Mock Test Papers

Mock Test Paper–1
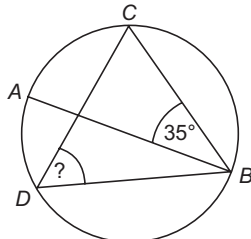
Mock Test Paper–2

Mock Test Paper–3

The following section contains 3 mock tests based on the CAT 2011 pattern of QA. As mentioned elsewhere in the book, the papers varied greatly in difficulty levels—from the ridiculously easy to the tough. However, one thing common about the trend of difficulty in the papers was that after the initial few days, the quality of questions in the tests became more and more difficult—and became quite like the CAT papers of the past years. In the coming years, the CAT is expected to retain the degree of difficulty normally associated with the exam over the past decade and more and hence the tests I am providing are on the tougher side.

- You should take these tests only after you are through with your preparations of the entire book.
- Each question in these tests carries a weightage of +4 and –1.
- Take each of these tests in a limited time frame of 45 minutes (adhere strictly to the time limits).
- A net score of anywhere above 40 (with a maximum of 2 errors) in these tests would give you a high 99+ percentile in the exam. Note that in case you score more than 40 but have made 5–6 errors in doing so, your percentile would drop to around 90. Hence, the higher your percentage accuracy, the more the exam is going to reward you.
- Similarly:
  30+ with 100% accuracy can expect a percentile of 95+.
  30+ with 4-5 errors would give around 80 percentile.

For more practice and mock tests log on to www.mindworkzz.in.

1. Works W1 and W2 are done by Priyanka and Sanjana. Priyanka takes 80% more time to do the work W1 alone than she takes to do it together with Sanjana. How much percent more time Sanjana will take to do the work W2 alone than she takes to do it together with Priyanka?
   (1) 125%   (2) 180%
   (3) 20%   (4) 80%

2. The value of the expression $(x^2 - x + 1)/(x - 1)$ cannot lie between?
   (1) (1, 3)   (2) (−1, −3)
   (3) (−1, 3)   (4) (−1, 2)

3. What is the maximum value of the function $y = \min(12 - x, 8 + x)$?
   (1) 12   (2) 10
   (3) 11   (4) 8

4. How many integral values for the set (x, y) would exist for the expression $|x - 4| + |y - 2| + = 5$?
   (1) 16   (2) 14
   (3) 12   (4) 20

5. A book contains 20 chapters. Each chapter has a different number of pages (each under 21). The first chapter starts on page 1 and each chapter starts on a new page. What is the largest possible number of chapters that can begin on odd page numbers?
   (1) 19   (2) 15
   (3) 10   (4) 11

6. How many even three-digit integers have the property that their digits, read left to right, are not in a strictly increasing order?
   (1) 420   (2) 416
   (3) 412   (4) 422

7. An unlimited number of coupons bearing the digits 1, 2 and 3 are available. What is the possible number of ways of choosing 4 of these coupons so that they can not be used to make the number 123?

   (1) 15   (2) 18
   (3) 21   (4) 24

8. How many real solutions exist for the equation $3^x - 2x - 1 = 0$?
   (1) 2   (2) 3
   (3) 5   (4) 1

9. The number of rational points $x = p/5$ satisfying $\log(2x - 3/4)/\log x > 2$, where p is an integer and $gcd(p, 5) = 1$ is/are
   (1) 2   (2) 3
   (3) 5   (4) 1

10. Two schools play against each other in a grass court tennis tournament. Each school is represented by 8 students. Every game is a doubles game, and every possible pair from the first school must play one game against every possible pair from the second school. How many games will each student play?
    (1) 196   (2) 180
    (3) 192   (4) 164

11. Consider the set $T_x = \{x, x + 1, x + 2, x + 3, x + 4, x + 5\}$. For $x = 1, 2, 3, 4 \ldots 999$. How many of these sets do not contain any 7 or any integral multiple of 7?
    (1) 121   (2) 143
    (3) 144   (4) 145

12. In the figure below you can see points A, B, C, D on a circle. Chord AB is a diameter of this circle. The measure of angle ABC is 35°. The measure of angle BDC is:

(1) 35°   (2) 45°

(3) 55°   (4) 60°

13. There are two arithmetic progressions, A_1 and A_2, whose first terms are 3 and 5 respectively and whose common differences are 6 and 8 respectively. How many terms of the series are common in the first n terms of A_1 and A_2, if the sum of the nth terms of A_1 and A_2 is equal to 6000?

     (1) 101   (2) 105

     (3) 107   (4) 111

14. Shaurya Sharma travels from Delhi to Lucknow at a speed of 100 Kmph and returns to Delhi at a speed of 50 Kmph. He again leaves for Lucknow immediately at a speed of 30 Kmph and goes back to Delhi at a speed of 60 Kmph. What is his average speed for the entire journey?

     (1) 54 kmph   (2) 48 kmph

     (3) 56 kmph   (4) 50 kmph

15. At 9 PM, Divya is driving her car at 100 km/h. At this velocity she has enough petrol to cover a distance of 80 km. Unfortunately the nearest petrol pump is 100 km away. The amount of petrol her car uses per km is proportional to the velocity of the car. What is the earliest time that Divya can arrive at the petrol pump?

     (1) 10:12 pm   (2) 10:15 pm

     (3) 10:20 pm   (4) 10:25 pm

16. The number y is defined as the sum of the digits of the number x, and z as the sum of the digits of the number y. Let 'A' be defined as the number of natural numbers x which satisfy the equation $x + y + z = 60$ and let 'B' be defined as the number of natural numbers x which satisfy the equation $x + y + z = 84$. Which of the following statements about A and B is/are correct?

     (i) $A > B$ (ii) $A < B$

     (iii) $A = B$ (iv) $A + B = 6$

(1) i & iv only   (2) ii & iv only

(3) iii only   (4) iii & iv only

17. The letters of the word HASTE are written in all possible orders and these words are written out as in dictionary. Then the dictionary rank of the word HEATS is:

     (1) 52   (2) 54

     (3) 56   (4) 58

18. Problems A, B and C were posed in a mathematical contest. 25 competitors solved at least one of the three. Amongst those who did not solve A, twice as many solved B as C. The number solving only A was one more than the number solving A and at least one other. The number solving just A equalled the number solving just B plus the number solving just C. How many solved just C?

     (1) 2   (2) 4

     (3) 6   (4) can not be determined

19. x, y are integers belonging to {1, 2, 3, 4, 5, 6, 7, 8, 9 … 15}. How many possible ratios of x/y can you get such that x/y is an integer?

     (1) 22   (2) 40

     (3) 42   (4) 44

20. Five friends Amit, Arun, Abhishek, Aishwarya and Azad buy lottery tickets having numbers 2, 4, 6, 8 and 10 respectively. Arun exchanges his ticket with Abhishek, Abhishek with Aishwarya, Aishwarya with Azad and Azad with Arun. Amit does not exchange his ticket. For three consecutive exchanges, the difference between the ticket numbers of two particular persons is constant at 2. After the fourth exchange, the difference in their ticket numbers will be

     (1) 1   (2) 2

     (3) 4   (4) Cannot be determined

Space for Rough Work

ANSWER KEY

1. (1)	2. (3)	3. (2)	4. (4)
5. (2)	6. (2)	7. (3)	8. (1)
9. (2)	10. (1)	11. (2)	12. (3)
13. (3)	14. (4)	15. (2)	16. (4)
17. (3)	18. (1)	19. (4)	20. (2)

Solutions and Shortcuts

Solution 1: Level of Difficulty (2)

Let p be the amount of work Priyanka can do per day and s be amount of work Sanjana can do per day. According to the given statement ... $((w1/p) – (w1/(p + s)))/(w1/(p + s)) = 0.8$ this gives $s = 0.8p$, what we were asked is, $((w2/s) – (w2/(p + s)))/(w2/(p + s))$ substituting $s = 0.8p$, we get the required value as 1.25 i.e. 125%. Hence, choice (1) is the right answer.

Solution 2: Level of Difficulty (3)

The expression needs to be evaluated at different values of x and we can easily see that at $x = 0$, the value of the function becomes $–1$. Further at $x = 0.5$ we can find that the value is $–3/2$. So we can understand that the value of the function is reducing when we move to the right of 0. It can also be seen that to the left of 0 also there will be a drop in the value of the function. For instance at $x = –0.1$ also the value of the function will be less than $–1$. So obviously the function is reaching a kind of a maximum at $–1$ and is not going beyond that when the range of values are in this range.

It can be observed that after $x = 1$, the function will become positive. At $x = 1.1$ it can be seen that the value of the function would become around 10-11. As you would increase the value of x beyond 1, 1 the function would reduce in value. Also, it can be seen that after $x = 1$, the funtion would achieve its minimum value at $x = 2 \to$ where its value would be 3. After 2 the value would start increasing. Hence, the value of the function cannot be between $–1$ to $+3$. Hence, option 3 is the correct answer.

Solution 3: Level of Difficulty (1)

Equate $12 – x = 8 + x$ to give you the intersection point between the two lines $12 – x$ and $8 + x$. The intersection occurs at a value of x as 2. It can be visualized by plotting both these lines that the maximum value of the given function would occur at $x = 2$. Hence, the correct answer would be 10.

Solution 4: Level of Difficulty (2)

Solutions would exist for the following structures of making the value of 5: $0 + 5 \to$ This would happen if we take the value of x as 4 and y can take the values of 7 or $–3$. Hence, there would be 2 sets of integral (x, y) values giving us $0 + 5 = 5$
$1 + 4 \to (5, 6), (5, –2), (3, 6), (3, –2) \to$ four solutions
$2 + 3 \to$ four possibilities again
$3 + 2 \to$ four possibilities again

$4 + 1 \to$ four possibilities again
$5 + 0 \to$ 2 possibilities

Solution to Question 5: Level of Difficulty (2)

There would be 10 chapters with even number of pages. Place them to start with—each of them would start on an odd numbered page. After that start to place the chapters with an odd number of pages—the first one would start on an odd numbered page, the second on an even numbered page, the third on an odd numbered page and so on. Thus there would be $10 + 5 = 15$ chapters out of 20 which can at the maximum start on an odd numbered page. Hence, option 2 is correct.

Solution to Question 6: Level of Difficulty (2)

For this question, you would have to count the actual number of numbers. In the hundreds, the first numbers you would find would be in the 120s. The first numbers are 124, 126, 128, 134, 136, 138, 146, 148, 156, 158, 168, 178.

In the 200s, the values would be 234, 236, 238, 246, 248, 256, 258, 268, 278

In the 300s the values would be 346, 348, 356, 358, 368, 378

In the 400s the values would be 456, 458, 468, 478

In the 500s there would be only 2 values.

1 value in the 600s and no value after that. Hence 34 values. But in all there are 450 even three digit numbers starting from 100, 102, 104 …998. Hence, the required answer is $450 – 34 = 416$.

Solution 7: Level of Difficulty (2)

Each of the 3 places can take 3 letters $\Rightarrow 27$. But we don't want the combination $(1, 2, 3) \Rightarrow 3! = 6$ are out $\Rightarrow 27 – 6 = 21$.

Solution 8: Level of Difficulty (3)

It can be seen by plotting the graph of this expression that the function $y = 3^x – 2x – 1$ would cut the x axis twice. Hence, the equation would have 2 real solutions.

Solution 9: Level of Difficulty (3)

$\log(2x – 3/4) > 2\log x$ solving we get 2 cases:

Case 1:   When $x > 1 \Rightarrow (2x – 3/4) > x^2$.

Case 2:   When $x < 1 \Rightarrow (2x – 3/4) < x^2$

Solving these inequalities we get: x lies in $(3/8, 1/2) \cup (1, 3/2)$ viz. $(0.375, 0.5) \cup (1, 1.5)$

In these ranges we have two independent values which could be expressed as $p/5$ viz. $0.4 = 2/5$ and $1.2 = 6/5$. Since in both the cases, p is co prime with 5, we can say that both these cases satisfy the conditional requirements. Hence, choice (2) is the right answer.

Solution 10: Level of Difficulty (2)

Total matches being played $= 8C2 * 8C2 = 28^2 = 784$. Thus, a total of $784 \times 4 = 3136$ people are part of these 784 matches. Each of the 16 players would play in the same number of matches $= 3136/16 = 196$.

Hence, choice (1) is the right answer.

Solution 11: Level of Difficulty (2)

In this case you would get the sets like: {1, 2, 3, 4, 5, 6}, {8, 9, 10, 11, 12, 13}, {15, 16, 17, 18, 19, 20}…. As we can see the starting digits for each of these sets consists of an Arithmetic Progression as 1, 8, 15…. The next step is to find the number of terms in this series before 999. This can be done as: Series is 1, 8, 15, 22 … 995 …. And this series would have [(995 – 1)/7] + 1 = 143 terms.

Solution 12: Level of Difficulty (1)

Join $AC \Rightarrow < ACB = 90° \Rightarrow < CAB = 55°$. But $< BDC = < CAB$ as they are subscribed by the same arc. Hence, choice (3) is the right answer.

Solution 13: Level of Difficulty (2)

Use
$$t_n = a + (n - 1)d$$
$$6000 = a_1 + a_2 + (n - 1)(d_1 + d_2)$$
or, $n = 429$

so, we have two A.P. series
3, 9, 15, 21, ———, 2571 (Calculate t_n)
5, 13, 21, ———, 3429 (Calculate t_n)

so, common series is 21, 45 ———, x where x £ 2571

On solving, x comes for $n = 107$. Hence, choice (3) is the right answer.

Solution 14:

Let the distance between Delhi and Lucknow be 300 kms. The total time taken would be 3 + 6 + 10 + 5 = 24 hours. The total distance would be 1200 kms. Hence, the average speed is given by

Average speed = (total distance/total time)
= 1200/24 = 50 kmph

Hence, choice (4) is the right answer.

Solution 15: Level of Difficulty (2)

Divya needs to travel 100 km @ 80 km/h $\Rightarrow$ Time taken = 5/4 hours. Hence, choice (2) is the right answer.

Solution 16: Level of Difficulty (3)

Go through trial and error for both situations.

We can see that $x + y + z = 60$ is satisfied for $z = 44, 47$ and 50. Hence, $A = 3$

We can see that $x + y + z = 84$ is satisfied for $z = 73, 70$ and 67. Hence, $B = 3$.

Hence, choice (4) is the right answer.

Solution 17: Level of Difficulty (2)

The letters available to us are: A, E H, S and T in their alphabetical order. When we form 5 lettter words out of these, the following order of appearing in the dictionary would hold…

Words starting with A___4! = 24
Words starting with E___4! = 24
Words starting with HA___3! = 6
Words starting with HE … complete description:
First word: HEAST, Second word = HEATS…
Hence, the 56th word in the list would be HEATS. Option 3 is correct.

Solution 18: Level of Difficulty (2)

Let a solve just A, b solve just B, c solve just C, and d solve B and C but not A. Then $25 - a - b - c - d$ solve A and at least one of B or C. The conditions give: $b + d = 2(c + d)$; $a = 1 + 25 - a - b - c - d$; $a = b + c$. Eliminating a and d, we get: $4b + c = 26$. But $d = b - 2c >= 0$, so $b = 6$, $c = 2$. Hence, choice (1) is the right answer.

Solution 19: Level of Difficulty (2)

If we take x as 2, we will get 2 integers,
With x as 3 we will get 2 integers,
With x as 4 we have 3 integers,
With x as 5 we have 2 integers,
With x as 6 we have 4 integers,
With x as 7, we have 2 integers,
With x as 8 we have 4 integers,
With x as 9 we have 3 integers,
With x as 10 we have 4 integers,
With x as 11 we have 2 integers,
With x as 12 we have 6 integers,
With x as 13 we have 2 integers
With x as 14 we have 4 integers,
With x as 15 we have 4 integers.

Thus there would be a total of 44 such integral ratios. Hence, the option 4 is correct.

Solution 20: Level of Difficulty (1)

Name	Amit	Arun	Abhishek	Aishwarya	Azad
Initial	2	4	6	8	10
1st exchange	2	10	4	6	8
2nd exchange	2	8	10	4	6
3rd exchange	2	6	8	10	4
4th exchange	2	4	6	8	10

From the table, it is clear that the difference between Arun and Aishwarya's lottery ticket value is constant upto the 3rd exchange and equal to 2. After the 4th exchange also it equals 2.