CAT 2019 Slot 1 – Quantitative Ability
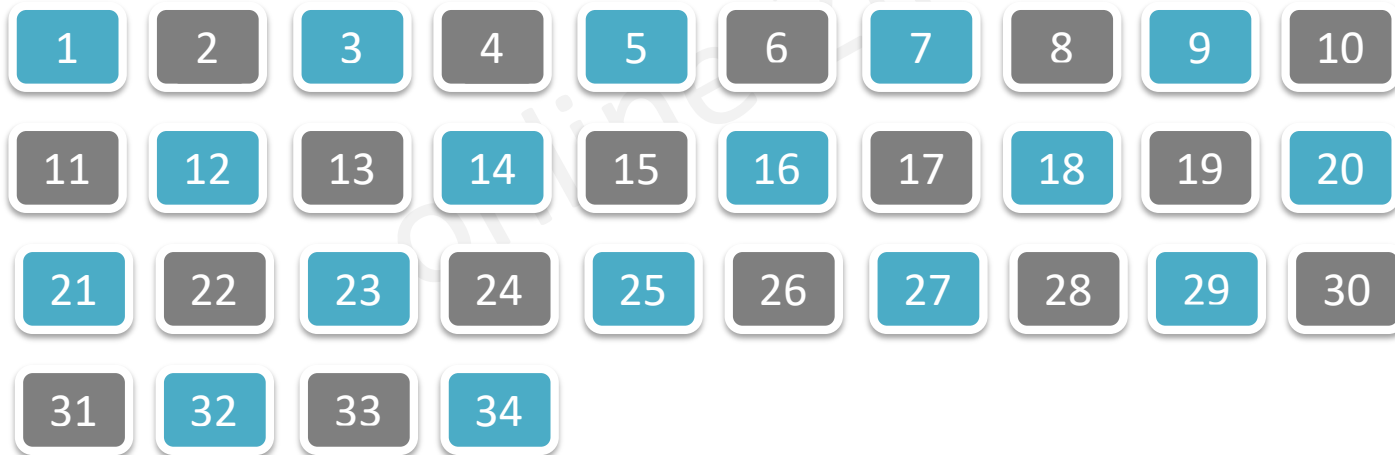
Number of Questions: 34

Duration: 1 hour

Marking scheme: +3(for correct answer) & -1(for wrong answer)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34						

How to take value from this PDF?

- You can take this is as a sectional test. Or you can just solve these questions one-at-a-time regardless of any time limit. Either way, we want you to attempt the question first, before looking at the solution.

- A detailed video-solution will be provided for each question after few months.

- For advice on CAT preparation, various test-taking strategies and MBA in general, click me.

How to use this PDF?

- Click on the blue colored "Answers" tab to see the correct answer to the question.

- Similarly, you can navigate back to the question from the solutions by clicking on the "Back to the Question" tab.

- You can find many CAT level questions from 2IIM's Question Bank, that too free of cost. Click on questions.2iim.com (present at the bottom of each slide) to know more.

Question 1

In a class, 60% of the students are girls and the rest are boys. There are 30 more girls than boys. If 68% of the students, including 30 boys, pass an examination, the percentage of the girls who do not pass is

[TITA]

Question 2

If $(5.55)^x = (0.555)^y = 1000$, then the value of $\frac{1}{x} - \frac{1}{y}$ is

A) 1

B) $\frac{1}{3}$

C) $\frac{2}{3}$

D) 3

Answer

With rectangular axes of coordinates, the number of paths from (1,1) to (8,10) via (4,6), where each step from any point (x, y) is either to (x, y+1) or to (x+1, y), is

[TITA]

Answer

Question 4

A club has 256 members of whom 144 can play football, 123 can play tennis, and 132 can play cricket. Moreover, 58 members can play both football and tennis, 25 can play both cricket and tennis, while 63 can play both football and cricket. If every member can play at least one game, then the number of members who can play only tennis is

A) 32

B) 43

C) 38

D) 45

Answer

Question 5

In a circle of radius 11 cm, CD is a diameter and AB is a chord of length 20.5 cm. If AB and CD intersect at a point E inside the circle and CE has length 7 cm, then the difference of the lengths of BE and AE, in cm, is

A) 1.5

B) 3.5

C) 0.5

D) 2.5

Answer

Question 6

Meena scores 40% in an examination and after review, even though her score is increased by 50%, she fails by 35 marks. If her post-review score is increased by 20%, she will have 7 marks more than the passing score. The percentage score needed for passing the examination is

A) 75

B) 80

C) 60

D) 70

Answer

Question 7

Corners are cut off from an equilateral triangle T to produce a regular hexagon H. Then, the ratio of the area of H to the area of T is

A) 5 : 6

B) 3 : 4

C) 2 : 3

D) 4 : 5

Answer

Question 8

Let T be the triangle formed by the straight line 3x + 5y - 45 = 0 and the coordinate axes. Let the circumcircle of T have radius of length L, measured in the same unit as the coordinate axes. Then, the integer closest to L is

[TITA]

Answer

Question 9

For any positive integer n, let f(n) = n(n + 1) if n is even, and

f(n) = n + 3 if n is odd. If m is a positive integer such that

8f(m + 1) - f(m) = 2, then m equals

[TITA]

Answer

Question 10

If the population of a town is p in the beginning of any year then it becomes 3+2p in the beginning of the next year. If the population in the beginning of 2019 is 1000, then the population in the beginning of 2034 will be

A) $(1003)^{15}$ + 6

B) $(997)^{15}$ - 3

C) $(1003)2^{15}$ - 3

D) $(997)2^{14}$ + 3

Answer

Question 11

A person invested a total amount of Rs 15 lakh. A part of it was invested in a fixed deposit earning 6% annual interest, and the remaining amount was invested in two other deposits in the ratio 2 : 1, earning annual interest at the rates of 4% and 3%, respectively. If the total annual interest income is Rs 76000 then the amount (in Rs lakh) invested in the fixed deposit was

[TITA]

Answer

Question 12

The product of two positive numbers is 616. If the ratio of the difference of their cubes to the cube of their difference is 157:3, then the sum of the two numbers is

A) 50

B) 85

C) 95

D) 58

Answer

Question 13

On selling a pen at 5% loss and a book at 15% gain, Karim gains Rs. 7. If he sells the pen at 5% gain and the book at 10% gain, he gains Rs. 13. What is the cost price of the book in Rupees?

A) 80

B) 85

C) 100

D) 95

Answer

Question 14

Two cars travel the same distance starting at 10:00 am and 11:00 am, respectively, on the same day. They reach their common destination at the same point of time. If the first car travelled for at least 6 hours, then the highest possible value of the percentage by which the speed of the second car could exceed that of the first car is

A) 20

B) 10

C) 30

D) 25

Answer

Question 15

At their usual efficiency levels, A and B together finish a task in 12 days. If A had worked half as efficiently as she usually does, and B had worked thrice as efficiently as he usually does, the task would have been completed in 9 days. How many days would A take to finish the task if she works alone at her usual efficiency?

A) 18

B) 12

C) 24

D) 36

Answer

Question 16

If $a_1 + a_2 + a_3 + \ldots + a_n = 3(2^{n+1} - 2)$, for every $n \geq 1$, then a_{11} equals

[TITA]

Answer

Question 17

The number of the real roots of the equation

$2\cos(x(x+1)) = 2^x + 2^{-x}$ is

A) 0

B) Infinite

C) 1

D) 2

Answer

Question 18

The income of Amala is 20% more than that of Bimala and 20% less than that of Kamala. If Kamala's income goes down by 4% and Bimala's goes up by 10%, then the percentage by which Kamala's income would exceed Bimala's is nearest to

A) 28

B) 29

C) 31

D) 32

Answer

Question 19

In a race of three horses, the first beat the second by 11 metres and the third by 90 metres. If the second beat the third by 80 metres, what was the length, in metres, of the racecourse?

[TITA]

Answer

Question 20

If a_1, a_2, ... are in A.P , then , $\dfrac{1}{\sqrt{a_1}+\sqrt{a_2}}$ + $\dfrac{1}{\sqrt{a_2}+\sqrt{a_3}}$ + ... + $\dfrac{1}{\sqrt{a_n}+\sqrt{a_{n+1}}}$

is equal to

A) $\dfrac{n}{\sqrt{a_1}+\sqrt{a_{n+1}}}$

B) $\dfrac{n-1}{\sqrt{a_1}+\sqrt{a_n}}$

C) $\dfrac{n}{\sqrt{a_1}-\sqrt{a_{n+1}}}$

D) $\dfrac{n-1}{\sqrt{a_1}+\sqrt{a_{n-1}}}$

Answer

Question 21

AB is a diameter of a circle of radius 5 cm. Let P and Q be two points on the circle so that the length of PB is 6 cm, and the length of AP is twice that of AQ. Then the length, in cm, of QB is nearest to

A) 8.5

B) 9.3

C) 9.1

D) 7.8

Answer

Question 22

One can use three different transports which move at 10, 20, and 30 kmph, respectively. To reach from A to B, Amal took each mode of transport 1/3 of his total journey time, while Bimal took each mode of transport 1/3 of the total distance. The percentage by which Bimal's travel time exceeds Amal's travel time is nearest to

A) 22

B) 19

C) 21

D) 20

Answer

Question 23

Amala, Bina, and Gouri invest money in the ratio 3 : 4 : 5 in fixed deposits having respective annual interest rates in the ratio 6 : 5 : 4. What is their total interest income (in Rs) after a year, if Bina's interest income exceeds Amala's by Rs 250?

A) 7000

B) 6000

C) 6350

D) 7250

Answer

Question 24

If m and n are integers such that $(\sqrt{2})^{19}\ 3^4\ 4^2\ 9^m\ 8^n = 3^n\ 16^m\ (\sqrt[4]{64}\ )$ then m is

A) -16

B) -24

C) -12

D) -20

Answer

Question 25

A chemist mixes two liquids 1 and 2. One litre of liquid 1 weighs 1 kg and one litre of liquid 2 weighs 800 gm. If half litre of the mixture weighs 480 gm, then the percentage of liquid 1 in the mixture, in terms of volume, is

A) 70

B) 85

C) 80

D) 75

Answer

Question 26

Let x and y be positive real numbers such that

$\log_5 (x + y) + \log_5 (x − y) = 3$, and $\log_2 y − \log_2 x = 1 − \log_2 3$.

Then xy equals

A) 25

B) 150

C) 250

D) 100

Answer

Question 27

If the rectangular faces of a brick have their diagonals in the ratio
$3 : 2\sqrt{3} : \sqrt{15}$, then the ratio of the length of the shortest edge of the
brick to that of its longest edge is

A) $1 : \sqrt{3}$

B) $2 : \sqrt{5}$

C) $\sqrt{2} : \sqrt{3}$

D) $\sqrt{3} : 2$

Answer

Question 28

Let S be the set of all points (x, y) in the x-y plane such that $|x| + |y| \leq 2$ and $|x| \geq 1$. Then, the area, in square units, of the region represented by S equals

[TITA]

Answer

The number of solutions of the equation $|x|(6x^2+1) = 5x^2$ is

[TITA]

Answer

Three men and eight machines can finish a job in half the time taken by three machines and eight men to finish the same job. If two machines can finish the job in 13 days, then how many men can finish the job in 13 days?

[TITA]

Answer

Question 31

The product of the distinct roots of $|x^2 - x - 6| = x + 2$ is

A) -4

B) −16

C) -8

D) -24

Answer

Question 32

The wheels of bicycles A and B have radii 30 cm and 40 cm, respectively. While traveling a certain distance, each wheel of A required 5000 more revolutions than each wheel of B. If bicycle B traveled this distance in 45 minutes, then its speed, in km per hour, was

A) 18π

B) 16π

C) 12π

D) 14π

Answer

Question 33

Consider a function $f(x+y) = f(x) f(y)$ where x,y are positive integers, and $f(1) = 2$. If $f(a+1) + f(a+2) + \ldots + f(a+n) = 16 (2^n-1)$ then a is equal to.

[TITA]

Answer

Question 34

Ramesh and Gautam are among 22 students who write an examination. Ramesh scores 82.5. The average score of the 21 students other than Gautam is 62. The average score of all the 22 students is one more than the average score of the 21 students other than Ramesh. The score of Gautam is

A) 51

B) 53

C) 49

D) 48

Answer

Done with the Questions! Take a break☺

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- Practice, practice and then practice some more. 2IIM's Question bank is generally a must-solve on all serious CAT aspirants' checklist. Click this to check it out!

Solutions

online.2IIM.com

1) 20
2) Option B
3) 3920
4) Option B
5) Option C
6) Option D
7) Option C
8) 9
9) 10
10) Option C

11) 9
12) Option A
13) Option A
14) Option A
15) Option A
16) 6144
17) Option C
18) Option C
19) 880
20) Option A

21) Option C
22) Option A
23) Option D
24) Option C
25) Option C
26) Option B
27) Option A
28) 2
29) 5
30) 13

31) Option B
32) Option B
33) 3
34) Option A

Sol 1

In a class, 60% of the students are girls and the rest are boys. There are 30 more girls than boys. If 68% of the students, including 30 boys, pass an examination, the percentage of the girls who do not pass is

[TITA]

Answer: **20**

Back to Question

Difficulty Level – Medium

Topic – Percentages

Sol 2

If $(5.55)^x = (0.555)^y = 1000$, then the value of $\frac{1}{x} - \frac{1}{y}$ is

A) 1

B) $\frac{1}{3}$

C) $\frac{2}{3}$

D) 3

Back to Question

Difficulty Level – Hard

Topic – Exponents

Sol 3

With rectangular axes of coordinates, the number of paths from (1,1) to (8,10) via (4,6), where each step from any point (x, y) is either to (x, y+1) or to (x+1, y), is

[TITA]

Answer : **3920**

Difficulty Level – Hard

Topic – Co- geometry

Sol 4

A club has 256 members of whom 144 can play football, 123 can play tennis, and 132 can play cricket. Moreover, 58 members can play both football and tennis, 25 can play both cricket and tennis, while 63 can play both football and cricket. If every member can play at least one game, then the number of members who can play only tennis is

A) 32

B) **43**

C) 38

D) 45

Difficulty Level – Medium

Topic – Set theory

Sol 5

In a circle of radius 11 cm, CD is a diameter and AB is a chord of length 20.5 cm. If AB and CD intersect at a point E inside the circle and CE has length 7 cm, then the difference of the lengths of BE and AE, in cm, is

A) 1.5

B) 3.5

C) **0.5**

D) 2.5

Difficulty Level – Medium

Topic – Circles

Back to Question

Sol 6

Meena scores 40% in an examination and after review, even though her score is increased by 50%, she fails by 35 marks. If her post-review score is increased by 20%, she will have 7 marks more than the passing score. The percentage score needed for passing the examination is

A) 75

B) 80

C) 60

D) **70**

Difficulty Level – Easy

Topic – Percentages

Sol 7

Corners are cut off from an equilateral triangle T to produce a regular hexagon H. Then, the ratio of the area of H to the area of T is

A) 5 : 6

B) 3 : 4

C) **2 : 3**

D) 4 : 5

Difficulty Level – Easy

Topic – Mensuration

Sol 8

Let T be the triangle formed by the straight line $3x + 5y - 45 = 0$ and the coordinate axes. Let the circumcircle of T have radius of length L, measured in the same unit as the coordinate axes. Then, the integer closest to L is

[TITA]

Answer : **9**

Difficulty Level – Hard

Topic – Co-geometry

Sol 9

For any positive integer n, let f(n) = n(n + 1) if n is even, and f(n) = n + 3 if n is odd. If m is a positive integer such that 8f(m + 1) - f(m) = 2, then m equals

[TITA]

Answer : **10**

Difficulty Level – Medium

Topic – Functions

Sol 10

If the population of a town is p in the beginning of any year then it becomes 3+2p in the beginning of the next year. If the population in the beginning of 2019 is 1000, then the population in the beginning of 2034 will be

A) $(1003)^{15} + 6$

B) $(997)^{15} - 3$

C) **$(1003)2^{15} - 3$**

D) $(997)2^{14} + 3$

Difficulty Level – Medium

Topic – Progressions

Sol 11

A person invested a total amount of Rs 15 lakh. A part of it was invested in a fixed deposit earning 6% annual interest, and the remaining amount was invested in two other deposits in the ratio 2 : 1, earning annual interest at the rates of 4% and 3%, respectively. If the total annual interest income is Rs 76000 then the amount (in Rs lakh) invested in the fixed deposit was

[TITA]

Answer : **9**

Difficulty Level – Easy

Topic – Simple interest

Sol 12

The product of two positive numbers is 616. If the ratio of the difference of their cubes to the cube of their difference is 157:3, then the sum of the two numbers is

A) **50**

B) 85

C) 95

D) 58

Difficulty Level – Medium

Topic – Number theory

Sol 13

On selling a pen at 5% loss and a book at 15% gain, Karim gains Rs. 7. If he sells the pen at 5% gain and the book at 10% gain, he gains Rs. 13. What is the cost price of the book in Rupees?

A) **80**

B) 85

C) 100

D) 95

Difficulty Level – Easy

Topic – Profit & Loss

Sol 14

Two cars travel the same distance starting at 10:00 am and 11:00 am, respectively, on the same day. They reach their common destination at the same point of time. If the first car travelled for at least 6 hours, then the highest possible value of the percentage by which the speed of the second car could exceed that of the first car is

A) **20**

B) 10

C) 30

D) 25

Difficulty Level – Medium

Topic – Speed, time and distance

Sol 15

At their usual efficiency levels, A and B together finish a task in 12 days. If A had worked half as efficiently as she usually does, and B had worked thrice as efficiently as he usually does, the task would have been completed in 9 days. How many days would A take to finish the task if she works alone at her usual efficiency?

A) **18**

B) 12

C) 24

D) 36

Back to Question

Difficulty Level – Medium

Topic – Work,time

If $a_1 + a_2 + a_3 + ... + a_n = 3(2^{n+1} - 2)$, for every $n \geq 1$, then a_{11} equals

[TITA]

Answer : **6144**

Difficulty Level – Medium

Topic – Progressions

The number of the real roots of the equation $2\cos(x(x+1)) = 2^x + 2^{-x}$ is

A) 0

B) Infinite

C) **1**

D) 2

Back to Question

Difficulty Level – Easy

Topic – Trigonometry

Sol 18

The income of Amala is 20% more than that of Bimala and 20% less than that of Kamala. If Kamala's income goes down by 4% and Bimala's goes up by 10%, then the percentage by which Kamala's income would exceed Bimala's is nearest to

A) 28

B) 29

C) **31**

D) 32

Back to Question

Difficulty Level – Medium

Topic – Percentages

Sol 19

In a race of three horses, the first beat the second by 11 metres and the third by 90 metres. If the second beat the third by 80 metres, what was the length, in metres, of the racecourse?

[TITA]

Answer : **880**

Difficulty Level – Easy

Topic – Races

Sol 20

If a_1, a_2, ….. are in A.P , then , $\dfrac{1}{\sqrt{a_1}+\sqrt{a_2}}$ + $\dfrac{1}{\sqrt{a_2}+\sqrt{a_3}}$ + …… + $\dfrac{1}{\sqrt{a_n}+\sqrt{a_{n+1}}}$ is equal to

A) $\dfrac{\boldsymbol{n}}{\sqrt{\boldsymbol{a_1}}+\sqrt{\boldsymbol{a_{n+1}}}}$

B) $\dfrac{n-1}{\sqrt{a_1}+\sqrt{a_n}}$

C) $\dfrac{n}{\sqrt{a_1}-\sqrt{a_{n+1}}}$

D) $\dfrac{n-1}{\sqrt{a_1}+\sqrt{a_{n-1}}}$

Back to Question

Difficulty Level – Hard

Topic – Progressions

Sol 21

AB is a diameter of a circle of radius 5 cm. Let P and Q be two points on the circle so that the length of PB is 6 cm, and the length of AP is twice that of AQ. Then the length, in cm, of QB is nearest to

A) 8.5

B) 9.3

C) **9.1**

D) 7.8

Difficulty Level – Medium

Topic – Geometry

Sol 22

One can use three different transports which move at 10, 20, and 30 kmph, respectively. To reach from A to B, Amal took each mode of transport 1/3 of his total journey time, while Bimal took each mode of transport 1/3 of the total distance. The percentage by which Bimal's travel time exceeds Amal's travel time is nearest to

A) **22**

B) 19

C) 21

D) 20

Difficulty Level – Medium

Topic – Speed, time and distance

Sol 23

Amala, Bina, and Gouri invest money in the ratio 3 : 4 : 5 in fixed deposits having respective annual interest rates in the ratio 6 : 5 : 4. What is their total interest income (in Rs) after a year, if Bina's interest income exceeds Amala's by Rs 250?

A) 7000

B) 6000

C) 6350

D) **7250**

Back to Question

Difficulty Level – Easy

Topic – Ratios and proportions

Sol 24

If m and n are integers such that $(\sqrt{2})^{19}\, 3^4\, 4^2\, 9^m\, 8^n = 3^n\, 16^m\, (\sqrt[4]{64}\ )$ then m is

A) -16

B) -24

C) **-12**

D) -20

Difficulty Level – Medium

Topic – Exponents

Sol 25

A chemist mixes two liquids 1 and 2. One litre of liquid 1 weighs 1 kg and one litre of liquid 2 weighs 800 gm. If half litre of the mixture weighs 480 gm, then the percentage of liquid 1 in the mixture, in terms of volume, is

A) 70

B) 85

C) **80**

D) 75

Difficulty Level – Medium

Topic – Mixtures

Sol 26

Let x and y be positive real numbers such that $\log_5 (x + y) + \log_5 (x - y) = 3$, and $\log_2 y - \log_2 x = 1 - \log_2 3$. Then xy equals

A) 25

B) **150**

C) 250

D) 100

Difficulty Level – Medium

Topic – Logarithms

Sol 27

If the rectangular faces of a brick have their diagonals in the ratio

3 : 2√3 : √15, then the ratio of the length of the shortest edge of the brick to

that of its longest edge is

A) **1 : √3**

B) 2 : √5

C) √2 : √3

D) $\sqrt{3}$: 2

Difficulty Level – Medium

Topic – Mensuration

Sol 28

Let S be the set of all points (x, y) in the x-y plane such that $|x| + |y| \leq 2$ and $|x| \geq 1$. Then, the area, in square units, of the region represented by S equals

[TITA]

Answer : **2**

Difficulty Level – Medium

Topic – Co - Geometry

Actual CAT 2019 Question Paper

The number of solutions of the equation $|x|(6x^2+1) = 5x^2$ is

[TITA]

Answer : **5**

Difficulty Level – Medium

Topic – Quadratic equations

Sol 30

Three men and eight machines can finish a job in half the time taken by three machines and eight men to finish the same job. If two machines can finish the job in 13 days, then how many men can finish the job in 13 days?

[TITA]

Answer : **13**

Difficulty Level – Medium

Topic – Work,time

Sol 31

The product of the distinct roots of $|x^2 - x - 6| = x + 2$ is

A) -4

B) **−16**

C) -8

D) -24

Difficulty Level – Medium

Topic – Quadratic equations

Actual CAT 2019 Question Paper

Sol 32

The wheels of bicycles A and B have radii 30 cm and 40 cm, respectively. While traveling a certain distance, each wheel of A required 5000 more revolutions than each wheel of B. If bicycle B traveled this distance in 45 minutes, then its speed, in km per hour, was

A) 18π

B) **16π**

C) 12π

D) 14π

Difficulty Level – Medium

Topic – Speed,time & distance

Actual CAT 2019 Question Paper

Sol 33

Consider a function $f(x+y) = f(x) f(y)$ where x,y are positive integers, and $f(1) = 2$. If $f(a+1) + f(a+2) + ….. + f(a+n) = 16(2^n-1)$ then a is equal to.

[TITA]

Answer : **3**

Difficulty Level – Medium

Topic – Functions

Sol 34

Ramesh and Gautam are among 22 students who write an examination. Ramesh scores 82.5. The average score of the 21 students other than Gautam is 62. The average score of all the 22 students is one more than the average score of the 21 students other than Ramesh. The score of Gautam is

A) **51**

B) 53

C) 49

D) 48

Difficulty Level – Medium

Topic – Averages

Done with the answers too!

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