A and B, are mixed in the proportion 1:3 by volume. The volume of the mixture is then doubled by adding solution A such that the resulting mixture has 72% alcohol. If solution A has 60% alcohol, then the percentage of alcohol in solution B is

- A) 94%
- B) 92%
- C) 90%
- D) 89%

Answer

Video Solution

Qn 19

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The vertices of a triangle are $(0,0)$, $(4,0)$ and $(3,9)$. The area of the circle passing through these three points is

- A) $\frac{14\pi}{3}$
- B) $\frac{123\pi}{7}$
- C) $\frac{205\pi}{9}$
- D) $\frac{12\pi}{5}$

Answer

Video Solution

Qn 20

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A person invested a certain amount of money at 10% annual interest, compounded half-yearly. After one and a half years, the interest and principal together became Rs 18522. The amount, in rupees, that the person had invested is

Answer

Video Solution

Qn 21

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A and B are two railway stations 90 km apart. A train leaves A at 9:00 am, heading towards B at a speed of 40 km/hr. Another train leaves B at 10:30 am, heading towards A at a speed of 20 km/hr. The trains meet each other at

- A) 11 : 20 am
- B) 11 : 00 am
- C) 10 : 45 am
- D) 11 : 45 am

Answer

Video Solution

Qn 22

Vimla starts for office every day at 9 am and reaches exactly on time if she drives at her usual speed of 40 km/hr. She is late by 6 minutes if she drives at 35 km/hr. One day, she covers two-thirds of her distance to office in one-third of her usual time to reach office, and then stops for 8 minutes. The speed, in km/hr, at which she should drive the remaining distance to reach office exactly on time is

- A) 27
- B) 28
- C) 29
- D) 26

Answer

Video Solution

Qn 23

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Let m and n be positive integers, If $x^2 + mx + 2n = 0$ and $x^2 + 2nx + m = 0$ have real roots, then the smallest possible value of $m + n$ is

- A) 8
- B) 6
- C) 5
- D) 7

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Answer

Video Solution

Qn 24

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In a trapezium ABCD, AB is parallel to DC, BC is perpendicular to DC and $\angle BAD = 45^\circ$. If DC = 5 cm, BC = 4 cm, the area of the trapezium in sq. cm is

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Answer

Video Solution

Qn 25

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The points $(2, 1)$ and $(-3, -4)$ are opposite vertices of a parallelogram. If the other two vertices lie on the line $x + 9y + c = 0$, then c is

- A) 15
- B) 13
- C) 14
- D) 12

Answer

Video Solution

Qn 26

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How many pairs (a,b) of positive integers are there such that $a \leq b$ and $ab = 4^{2017}$?

- A) 2019
- B) 2018
- C) 2020
- D) 2017

Answer

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Solution

- 1) A ← Click to go "Back to Answer page"
- 2) 6
- 3) A
- 4) 40
- 5) D
- 6) 18
- 7) A
- 8) A
- 9) D
- 10) 24
- 11) 3
- 12) C
- 13) C
- 14) D
- 15) C
- 16) 252
- 17) C
- 18) B
- 19) C
- 20) 16000
- 21) B
- 22) B
- 23) B
- 24) 28
- 25) C
- 26) B

Sol 1

Click to see "overall Solution page"

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If $x_1 = -1$ and $x_m = x_{m+1} + (m + 1)$ for every positive integer m , then x_{100} equals

- A) -5050
- B) -5051
- C) -5150
- D) -5151

Click to go "Back to Question"

Back to Question

Video Solution

Difficulty Level – Medium

Topic – Inequalities and polynomials

Sol 2

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Let N , x and y be positive integers such that $N = x + y$, $2 < x < 10$ and $14 < y < 23$. If $N > 25$, then how many distinct values are possible for N ? (TITA)

Answer: 6

Difficulty Level – Easy

Topic – Modern Maths

Back to Question

Video Solution

Sol 3

Let $\log_a 30 = A$, $\log_a \frac{5}{3} = -B$ and $\log_2 a = \frac{1}{3}$, then $\log_3 a$ equals

- A) $\frac{2}{A+B-3}$
B) $\frac{A+B-3}{2}$
C) $\frac{A+B}{2} - 3$
D) $\frac{2}{A+B} - 3$

Difficulty Level – **Hard**

Topic – **Logarithms**

Sol 4

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A contractor agreed to construct a 6 km road in 200 days. He employed 140 persons for the work. After 60 days, he realized that only 1.5 km road has been completed. How many additional people would he need to employ in order to finish the work exactly on time?

Answer: 40

Difficulty Level – Easy

Topic – Time and work

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Video Solution

Sol 5

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The area, in sq. units, enclosed by the lines $x = 2$, $y = |x - 2| + 4$, the X-axis and the Y-axis is equal to

- A) 12
- B) 8
- C) 6
- D) 10**

Difficulty Level –  Medium

Topic – **Coordinate geometry**

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Video Solution

Sol 6

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Dick is thrice as old as Tom and Harry is twice as old as Dick. If Dick's age is 1 year less than the average age of all three, then Harry's age, in years, is

Correct answer: 18

Difficulty Level – Easy

Topic – Ratios and proportions

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Video Solution

Sol 7

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How many of the integers 1, 2, ... , 120, are divisible by none of 2, 5 and 7?

- A) 41
- B) 42
- C) 40
- D) 43

Difficulty Level –  Hard

Topic – **Number theory**

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Video Solution

Sol 8

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In the final examination, Bishnu scored 52% and Asha scored 64%. The marks obtained by Bishnu is 23 less, and that by Asha is 34 more than the marks obtained by Ramesh. The marks obtained by Geeta, who scored 84%, is

- A) 399
- B) 439
- C) 357
- D) 417

Difficulty Level – Easy

Topic – Percentages

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Video Solution

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Sol 9

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If $f(x+y) = f(x)f(y)$ and $f(5) = 4$, then $f(10) - f(-10)$ is equal to

- A) 3
- B) 0
- C) 14.0625
- D) 15.9375**

Difficulty Level – Medium

Topic – **Functions**

Back to Question

Video Solution

Sol 10

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$$\frac{2 \times 4 \times 8 \times 6}{(\log_2 4)^2 (\log_4 8)^3 (\log_8 16)^4} \text{ equals (TITA)}$$

Answer: 24

Difficulty Level – Medium

Topic – **Logarithms**

Back to Question

Video Solution

Sol 11

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If a, b, c are non-zero and $14^a = 36^b = 84^c$, then $6b\left(\frac{1}{c} - \frac{1}{a}\right)$ is equal to
(TITA)

Answer: 3

Difficulty Level –  Hard

Topic – Exponents and powers

Back to Question

Video Solution

Sol 12

Let m and n be natural numbers such that n is even and $0.2 < \frac{m}{20}, \frac{n}{m}, \frac{n}{11} < 0.5$.

Then $m - 2n$ equals

- A) 4
- B) 2
- C) 1**
- D) 3

Difficulty Level – **Hard**

Topic – **Inequalities**

Sol 13

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Anil, Sunil, and Ravi run along a circular path of length 3 km, starting from the same point at the same time, and going in the clockwise direction. If they run at speeds of 15 km/hr, 10 km/hr, and 8 km/hr, respectively, how much distance in km will Ravi have run when Anil and Sunil meet again for the first time at the starting point?

- A) 4.6
- B) 4.2
- C) 4.8**
- D) 5.2

Difficulty Level –  Medium

Topic – **Circular races**

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Video Solution

Sol 14

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A man buys 35 kg of sugar and sets a marked price in order to make a 20% profit. He sells 5 kg at this price, and 15 kg at a 10% discount. Accidentally, 3 kg of sugar is wasted. He sells the remaining sugar by raising the marked price by p percent so as to make an overall profit of 15%. Then p is nearest to

- A) 35
- B) 31
- C) 22
- D) 25**

Difficulty Level – Medium

Topic – Profit and loss

Back to Question

Video Solution

Sol 15

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Let k be a constant. The equations $kx + y = 3$ and $4x + ky = 4$ have a unique solution if and only if

- A) $|k| = 2$
- B) $k \neq 2$
- C) $|k| \neq 2$**
- D) $k = 2$

Difficulty Level – Easy

Topic – Linear Equations

Back to Question

Video Solution

Sol 16

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How many integers in the set $\{100, 101, 102, \dots, 999\}$ have at least one digit repeated? (TITA)

Answer: 252

Difficulty Level – Easy

Topic – **Number Theory**

Back to Question

Video Solution

Sol 17

A batsman played $n + 2$ innings and got out on all occasions. His average score in these $n + 2$ innings was 29 runs and he scored 38 and 15 runs in the last two innings. The batsman scored less than 38 runs in each of the first n innings. In these n innings, his average score was 30 runs and lowest score was x runs. The smallest possible value of x is

- A) 1
- B) 3
- C) 2**
- D) 4

Difficulty Level – Medium

Topic – Averages

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Sol 18

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Two alcohol solutions, A and B, are mixed in the proportion 1:3 by volume. The volume of the mixture is then doubled by adding solution A such that the resulting mixture has 72% alcohol. If solution A has 60% alcohol, then the percentage of alcohol in solution B is

- A) 94%
- B) 92%**
- C) 90%
- D) 89%

Difficulty Level – Medium

Topic – Ratios and Proportion

Back to Question

Video Solution

Sol 19

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The vertices of a triangle are $(0,0)$, $(4,0)$ and $(3,9)$. The area of the circle passing through these three points is

- A) $\frac{14\pi}{3}$
B) $\frac{123\pi}{7}$
C) $\frac{205\pi}{9}$
D) $\frac{12\pi}{5}$

Difficulty Level –  Hard

Topic – **Coordinate Geometry**

Back to Question

Video Solution

Sol 20

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A person invested a certain amount of money at 10% annual interest, compounded half-yearly. After one and a half years, the interest and principal together became Rs 18522. The amount, in rupees, that the person had invested is

Answer: 16000

Difficulty Level – Easy

Topic – SI & CI

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Video Solution

Sol 21

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A and B are two railway stations 90 km apart. A train leaves A at 9:00 am, heading towards B at a speed of 40 km/hr. Another train leaves B at 10:30 am, heading towards A at a speed of 20 km/hr. The trains meet each other at

- A) 11 : 20 am
- B) 11 : 00 am**
- C) 10 : 45 am
- D) 11 : 45 am

Difficulty Level – Easy

Topic – Time speed and Distance

Back to Question

Video Solution

Sol 22

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Vimala starts for office every day at 9 am and reaches exactly on time if she drives at her usual speed of 40 km/hr. She is late by 6 minutes if she drives at 35 km/hr. One day, she covers two-thirds of her distance to office in one-thirds of her usual time to reach office, and then stops for 8 minutes. The speed, in km/hr, at which she should drive the remaining distance to reach office exactly on time is

- A) 27
- B) 28**
- C) 29
- D) 26

Difficulty Level –  Medium

Topic – **Time, Speed & Distance**

Back to Question

Video Solution

Sol 23

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Let m and n be positive integers, If $x^2 + mx + 2n = 0$ and $x^2 + 2nx + m = 0$ have real roots, then the smallest possible value of $m + n$ is

- A) 8
- B) 6**
- C) 5
- D) 7

Difficulty Level –  Hard

Topic – Quadratic Equations

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Video Solution

Sol 24

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In a trapezium ABCD, AB is parallel to DC, BC is perpendicular to DC and $\angle BAD = 45^\circ$. If DC = 5 cm, BC = 4 cm, the area of the trapezium in sq. cm is

Answer: 28

Difficulty Level – Medium

Topic – **Geometry**

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Video Solution

Sol 25

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The points $(2, 1)$ and $(-3, -4)$ are opposite vertices of a parallelogram. If the other two vertices lie on the line $x + 9y + c = 0$, then c is

- A) 15
- B) 13
- C) 14**
- D) 12

Difficulty Level – Easy

Topic – **Coordinate Geometry**

Back to Question

Video Solution

Sol 26

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How many pairs (a,b) of positive integers are there such that $a \leq b$ and $ab = 4^{2017}$?

- A) 2019
- B) 2018**
- C) 2020
- D) 2017

Difficulty Level – **Hard**

Topic – **Number Theory**

Back to Question

Video Solution

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