

CAT 2020 Slot 1 – Quantitative Ability

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CAT 2020 Slot 1 – 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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How many 3-digit numbers are there, for which the product of their digits is more than 2 but less than 7?

(TITA)

Click to see the correct answer

Answer

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for this question

Video Solution

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Original CAT 2020 Question Paper

Qn 2

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If $f(5 + x) = f(5 - x)$ for every real x and $f(x) = 0$ has four distinct real roots, then the sum of the roots is

- A) 0
- B) 40
- C) 10
- D) 20

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Answer

Video Solution

Qn 3

online.2IIM.com

Veeru invested Rs 10000 at 5% simple annual interest, and exactly after two years, Joy invested Rs 8000 at 10% simple annual interest. How many years after Veeru's investment, will their balances, i.e., principal plus accumulated interest, be equal?

(TITA)

Answer

Video Solution

Qn 4

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A train travelled at one-thirds of its usual speed, and hence reached the destination 30 minutes after the scheduled time. On its return journey, the train initially travelled at its usual speed for 5 minutes but then stopped for 4 minutes for an emergency. The percentage by which the train must now increase its usual speed so as to reach the destination at the scheduled time, is nearest to

[Click to see the correct answer](#)

Answer

- A) 58
- B) 67
- C) 50
- D) 61

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for this question](#)

Video Solution

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Original CAT 2020 Question Paper

Qn 5

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If $\log_4 5 = (\log_4 y)(\log_6 \sqrt{5})$, then y equals
(TITA)

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Answer

Video Solution

Qn 6

The number of real-valued solutions of the equation $2^x + 2^{-x} = 2 - (x - 2)^2$

is

- A) infinite
- B) 0
- C) 1
- D) 2

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Answer

Video Solution

Qn 7

A straight road connects points A and B. Car 1 travels from A to B and Car 2 travels from B to A, both leaving at the same time. After meeting each other, they take 45 minutes and 20 minutes, respectively, to complete their journeys. If Car 1 travels at the speed of 60 km/hr, then the speed of Car 2, in km/hr, is

- A) 90
- B) 80
- C) 70
- D) 100

Answer

Video Solution

Qn 8

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Let A , B and C be three positive integers such that the sum of A and the mean of B and C is 5. In addition, the sum of B and the mean of A and C is 7. Then the sum of A and B is

- A) 6
- B) 4
- C) 7
- D) 5

Answer

Video Solution

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Qn 9

If $x = (4096)^{7+4\sqrt{3}}$, then which of the following equals 64?

A) $\frac{x^{7/2}}{x^{4/\sqrt{3}}}$

B) $\frac{x^7}{x^{4\sqrt{3}}}$

C) $\frac{x^{7/2}}{x^{2\sqrt{3}}}$

D) $\frac{x^7}{x^{2\sqrt{3}}}$

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Answer

Video Solution

Qn 10

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The mean of all 4 digit even natural numbers of the form 'aabb', where $a > 0$, is

- A) 5544
- B) 4466
- C) 4864
- D) 5050

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Answer

Video Solution

Qn 11

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The number of distinct real roots of the equation

$$\left(x + \frac{1}{x}\right)^2 - 3\left(x + \frac{1}{x}\right) + 2 = 0 \text{ equals}$$

(TITA)

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Answer

Video Solution

Qn 12

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A person spent Rs 50000 to purchase a desktop computer and a laptop computer. He sold the desktop at 20% profit and the laptop at 10% loss. If overall he made a 2% profit then the purchase price, in rupees, of the desktop is
(TITA)

Answer

Video Solution

Qn 13

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Among 100 students, x_1 have birthdays in January, x_2 have birthdays in February, and so on. If $x_0 = \max(x_1, x_2, \dots, x_{12})$, then the smallest possible value of x_0 is

- A) 8
- B) 10
- C) 12
- D) 9

Answer

Video Solution

Qn 14

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Two persons are walking beside a railway track at respective speeds of 2 and 4 km per hour in the same direction. A train came from behind them and crossed them in 90 and 100 seconds, respectively. The time, in seconds, taken by the train to cross an electric post is nearest to

- A) 87
- B) 82
- C) 78
- D) 75

Answer

Video Solution

Qn 15

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How many distinct positive integer-valued solutions exist to the equation

$$(x^2 + 7x + 11)^{(x^2 - 13x + 42)} = 1 ?$$

- A) 6
- B) 2
- C) 4
- D) 8

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Answer

Video Solution

Qn 16

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The area of the region satisfying the inequalities

$$|x| - y \leq 1, y \geq 0, \text{ and } y \leq 1 \text{ is}$$

(TITA)

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Answer

Video Solution

Qn 17

A solid right circular cone of height 27 cm is cut into 2 pieces along a plane parallel to its base at a height of 18 cm from the base. If the difference in the volume of the two pieces is 225 cc, the volume, in cc, of the original cone is

- A) 264
- B) 232
- C) 243
- D) 256

Answer

Video Solution

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Qn 18

A circle is inscribed in a rhombus with diagonals 12 cm and 16 cm. The ratio of the area of the circle to the area of the rhombus is

- A) $\frac{2\pi}{15}$
- B) $\frac{6\pi}{25}$
- C) $\frac{3\pi}{25}$
- D) $\frac{5\pi}{18}$

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Answer

Video Solution

Qn 19

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Leaving home at the same time, Amal reaches office at 10:15 am if he travels at 8kmph, and at 9:40 am if he travels at 15kmph. Leaving home at 9:10 am, at what speed, in kmph, must he travel so as to reach office exactly at 10:00 am?

- A) 12
- B) 11
- C) 13
- D) 14

Answer

Video Solution

Qn 20

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If a , b and c are positive integers such that $ab = 432$, $bc = 96$ and $c < 9$, then the smallest possible value of $a + b + c$ is

- A) 56
- B) 49
- C) 46
- D) 59

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Answer

Video Solution

Qn 21

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If y is a negative number such that $2^{y^2 \log_3 5} = 5^{\log_2 3}$, then y equals

A) $\log_2 \left(\frac{1}{3} \right)$

B) $\log_2 \left(\frac{1}{5} \right)$

C) $-\log_2 \left(\frac{1}{3} \right)$

D) $-\log_2 \left(\frac{1}{5} \right)$

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Answer

Video Solution

Qn 22

On a rectangular metal sheet of area 135 sq in, a circle is painted such that the circle touches opposite two sides. If the area of the sheet left unpainted is two-thirds of the painted area the the perimeter of the rectangle in inches is

- A) $3\sqrt{\pi} \left(5 + \frac{12}{\pi}\right)$
- B) $4\sqrt{\pi} \left(3 + \frac{12}{\pi}\right)$
- C) $5\sqrt{\pi} \left(3 + \frac{12}{\pi}\right)$
- D) $3\sqrt{\pi} \left(\frac{5}{2} + \frac{6}{\pi}\right)$

Answer

Video Solution

Qn 23

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In a group of people, 28% of the members are young while the rest are old. If 65% of the members are literates, and 25% of the literates are young, then the percentage of old people among the illiterates is nearest to

- A) 59
- B) 62
- C) 66
- D) 55

Answer

Video Solution

Qn 24

online.2IIM.com

An alloy is prepared by mixing metals A, B, C in the proportion 3 : 4 : 7 by volume. Weights of the same volume of metals A, B, C are in the ratio 5 : 2 : 6. In 130 kg of the alloy, the weight, in kg, of the metal C is

- A) 84
- B) 48
- C) 96
- D) 70

Answer

Video Solution

Qn 25

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A gentleman decided to treat a few children in the following manner. He gives half of his total stock of toffees and one extra to the first child, and then the half of the remaining stock along with one extra to the second and continues giving away in this fashion. His total stock exhausts after he takes care of 5 children. How many toffees were there in his stock initially?

(TITA)

Answer

Video Solution

Qn 26

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A solution, of volume 40 litres, has dye and water in the proportion 2 : 3. Water is added to the solution to change this proportion to 2 : 5. If one-fourths of this diluted solution is taken out, how many litres of dye must be added to the remaining solution to bring the proportion back to 2 : 3?

(TITA)

Answer

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Solution

- 1) 21 ← Click to go "Back to Answer page"
- 2) D
- 3) 12
- 4) B
- 5) 36
- 6) B
- 7) A
- 8) A
- 9) C
- 10) A
- 11) 1
- 12) 20000
- 13) D
- 14) B
- 15) A
- 16) 3
- 17) C
- 18) B
- 19) A
- 20) C
- 21) A
- 22) A
- 23) C
- 24) A
- 25) 62
- 26) 8

Sol 1

Click to see "overall Solution page"

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How many 3-digit numbers are there, for which the product of their digits is more than 2 but less than 7?

(TITA)

Correct Answer: **21**

Click to go "Back to Question" →

Back to Question

Video Solution

Difficulty Level – Medium

Topic – **Number Theory**

Sol 2

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If $f(5 + x) = f(5 - x)$ for every real x and $f(x) = 0$ has four distinct real roots, then the sum of the roots is

- A) 0
- B) 40
- C) 10
- D) 20**

Difficulty Level – Medium

Topic – **Functions**

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Video Solution

Sol 3

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Veeru invested Rs 10000 at 5% simple annual interest, and exactly after two years, Joy invested Rs 8000 at 10% simple annual interest. How many years after Veeru's investment, will their balances, i.e., principal plus accumulated interest, be equal?

(TITA)

Correct Answer: **12**

Difficulty Level – Medium

Topic – CI & SI

Back to Question

Video Solution

Sol 4

A train travelled at one-thirds of its usual speed, and hence reached the destination 30 minutes after the scheduled time. On its return journey, the train initially travelled at its usual speed for 5 minutes but then stopped for 4 minutes for an emergency. The percentage by which the train must now increase its usual speed so as to reach the destination at the scheduled time, is nearest to

- A) 58
- B) 67**
- C) 50
- D) 61

Difficulty Level –  Medium

Topic – **Speed, Time & Distance**

Sol 5

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If $\log_4 5 = (\log_4 y)(\log_6 \sqrt{5})$, then y equals
(TITA)

Correct Answer: **36**

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Difficulty Level – Medium

Topic – **Logarithms**

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Video Solution

Sol 6

The number of real-valued solutions of the equation

$$2^x + 2^{-x} = 2 - (x - 2)^2$$

is

A) infinite

B) 0

C) 1

D) 2

Difficulty Level –  Hard

Topic – **Inequalities**

Back to Question

Video Solution

Sol 7

A straight road connects points A and B. Car 1 travels from A to B and Car 2 travels from B to A, both leaving at the same time. After meeting each other, they take 45 minutes and 20 minutes, respectively, to complete their journeys. If Car 1 travels at the speed of 60 km/hr, then the speed of Car 2, in km/hr, is

- A) 90
- B) 80
- C) 70
- D) 100

Difficulty Level –  Easy

Topic – **Speed, Time & Distance**

Sol 8

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Let A, B and C be three positive integers such that the sum of A and the mean of B and C is 5. In addition, the sum of B and the mean of A and C is 7. Then the sum of A and B is

- A) 6
- B) 4
- C) 7
- D) 5

Difficulty Level –  Medium

Topic – **Averages**

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Sol 9

If $x = (4096)^{7+4\sqrt{3}}$, then which of the following equals 64?

A) $\frac{x^{7/2}}{x^{4/\sqrt{3}}}$

B) $\frac{x^7}{x^{4\sqrt{3}}}$

C) $\frac{x^{7/2}}{x^{2\sqrt{3}}}$

D) $\frac{x^7}{x^{2\sqrt{3}}}$

Difficulty Level – **Hard**

Topic – **Number Theory**

Back to Question

Video Solution

Sol 10

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The mean of all 4 digit even natural numbers of the form 'aabb', where $a > 0$, is

- A) 5544
- B) 4466
- C) 4864
- D) 5050

Difficulty Level – Medium

Topic – Averages

Back to Question

Video Solution

Sol 11

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The number of distinct real roots of the equation

$$\left(x + \frac{1}{x}\right)^2 - 3\left(x + \frac{1}{x}\right) + 2 = 0 \text{ equals}$$

(TITA)

Correct Answer: **1**

Difficulty Level – Medium

Topic – Quadratic Equations

Back to Question

Video Solution

Sol 12

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A person spent Rs 50000 to purchase a desktop computer and a laptop computer. He sold the desktop at 20% profit and the laptop at 10% loss. If overall he made a 2% profit then the purchase price, in rupees, of the desktop is

(TITA)

Correct Answer: **20000**

Difficulty Level – Easy

Topic – Profit & Loss

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Video Solution

Sol 13

Among 100 students, x_1 have birthdays in January, x_2 have birthdays in February, and so on. If $x_0 = \max(x_1, x_2, \dots, x_{12})$, then the smallest possible value of x_0 is

- A) 8
- B) 10
- C) 12
- D) 9**

Difficulty Level –  Hard

Topic – **Maxima Minima**

Sol 14

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Two persons are walking beside a railway track at respective speeds of 2 and 4 km per hour in the same direction. A train came from behind them and crossed them in 90 and 100 seconds, respectively. The time, in seconds, taken by the train to cross an electric post is nearest to

- A) 87
- B) 82**
- C) 78
- D) 75

Difficulty Level –  Easy

Topic – Time, Speed & Distance

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Video Solution

Sol 15

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How many distinct positive integer-valued solutions exist to the equation

$$(x^2 + 7x + 11)^{(x^2 - 13x + 42)} = 1 ?$$

A) 6

B) 2

C) 4

D) 8

Difficulty Level – **Hard**

Topic – **Inequalities**

Back to Question

Video Solution

Sol 16

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The area of the region satisfying the inequalities

$$|x| - y \leq 1, y \geq 0, \text{ and } y \leq 1 \text{ is}$$

(TITA)

Correct Answer: **3**

Difficulty Level – Medium

Topic – **Geometry**

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Video Solution

Sol 17

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A solid right circular cone of height 27 cm is cut into 2 pieces along a plane parallel to its base at a height of 18 cm from the base. If the difference in the volume of the two pieces is 225 cc, the volume, in cc, of the original cone is

- A) 264
- B) 232
- C) 243**
- D) 256

Difficulty Level – Easy

Topic – **Geometry**

Back to Question

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Sol 18

A circle is inscribed in a rhombus with diagonals 12 cm and 16 cm. The ratio of the area of the circle to the area of the rhombus is

- A) $\frac{2\pi}{15}$
- B) $\frac{6\pi}{25}$**
- C) $\frac{3\pi}{25}$
- D) $\frac{5\pi}{18}$

Difficulty Level –  Hard

Topic – **Geometry**

Sol 19

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Leaving home at the same time, Amal reaches office at 10:15 am if he travels at 8kmph, and at 9:40 am if he travels at 15kmph. Leaving home at 9:10 am, at what speed, in kmph, must he travel so as to reach office exactly at 10:00 am?

- A) 12
- B) 11
- C) 13
- D) 14

Difficulty Level –  Medium

Topic – Time, Speed & Distance

Back to Question

Video Solution

Sol 20

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If a , b and c are positive integers such that $ab = 432$, $bc = 96$ and $c < 9$, then the smallest possible value of $a + b + c$ is

- A) 56
- B) 49
- C) 46**
- D) 59

Difficulty Level – Medium

Topic – **Number Theory**

Back to Question

Video Solution

Sol 21

If y is a negative number such that $2^{y^2 \log_3 5} = 5^{\log_2 3}$, then y equals

- A) $\log_2 \left(\frac{1}{3}\right)$
- B) $\log_2 \left(\frac{1}{5}\right)$
- C) $-\log_2 \left(\frac{1}{3}\right)$
- D) $-\log_2 \left(\frac{1}{5}\right)$

Difficulty Level – **Hard**

Topic – **Logarithms**

Back to Question

Video Solution

Sol 22

On a rectangular metal sheet of area 135 sq in, a circle is painted such that the circle touches opposite two sides. If the area of the sheet left unpainted is two-thirds of the painted area the the perimeter of the rectangle in inches is

- A) $3\sqrt{\pi} \left(5 + \frac{12}{\pi} \right)$
- B) $4\sqrt{\pi} \left(3 + \frac{12}{\pi} \right)$
- C) $5\sqrt{\pi} \left(3 + \frac{12}{\pi} \right)$
- D) $3\sqrt{\pi} \left(\frac{5}{2} + \frac{6}{\pi} \right)$

Difficulty Level – Medium

Topic – Geometry

Sol 23

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In a group of people, 28% of the members are young while the rest are old. If 65% of the members are literates, and 25% of the literates are young, then the percentage of old people among the illiterates is nearest to

- A) 59
- B) 62
- C) 66**
- D) 55

Difficulty Level – Easy

Topic – Percentages

Back to Question

Video Solution

Sol 24

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An alloy is prepared by mixing metals A, B, C in the proportion 3 : 4 : 7 by volume. Weights of the same volume of metals A, B, C are in the ratio 5 : 2 : 6. In 130 kg of the alloy, the weight, in kg, of the metal C is

- A) 84
- B) 48
- C) 96
- D) 70

Difficulty Level – Easy

Topic – Mixtures

Back to Question

Video Solution

Sol 25

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A gentleman decided to treat a few children in the following manner. He gives half of his total stock of toffees and one extra to the first child, and then the half of the remaining stock along with one extra to the second and continues giving away in this fashion. His total stock exhausts after he takes care of 5 children. How many toffees were there in his stock initially?

(TITA)

Correct Answer: **62**

Difficulty Level – **Hard**

Topic – **Linear Equations**

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Video Solution

Sol 26

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A solution, of volume 40 litres, has dye and water in the proportion 2 : 3. Water is added to the solution to change this proportion to 2 : 5. If one-fourths of this diluted solution is taken out, how many litres of dye must be added to the remaining solution to bring the proportion back to 2 : 3?

(TITA)

Correct Answer: **8**

Difficulty Level – **Medium**

Topic – **Ratio and Proportion**

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