

# CAT MOCK TEST SOLUTION

## Quantitative Techniques

1. (a) : Number in each bracket at units place = 7, So unit digit of  $7^{102} = 7^2 = 9$
2. (a) : Number of 5's  $30 \rightarrow 1, 35 \rightarrow 1, 40 \rightarrow 1$ , Number of zeroes  $\rightarrow 3$
3. (c) : Value divide by 9 and 4, Sum of digits =  $11 + 2A$  (by 9), So,  $A \rightarrow 8$ , 851580 is divide by 9
4. (a) : 1<sup>st</sup> terms only  $\sqrt{1 + \frac{1}{1^2} + \frac{1}{2^2}} = \sqrt{1 + 1 + \frac{1}{4}} = \sqrt{\frac{9}{4}} = \frac{3}{2} = 2 - \frac{1}{2}$ ; Consider the 1<sup>st</sup> two terms  
 $\frac{3}{2} + \sqrt{1 + \frac{1}{2^2} + \frac{1}{3^2}} = \frac{3}{2} + \sqrt{\frac{49}{36}} = 3 - \frac{1}{3}$   
; For 'n' terms =  $n - \frac{1}{n}$ ; So Answer is  $2088 - \frac{1}{2088}$
5. (a) : Net affect Area  $[-20 + 10 + \{(-20)(-10)/100\}] \% = -12\%$ , Mistake New Area =  $(100 - 12)\%$  of 200 = 176 square metre
6. (b) : Pulp constant; 10% of fresh apple = 90% of dried apples 10% of 20 = 90% of x;  $10 \times 20 = 90 \times x$ ;  $x = (10 \times 20)/90 = 20/9 = 2(2/9)$  kg
7. (c) : Let the sum  $\rightarrow S$ ,  $S(1.1)^4 - 1.4S = 256.40$ ; Solve this we get,  $S = \text{Rs. } 4000$
8. (c) :  $[P(1 + r)^2]/[(P + Pr)] = 6/5$ ;  $(1 + r) = 6/5$ ;  $r = 1/5 = 20\%$
9. (a) : Let CP of I Phone = 100; MP of I Phone = 120; Let the no. of I phones = 4; Total CP = 400; Total SP =  $[120 \times 2 + 120 \times 0.8 + 120 \times 0.6] = 408$ ;  $\%P = (8/400) \times 100 = 2\%$
10. (a) :  $E = F + KV$ ;  $15000 = F + K \times 20 \dots \text{I}$ ;  $20000 = F + K \times 30 \dots \text{II}$ ; Solve this;  $K = \text{Rs. } 500$   $F = \text{Rs. } 5000$ ; When  $V = 40$ ;  $E = 5000 + 40 \times 500 = \text{Rs. } 25000$
11. (d) : Number of employees = 10; 2 Workers, 8 Officers; Average =  $(20 \times 390 + 80 \times 420)/10 = 414$
12. (a) :  $x, y, z \rightarrow \text{number}$ ;  $x + y = 8$ ;  $y + z = 10$ ;  $x + z = 18$ ; Add all we get,  $x + y + z = 18$   
 $\text{Avg} = 18/3 = 6$
13. (c) :  $\frac{8}{25} = \frac{5}{8} \left(1 - \frac{20}{100}\right)^n$ ;  $\frac{64}{125} = \left(1 - \frac{20}{100}\right)^3$ ;  $\left(\frac{4}{5}\right)^3 = \left(\frac{4}{5}\right)^n$  ;  $n = 3$
14. (c) :  $4000 \times 190 = 4000 \times 30 + D \times 3200$ ;  $D = 200$
15. (a) : Capacity = N; in 30 minute  $\Rightarrow N$ ; in 25 minute  $N/2$ ; in 20 minute  $N/4$
16. (b) : If 'r' double then Area becomes 4 times; so  $40/4 = 10$  min
17. (c) : Speed of boat  $\Rightarrow b$ ; speed of stream  $\Rightarrow s$  ATQ,  $\frac{10}{b - s} = \frac{30}{60} \dots \text{I}$ ;  $\frac{10}{b + s} = \frac{25}{60} \dots \text{II}$ ; solve this we get,  
 $b = 11 \text{ km/hr}$ ;  $s = 2 \text{ km/hr}$

18. (a) : 100 m is covered in 4 min at R<sub>s</sub>.  $S_c - S_m = d/t$  ;  $S_c - 3 = (100/100)/(4/60)$  ;  $S_c = 3 + 1.5 = 4.5$  km/hr

19. (c) : we know that  $[x] + \left[ \frac{1}{x} \right] + \dots + \left[ \frac{(n-1)}{x} \right] = [nx]$  ; then  $\Rightarrow [400 \times 1/8] \Rightarrow 50$

20. (a) : Let QR = b, ST = 3b; Area of triangle QTR = 14;  $(1/2) \times b \times b = 14$ ;  $b^2 = 28$ ; Area of Rectangle PQRS = PQ  $\times$  QR;  $4b \times b = 4b^2 = 4 \times 28 = 112$

21. (d) : Area of square – Area of 4 Quadrant = Area of Required;  $14 \times 14 - 4 \times (1/4) \times (22/7) \times 7 \times 7$ ;  $196 - 49 = 147$  Square cm

22. (b) :  $P(A) = F(0)/T(0)$ ; All vowel together/Total =  $(5! \times 3!)/7! = 1/7$

### Data Interpretation and Logical Reasoning

#### Solutions for questions 1 to 5:

	V1	V2	V3	V4
T1	2	6	4	6
T2	6	4	8	10
T3	4	6	6	8
T4	2	8	4	8

In New Delhi, Bangladesh won the maximum number of matches:

If V1 is New Delhi, then T2 is Bangladesh

If V2 is New Delhi, then T4 is Bangladesh

If V3 is New Delhi, then T2 is Bangladesh

If V4 is New Delhi, then T2 is Bangladesh

Hence, Bangladesh = T2 or T4.

In Goa, Pakistan won the minimum number of matches:

If T1 is Pakistan, then V1 is Goa

If T2 is Pakistan, then V2 is Goa

If T3 is Pakistan, then V1 is Goa

If T4 is Pakistan, then V1 is Goa

If we assume V2 to be Goa, then T2 will be Pakistan and T4 will be Bangladesh. Also this will make V2 to be New Delhi. But as V2 cannot depict 2 cities hence V2 cannot be Goa. So, Goa is V1 and T2 cannot be Pakistan.

Nepal has won 4 matches less than Pakistan.

T1 = 18 matches

T2 = 28 matches

T3 = 24 matches

T4 = 22 matches

Thus Pakistan can be either  $T2$  or  $T4$ , but we have already seen it cannot be  $T2$  and hence Pakistan is  $T4$  and Nepal is  $T1$ . Also,  $T2$  becomes Bangladesh and  $T3$  becomes India.

	Goa	V2	V3	V4
Nepal	2	6	4	6
Bangladesh	6	4	8	10
India	4	6	6	8
Pakistan	2	8	4	8

Also, New Delhi will be either V3 or V4.

- (a) : If V4 is New Delhi, India and Pakistan could have won 8 matches each.
- (b) : Bangladesh has won 4 matches at New Delhi, but according to table it is V2 and V2 cannot be New Delhi.
- (c) : Nepal has won 18 and Bangladesh as won 28.
- (c) : The team winning minimum matches at Mumbai is Nepal and hence Mumbai can be V3 or V4.  
Also New Delhi will be V3 or V4, so V2 will become Ranchi. Only option (c) is not certain.
- (d): From the above table we can see it

#### Solutions for questions 6 to 10:

6. (c) :

	Profit Rate of Ambuja	Profit Rate of Ultratech
Oct – Dec 2020	27.78	25.36
Jan – Mar 2021	37.82	38.1
Apr – Jun 2021	30.5	43.17
Jul – Sept 2021	30.85	41.75

7. (d): **For Jan – Mar 2021,**  
 Ambuja Cement  
 Sales Quantity = 543278  
 Cost (as a percentage of revenue) = 87.56%

So, profit as a % of revenue =  $100 - 87.56 = 12.44\%$

$$\text{Profit} = \frac{12.44}{100} \times 543278 \times 304 = 20545470$$

Profit Rate = 37.82

Ultratech Cement

$$\text{Profit} = \frac{100 - 91.34}{100} \times 526532 \times 440 = 20062975.3$$

Profit Rate = 38.10

**For Apr-Jun 2021**

Ambuja Cement

$$\text{Profit} = \frac{100 - 91.03}{100} \times 340 \times 698236 = 21294801.53$$

Profit rate = 30.5

Ultratech Cement

$$\text{Profit} = \frac{100 - 89.96}{100} \times 430 \times 499874 = 21580560.33$$

Profit Rate = 43.17

8. (d) : Let the sales quantity of Ambuja Cement for Apr-Jun 2021 be Rs.  $x$

$$\therefore \text{Profit} = \frac{(100 - 91.03)}{100} \times 340 \times x = 30.498x$$

In the period Jul-Sept 2021 the sales increased by 2.25%

Sales for Jul-Sept 2021 =  $1.0225x$

$$\therefore \text{Profit} = \frac{(100 - 90.42)}{100} \times 322 \times 1.0225x = 31.54x$$

$$\% \text{ increase in profit} = \frac{1.042}{30.498} \times 100 \approx 3.42\%$$

9. (c) : The required percentage is:

$$\frac{43.17 - 27.78}{43.17} \times 100 = 35.64\%$$

$$10. (a) : \frac{43.17 - 30.85}{30.85} = 39.94\%$$

**Solutions for questions 11 to 15:**

Takayuki cannot score 20 or 60 in round 1 as there will no possible combination of score in round 2 and round 3 given his total score to be 290. Also, according to observer 5, he did not scored 50 or 100 in any of the rounds. Hence, his scores are 70 in round 1, 80 in round 2 and 140 in round 3.

Also, Anwar cannot get a score of 50 in round 1, as there will be no possible combination to get 260 as total score.

We get the following 4 cases:

**Case 1:**

	Round 1	Round 2	Round 3	Total Score	Points
Takayuki	70	80	140	290	28
Anwar	60	100	100	260	26
Hui Zicheng	50	120	120	290	27
Sanjeev	20	60	80	160	21

**Case 2:**

	Round 1	Round 2	Round 3	Total Score	Points
Takayuki	70	80	140	290	28
Anwar	20	120	120	260	26
Hui Zicheng	60	100	100	260	26
Sanjeev	50	60	80	190	23

**Case 3:**

	Round 1	Round 2	Round 3	Total Score	Points
Takayuki	70	80	140	290	28
Anwar	60	100	100	260	26
Hui Zicheng	20	120	120	260	26
Sanjeev	50	60	80	190	22

**Case 4:**

	Round 1	Round 2	Round 3	Total Score	Points
Takayuki	70	80	140	290	28
Anwar	60	120	80	260	26
Hui Zicheng	50	100	100	250	25

Sanjeev	20	60	120	200	23
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11. (b): Hui Zicheng scored 50 in round 1 in case 1 and case 4, so the ratios of the scores of Hui Zicheng in round 2 and Sanjeev in round 3 are 1.5 in case 1 and 0.833 in case 4.
12. (a): In case the total points are different for all the shooters and the difference of score of Anwar in round 2 and score of Sanjeev in round 3 is 0.
13. (b): The total points scored by Anwar are always 26.
14. (d): It can be true from case (I), (II) and (III) only I and IV may be true.
15. (a) : We can see it from case 4 it is 20.

**Solutions for questions 16 to 20:**

16. (d)

	Rohit	Dhawan	Mayank	Rahul	Highest Score	Lowest Score	MPA	Sum of points in a particular match of these players
Match 1	0	1			3		1.5	6
Match 2				3			1.75	7
Match 3		2/3	3		3/4	2	2.75	11
Match 4	2	3	2	0	3	0	1.75	7
Match 5			4			0	2.25	9
<b>PPA</b>	2	1.4	--	1.8	--	--		
Sum of points of the player in the given matches	10	7		9				

As dhawan had already obtained 3 and 1 points respectively in Match 1 and Match 4 so he cannot have 4 points in Match 3

Hence to maintain the sum as '7' he can have either 2 or 3 points that means he can score either 20 or 30 runs.

17. (d)

	Rohit	Dhawan	Mayank	Rahul	Highest Score	Lowest Score	MPA	Total points in a particular match of these players
Match 1	0	1		2 or 3	3		1.5	6

Match 2	1	1		3			1.75	7
Match 3	4 or 3	2	3	2 or 3	3 or 4	2	2.75	11
Match 4	2	3	2	0	3	0	1.75	7
Match 5			4			0	2.25	9
<b>PPA</b>	2	1.4	--	1.8	--	--		
Total points of the player in the given matches	10	7		9				

To maintain the total points in match 3 of these players as 11

If Rohit scores 40 runs, then Rahul will score 20 runs and If Rohit scores 30 runs, then Rahul will also score 30 runs.

18. (a) As per statement in option(a)

By looking at the table in the solution of Ques 1, If dhawan will score 40 runs in Match 5 then his total points in the given matches will exceed by 7 and which is not possible

As per statement in option(B)

By looking at the table in the solution of Ques 2

We can see that Rahul can score maximum 20 runs in match 5

As per statement in Option(C)

By looking at the table in the solution of Ques 1, we can say that dhawan can score either 20 or 30 runs in match 3

19. 2.8

20. 40

## Language Comprehension

1. Answer- C

As mentioned in the paragraph “A few years later, Kaelin and Ratcliffe characterized how oxygen levels in the cells regulate the amount of HIF-1 produced.”. It can be directly inferred from the above lines.

2. Answer-C

Physiological status is one of the factors but not the only factor responsible for oxygen flux. As mentioned in the passage “Both the environment and the physiological status of the body determines how much oxygen is available to cells.”

3. Answer-A

Only first option clearly defines the meaning of HIF, by using the term ‘protein’. Option C can be a characteristic but not a complete meaning. The meaning can be derived with the help of the following lines “When oxygen levels decrease, the HIF protein inhibits oxygen-consuming processes of the cells by altering the activity of numerous genes”.

4. Answer- B

'Retreat' is opposite of 'advancement', here, in the second option opposite fact has been presented. As mentioned in the lines "In the last decade, researchers have shown that HIFs have a pivotal role in promoting the growth of tumours.". Option B completely negates this research.

5. Answer- A

As mentioned in the passage "In the early 1990s, Semenza and Ratcliffe independently discovered that cells adapt to changes in oxygen levels by making more of a protein called hypoxia-inducible factor-1 or HIF-1." Both Semenza and Ratcliffe have worked on this research separately, their finding was same although.

6. Answer-A

From the starting of the passage only, the author is more concentrated on the frequency of cyclones. The author has also taken two cyclones as an example.

7. Answer-D

As mentioned in the passage "According to records, the surface temperature which led to the formation of the cyclonic storm Nisarga over the Arabian Sea was around 32 degrees Celsius, while the normal temperature range over this part of the world is around 24 and 26 degrees Celsius.". Only D option negates the finding of the research mentioned, as Nisarga storm has nothing to do with Bay of Bengal.

8. Answer- D

This is a direct question and the analysis has been done by IMD as mentioned in the following lines "According to the IMD's report State of Climate of India during 2019, the sea-surface temperature over the Arabian Sea has increased dramatically by over 0.36-degree Celsius, as against the baseline temperatures of 1981-2010".

9. Answer-D

As mentioned in the 2<sup>nd</sup> paragraph that "Last week, the Indian Meteorological Department had tracked two disturbances over the Arabian Sea, one of which failed to concentrate into a cyclone and dissipated over Oman." There is no evidence that the IMD is talking about the kind of Nisarga cyclone only.

10. Answer-A

It has been specifically mentioned in the 8th and 9th paragraphs that post-monsoon cyclones are detectable but not pre-monsoon cyclones in the Arabian Sea.

11. Answer-A

The author has given the idea about the first option in the beginning only and then after stating a few facts he concluded it in the last passage.

12. Answer- C

As mentioned in the second last paragraph "Unlike conduction and convection, radiation does not need matter to transfer heat".



13. Answer- B

The author has clearly specified when explaining conduction that poor conductors of heat are insulators. This nullifies the statement B given in the option. As mentioned in the passage " If you touch something cold, heat goes from you to it. Some materials, such as metals, are good conductors. Other materials, such as glass, are poor conductors and are called insulators."

14. Answer- D

The author has not cited any hint regarding the method involved in the appearance of beautiful light in space called aurora.

It's basically related to the matter released by the sun as mentioned in the beginning of the paragraph. Other options can be inferred after skimming through the whole passage.

15. Solution: (A) The use of the article at the start of the second sentence gives a hint about it being the first in the sequence. It is further followed by the third sentence, which gives the idea about the stated problem in the second. The fourth sentence, 'finally,' places it last in the sequence.

16. Solution: (C) Statement 2 talks about a group, but 'which group' is answered by statement 3. So, 2, followed by 3, Statement 4 gives some sort of context to Statement 1.

17. Solution: (B) '12' is an obvious pair as it connects the figures mentioned in both the statements. Statement 4 gives further explanation to the fact given in the 3<sup>rd</sup> sentence.

18. Answer-B

The most appropriate option will be B, as it represents the main purpose of the passage, i.e., differences in the anatomical structure of winged creatures and pterosaurs despite being the same structure.

19. Answer – D

Option D rightly states the facts and describe the real problem directed in the passage which is the growing population of netizens and the influence media is creating on their minds.

20. Answer-B

Option B focuses on the main idea of the passage which is why potoroos are rarely seen in the open areas where cats are mostly comfortable.

21. Answer-(D)

Only FOURTH sentence is different than others; all given statements talk about Economics of happiness except the last statement.

22. Solution: (D) The fourth sentence talks about a rate notified by the RBI which is not consistent with the other sentences; talking about a new scheme announced by Andhra bank.

23. Solution: (C) The given sentence talks about a cause. The preceding line before the 3<sup>rd</sup> blank uses the word 'experiences' which provides hint for option 3 to be correct.
24. Solution: (D) The given sentence elaborates the fact stated in the preceding line before the 4<sup>th</sup> blank. It supports the given line by stating an example.