PUZZLE - 5

Direction: A shopping mall has a large basement parking lot with parking slots painted in it along a single row. These slots are quite narrow; a compact car can fit in a single slot but an SUV requires two slots. When a car arrives, the parking attendant guides the car to the first available slot from the beginning of the row into which the car can fit. For our purpose, cars are numbered according to the order in which they arrive at the lot. For example, the first car to arrive is given a number 1, the second a number 2, and so on. This numbering does not indicate whether a car is a compact or an SUV. The configuration of a parking lot is a sequence of the car numbers in each slot. Each single vacant slot is represented by letter V.

For instance, suppose cars numbered 1 through 5 arrive and park, where cars 1, 3 and 5 are compact cars and 2 and 4 are SUVs. At this point, the parking lot would be described by the sequence 1, 2, 3, 4, 5. If cars 2 and 5 now vacate their slots, the parking lot would now be described as 1, V, V, 3, 4. If a compact car (numbered 6) arrives subsequently followed by an SUV (numbered 7), the parking lot would be described by the sequence 1, 6, V, 3, 4, 7.

- Initially cars numbered 1, 2, 3, and 4 arrive among which 1 and 4 are SUVs while 2 and 3 are compact cars. Car 1 then leaves, followed by the arrivals of car 5 (a compact car) and car 6 (an SUV). Car 4 then leaves. Then car 7 (an SUV) and car 8 (a compact car) arrive. At this moment, which among the following numbered car is parked next to car 3?
 a) 6 b) 5 c) 8 d) 7
- 2. Suppose eight cars have arrived, of which two have left. Also suppose that car 4 is a compact and car 7 is an SUV. Which of the following is a POSSIBLE current configuration of the parking lot?
 - a) V, 2, 3, 7, 5, 6, 8 b) 8, 2, 3, V, 6, 5, 7 c) 8, 2, 3, V, 5, 6, 7
 - d) 8, 2, 3, V, 5, 7, 6
- 3. Suppose the sequence at some point of time is 4, 5, 6, V, 3. Which of the following is NOT necessarily true?
 - a) Car 4 is a compact.
 - b) Car 3 is an SUV.
 - c) Car 5 is a compact.
 - d) Car 1 is an SUV.
- 4. Suppose that car 4 is not the first car to leave and that the sequence at a time between the arrival of the car 7 and car 8 is V, 7, 3, 6, 5. Then which of the following statements MUST be false?
 - a) Car 4 is an SUV.
 - b) Car 2 is a compact.
 - c) Car 7 is a compact.
 - d) Car 6 is a compact.

Direction: Four institutes, A, B, C, and D, had contracts with four vendors W, X, Y, and Z during the ten calendar years from 2010 to 2019. The contracts were either multi-year contracts running for several consecutive

years or single-year contracts. No institute had more than one contract with the same vendor. However, in a calendar year, an institute may have had contracts with multiple vendors, and a vendor may have had contracts with multiple institutes. It is known that over the decade, the institutes each got into two contracts with two of these vendors, and each vendor got into two contracts with two of these institutes.

The following facts are also known about these contracts.

- I. Vendor Z had at least one contract in every year.
- II. Vendor X had one or more contracts in every year up to 2015, but no contract in any year after that.
- III. Vendor Y had contracts in 2010 and 2019. Vendor W had contracts only in 2012.
- IV. There were five contracts in 2012.
- V. There were exactly four multi-year contracts. Institute B had a 7-year contract, D had a 4-year contract, and A and C had one 3-year contract each. The other four contracts were single-year contracts.
- VI. Institute C had one or more contracts in 2012 but did not have any contract in 2011.
- VII. Institutes B and D each had exactly one contract in 2012. Institute D did not have any contract in 2010.
- 5. Which institutes and vendors had more than one contracts in any year?
 - a) B, W, X, and Z
 - b) B, D, W, and X
 - c) A, B, W, and X
 - d) A, D, W, and Z
- 6. In which of the following years were there two or more contracts?
 - a) 2017
 - b) 2016
 - c) 2015
 - d) 2018
- 7. Which of the following is true?
 - a) B had a contract with Z in 2017
 - b) B had a contract with Y in 2019
 - c) D had a contract with X in 2011
 - d) D had a contract with Y in 2019
- 8. In how many years during this period was there only one contract?
 a) 3 b) 2 c) 4 d) 5
- 9. What BEST can be concluded about the number of contracts in 2010?
 - a) exactly 4
 - b) exactly 3
 - c) at least 3
 - d) at least 4
- 10. Which institutes had multiple contracts during the same year?
 - a) A only
 - b) B and C only
 - c) A and B only
 - d) B only

Direction: Mr. Trump has a number of boxes with him. These boxes are painted with exactly one of the following four colours: Red, Green, Blue or Black. Each box has a number of chocolates named 'Seven Star' in it. The number of 'Seven Stars' in the boxes can be one of the following five numbers. 6, 10, 12, 15 or 20. No two boxes coloured with the same colour have equal number of 'Seven Stars'.





The following column graph shows the distribution of the number of boxes containing different number of 'Seven Stars'.



- 11. If it is known that the green boxes contain the maximum possible number of 'Seven Stars', what is the total number of 'Seven Stars' in all the green boxes taken together?
- 12. If it is known that there are maximum possible boxes with 15 'Seven Stan', what is the number of boxes with 12 'Seven Stars'? (Use information from the previous questions).
- 13. If it is known that there are minimum possible boxes with 6 'Seven Stars', what is the total number of 'Seven Stars' in all the black boxes taken together? determined') (Use information from the previous questions).

14. What is the total number of 'Seven Stars' with Mr. Trump? (Use information from the previous questions).

Direction: Ramesh has an apple orchard in the state of Himachal Pradesh. On a particular day. his associate Suresh plucked 103 distinct apples (each apple of a distinct size). He distributed these 103 apples in four distinct boxes — P. Q, R and Sat 10:00 AM.

Later at multiple times during the clay (12 00 noon, 2:00 PM, 4:00 PM and 8:00 PM), Ramesh tested some of the apples that were present in sonic or all of the four boxes at those times. He performed one of the following three operations — I, H and III on the apples he tested

Operation I: If Ramesh liked any apple in a box, he plucked a new apple of the same size and placed in one of the other three boxes.

Operation II: If Ramesh did not like the box in which a particular apple was placed, he removed the apple from that box and placed it in another box.

Operation III: If Ramesh did not like any apple, he discarded the apple from the box.

The following table provides information about the number of apples in each of the boxes — P. Q. R and S at different times during the entire day. Ramesh was very lazy and hence performed minimum possible number of operations. An operation is ,a:c1 to have been performed, when any of I. II or III is performed

Boxes	10:00	12:00:00	2:00	4:00	8:00
	AM	Noon	PM	PM	PM
Р	23	25	29	26	28
Q	27	31	31	32	29
R	15	27	40	39	32
S	38	30	25	24	45

- 15. Find the total number of operations performed by Ramesh between 10:00 AM and 8:00 PM. a) 63 b) 67 c) 64 d) 62
- 16. How many times did Ramesh perform operation DI between 10:00 AM and 8:00 PM?
 a) 6 b) 5 c) 4 d) 3
- 17. At least how many times was operation II performed to remove an apple from box S and place it in box R between 10:00 AM and 8:00 PM?a) 1 b) 2
 - c) 3 d) More than 3
- 18. How many times did Ramesh perform operation II between 10:00 AM to 8:00 PM?
 a) 25 b) 24 c) 23 d) 22

Answer Key										
1. D	2. C	3. B	4. D	5. B	6. C	7. D	8. A	9. A		
10. C	11. 37	12. 2	13. 25	14. 150	15. A	16. C	17. C	18. B		