

## IT Bodhi Sample questions for written test

1- You have 8 balls, all have same weight except one which is heavier. Using a balance, how many minimum number of times you need to weigh to find the heavier ball.

2- You are blindfolded and 10 coins are placed in front of you on a table. You are allowed to touch the coins, but can't tell which way up they are by feel. You are told that there are 5 coins head up, and 5 coins tails up but not which ones are which. How do you make two sets of coins each with the same number of heads up? You can flip the coins any number of times.

3- A man has two cubes at his desk. Every day he arranges both cubes so that the front faces show the current day of the month. What numbers are on the faces of the cubes to allow this?

4- You have 100 doors in a row that are all initially closed. You make 100 passes by the doors starting with the first door every time. First time through you visit every door and toggle the door (if the door is closed, you open it, if it's open, you close it). The second time you only visit every 2nd door and toggle it (door #2, #4, #6). The third time, every 3rd door and toggle it (door #3, #6, #9), etc, until you only visit the 100th door. Tell the door's no which will remain open after all this. (like 4th ..)

5- There are 25 horses in a racing competition. You can have a race among 5 horses in a particular race. What would be the minimum number of races that will be required to determine the 1st, 2nd and 3rd fastest horses?

6- You are a prisoner sentenced to death. The Emperor offers you a chance to live by playing a simple game. He gives you 50 black marbles, 50 white marbles and 2 empty bowls. He then says, "Divide these 100 marbles into these 2 bowls. You can divide them any way you like as long as you use all the marbles. Then I will blindfold you and shuffle the bowls. You then may choose one bowl randomly and remove ONE marble from it. If the marble is WHITE you will live, but if the marble is BLACK... you will die." How do you divide the marbles up so that you have the greatest probability of choosing a WHITE marble?

7- There is a building of 100 floors. If an egg drops from the Nth floor or above it will break. If it's dropped from any floor below, it will not break. You're given 2 eggs. Find N, while minimizing the number of drops for the worst case.

8- A line of 100 airline passengers is waiting to board a plane. They each hold a ticket to one of the 100 seats on that flight. (For convenience, let's say that the  $n$ th passenger in line has a ticket for the seat number  $n$ .) Unfortunately, the first person in line is crazy, and will ignore the seat number on their ticket, picking a random seat to occupy. All of the other passengers are quite normal, and will go to their proper seat unless it is already occupied. If it is occupied, they will then find a free seat to sit in, at random. What is the probability that the last (100th) person to board the plane will sit in their proper seat (#100)?

9- You are standing at point A with 3000 bananas and a faithful camel. Your destination is point B which is exactly 1000 kms away. The objective is to transport as many bananas as possible to point B, under the following conditions.

1. Only the camel can carry bananas.
2. The maximum load that the camel can carry at a time is 1000 bananas.
3. The camel consumes 1 banana for every km that it travels. (Irrespective of direction of travel or load)

10- There are 3 baskets. One of them has apples, one has oranges only and the other has mixture of apples and oranges. The labels on their baskets always lie. (i.e. if the label says oranges, you are sure that it doesn't have oranges only, it could be a mixture) The task is to pick one basket and pick only one fruit from it and then correctly label all the three baskets. How do you do it?

11- Pairs of primes separated by a single number are called prime pairs. Examples are 17 and 19, 5 and 7 etc. Prove that the number between a prime pair is always divisible by 6 (assuming both numbers in the pair are greater than 6). Also prove that there are no 'prime triples'.

12- A barman is having a 12 liters jug full of beer. He needs to divide or split that beer into two equal parts. All he has is two empty jugs of capacity 8 liters and 5 liters.

13- You have 16 players. you have to arrange a match between two players to find out which one is better. How many minimum matches do you need to arrange to find the second best player. Extend your approach to find second best among  $N$  players.

14- A candidate is selected for interview for 3 posts. the number of candidates for the first, second, third posts are 3, 4, 5 respectively. what is the probability of his getting at least one post?

15- Amar and Akbar both tell the truth with probability  $\frac{3}{4}$  and lie with probability  $\frac{1}{4}$ . Amar watches a test match and talks to Akbar about the outcome. Akbar, in turn, tells Anthony, "Amar told me that India won". What probability should Anthony assign to India's win?

16- A king has 1000 bottles of wine of same type. His rival king decides to kill him and send his secret killer to poison one of this wine bottle. The killer poison one of his bottle but was caught by the guards. The King came to know about this and he decides to check which bottle is poisonous. The king is very clever so he decides to take 10 prisoners from his jail to check which bottle is poisonous or not. Can you explain how it is possible?

17- There is a country A where every family wants a girl. So each family continues having babies till they have a girl in their family.

So what would be the ratio of male & female in that country.

18- An executioner lines up 100 prisoners into single line and puts a red or a blue hat on each prisoner's head. Every prisoner can see the hats of the people in front of him in the line - but not his own hat, nor those of anyone behind him. The executioner starts at the end (back) and asks the last prisoner the colour of his hat. He must answer "red" or "blue." If he answers correctly, he is allowed to live. If he gives the wrong answer, he is killed instantly and silently. (While everyone hears the answer, no one knows whether an answer was right.) On the night before the line-up, the prisoners confer on strategy. What would be their strategy to save maximum among themselves.

19- A merchant has to weigh things ranging from 1 pound to 40 pounds. To do this, what is the minimum number of weights he needs and how heavy should each weight be?

20- You have a number which is a palindrome like 24342. how u will find next greater number which is also palindrome.

21- You've got someone working for you for seven days and a gold bar to pay him. The gold bar is segmented into seven connected pieces. You must give them a piece of gold at the end of every day. What are the fewest number of cuts to the bar of gold that will allow you to pay him  $\frac{1}{7}$ th each day?