

CAT 2020 Question Paper Slot 3 | CAT Quant

Q.1 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

1: A

Q.2 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 ?

2: 6

Q.3 Let $\log_a 30 = A$, $\log_a(5/3) = B$ and $\log_2 a = (1/3)$ then $\log_3 a$ equals

- A. $2/(A+B-3)$
- B. $(A+B-3)/2$
- C. $[(A+B)/2] - 3$
- D. $[2/(A+B)] - 3$

3: A

Q.4 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?

4: 40

Q.5 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

5: D

Q.6 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

6: 18

Q.7 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

7: A

Q.8 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

8: A

Q.9 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

9: D

Q.10 $(2 \times 4 \times 8 \times 16) / (\log_2 4)^2 (\log_4 8)^3 (\log_8 16)^4$ equals to:

10: 24

Q.11 If a, b, c are non-zero and $14a = 36b = 84c$, then $6b(1/c - 1/a)$ equals to:

11: 3

Q.12 Let m and n be natural numbers such that n is even and $0.2 < m/20, n/m, n/11 < 0.5$. Then $m - 2n$ equals

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

12: C

Q.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

13: C

Q.14 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

14: D

Q.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. $k = 2$

15: C

Q.16 How many integers in the set $\{100, 101, 102, \dots, 999\}$ have at least one digit repeated?

16: 252

Q.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

17: C

Q.18 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%

18: B

Q.19 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. $14\pi/3$

B. $123\pi/7$

C. $205\pi/9$

D. $12\pi/5$

19: B

Q.20 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

20: 16000

Q.21 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

21: B

Q.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

22: B

Q.23 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

23: B

Q.24 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

24: 28

Q.25 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

25: C

Q.26 How many pairs (a,b) of positive integers are there such that $a \leq b$ and $ab = 4^{2017}$ is equal to:

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

26: B