TCS Ninja Numerical Ability Questions

1. What is the fourth proportional of 0.006, 1.2 & 6/25?
   A. 36
   B. 48
   C. 4.8
   D. 3.6
   Answer: B
   Explanation:
   Let the fourth proportional be x
   Then,
   0.006: 1.2 :: 6/25 : x
   0.006 * x = 1.2 * 6/25 (Since Product of means = Product of extremes)
   x = (1.2*6)/(25*0.006)
   x = 7.2/0.15
   x = 48

2. Two ants of length 1 cm and 1.2 cm crawl in opposite directions with average speeds of 2 and 3 mm per second respectively. How many seconds will they take to cross each other?
   A. 4.4
   B. 2.8
   C. 0.4
   D. 1.5
   Answer: A
   Explanation:
   Relative distance to be covered = Sum of the lengths of ants
   = 1 + 1.2
   = 2.2 cm
   = 22 mm (1 cm = 10 mm)
   Relative speed when bodies move in opposite directions = Sum of the speeds
   = 2 + 3
   = 5 mm per second
   Time taken to cross each other = Relative distance / Relative speed
   = 22/5
   = 4.4 seconds

3. The index numbers of five commodities are 121, 123, 125, 126, 128 and the weights assigned to these are respectively 5, 11, 10, 8, 6. Then what is the weighted average index number?
   A. 123.8
   B. 124.2
   C. 124.6
   D. 125.2
   Answer: C
   Explanation:

Weighted average = Sum of all the weights / Total number of weights
Sum of all the weights = 121*5 + 123*11 + 125*10 + 126*8 + 128*6
= 605 + 1353 + 1250 + 1008 + 768
= 4984
Number of weights = 5 + 11 + 10 + 8 + 6
= 40
Weighted average = 4984 / 40
= 124.6

4. Which one among the following has the least value?
   A. √75 - √74
   B. √74 - √73
   C. √77 - √76
   D. √76 - √75
   Answer: C
   Explanation:
   Rationalizing the options
   [√75 - √74 * (√75 + √74)]/(√75 + √74) = 1/(√75 + √74)
   [√74 - √73 * (√74 + √73)]/(√74 + √73) = 1/(√74 + √73)
   [√77 - √76 * (√77 + √76)]/(√77 + √76) = 1/(√77 + √76)
   [√75 - √74 * (√75 + √74)]/(√75 + √74) = 1/(√75 + √74)
   Comparing all the fractions, 1/(√77 + √76) is the least value as its denominator is the greatest.

5. A sum was lent to Ravi for three years by an organization that fixed a yearly rate of 10% compound Interest for repayment along with the condition of recovery in equal instalments of Rs.31944. What percentage (correct to two decimal places) above the borrowed amount Ravi had to pay the organization?
   A. 18.43%
   B. 21.25%
   C. 16.52%
   D. 20.63%
   Answer: D
   Explanation:
   Let x be the amount borrowed.
   After one year amount will be = 1.1 x
   Amount remaining after paying the first instalment = 1.1x – 31944
   For the next year, this amount acts as the principal
   After second year amount will be = 1.1 (1.1x - 31944)
   = 1.21x - 35138.4
   Amount remaining after paying the second instalment = 1.21x - 35138.4 – 31944
   = 1.21x - 67082.4
   This acts as principal for the third year
   After third year, amount will be = 1.1(1.21x - 67082.4)
   = 1.331x - 73790.64

This amount should exactly be equal to the final instalment.
Hence, 1.331x - 73790.64 = 31944
1.331x = 105734.64
x = 105734.64/1.331
x = 79440
Borrowed amount = 79440
Amount paid = 31944*3
= 95832
Percentage of extra amount paid = (95832-79440)/79440 * 100
= (16392/79440) * 100
= 20.63%

6. A retailer purchased 25 identical toys for a price of Rs P and sold some of them for Rs P. If he calculated his profit as 8%, with selling price as base instead of cost price then how many did he sell?
   A. 24
   B. 20
   C. 21
   D. 23
   Answer: D
   Explanation:
   CP of 25 toys = P
   CP of each toy = P/25
   Let the number of toys he sold be 'x'
   CP of the toys sold = xP/25
   SP of the toys sold = P
   Profit % = (SP-CP)/CP * 100
   In this case, profit percentage was calculated with selling price as base
   So, formulae used is-
   Profit % = (SP-CP)/SP * 100
   8/100 = (P - xP/25)/ P
   x = 23

7. A sum of Rs.12500 is invested on 1st January 2016 at 4% simple interest p.a. How much interest in Rs. gets accrued on the end of the day on 1st July 2016?
   A. 240
   B. 400
   C. 250
   D. 500
   Answer: C
   Explanation:
   Time for which money was invested = 6 months
   = 1/2 year
   Rate of interest = 4%
   Principal = Rs. 12500

Simple Interest = PTR/100
= (12500*1/2*4)/100
= 250

8. What is the real value of (0.000314 + 0.000198)1/3?
   A. 0.04
   B. 0.08
   C. 0.8
   D. 0.4
   Answer: B
   Explanation:
   $(0.000314 + 0.000198)^{1/3} = (0.000512)^{1/3}$
   $= ((0.08)^3)^{1/3}$
   = 0.08
9. A man who has to walk 11 km finds that in 30 minutes he has travelled two-ninth of the remaining distance. What is his speed in km/h?
   A. 4.8
   B. 4
   C. 4.2
   D. 4.5
   Answer: B
   Explanation:
   Let the remaining distance he has to cover be 'x' km
   So, distance covered by him = 2x/9 km
   Total distance = 11 km
   x + 2x/9 = 11
   x = 9 km
   Hence, distance he has covered in 30 minutes = 2(9)/9 = 2 km
   Speed = Distance / Time
   = 2 km / 30 min
   = 2 km / (1/2) hr
   = 4 kmph

10. With what value should the highest quantity in data 65, 52, 14, 26, 18, 35, 32, 38 be replaced so that the mean and median become equal?
    A. 51
    B. 66
    C. 64
    D. 53
    Answer: D
    Explanation:
    Arranging the given observations in ascending order
    14, 18, 26, 32, 35, 38, 52, 65
    Median of these observations = Mean of 32 and 35

= (32+35)/2
= 33.5
Let the highest quantity 65 be replaced with 'x'
Given that mean and median should be equal
Mean of the data = 33.5
Sum of the observations / Total number of observations = 33.5
(14 + 18 + 26 + 32 + 35 + 38 + 52 + x) / 8 = 33.5
215 + x = 33.5 * 8
x = 268 – 215
x = 53

11. A work is assigned to 6 men and 12 women and they could complete it in 3 days. It was also observed that together they can do 7 times as much work a man and a woman can do. In how many days would 14 women have done the work?
    A. 10
    B. 6
    C. 12
    D. 9
    Answer: D
    Explanation:
    Let 'M' and 'W' be the efficiencies of man and woman respectively.
    Total work = 3(6M + 12W)
    Also,
    6M + 12W = 7 (M + W)
    5W = M
    M/W = 5/1
    Let efficiency of man = 5 units
    Efficiency of woman will be = 1 unit
    Total work = 3 [6(5) +12(1)]
    = 126 units
    Time taken by 14 women to complete the same work = 126/14
    = 9 days

12. If the HCF of 180 and 432 is expressed as (180m + 432n), where m and n are integers, then what is the difference between m and n?
    A. 3
    B. 7
    C. 9
    D. 8
    Answer: B
    Explanation:
    HCF of 180 and 432 is 36
    Hence, 180m + 432n = 36____(1)
    432 = 2(180) + 72

=> 72 = 432 - 2(180)
180 = 2(72) + 36
=> 180 = 2 [432 - 2(180)] + 36
=> 180 = 2(432) - 4(180) +36
=> 36 = 5(180) - 2(432)____(2)
Comparing equations (1) and (2)
m = 5 and n = -2
Difference between m and n = 5 - (-2) = 7

13. A sales representative's commission is 6% on all sales up to Rs. 15000 and 5% on all sales exceeding this. He remits Rs. 47350 to his company after deducting his commission. What were the total sales?
    A. Rs. 49000
    B. Rs. 47500
    C. Rs. 50500
    D. Rs. 50000
    Answer: D
    Explanation:
    Let the total sales be 'x'
    Commission = x - 47350 ____(1)
    Commission on sales up to 15000 = 6% (15000) = 900
    Commission on remaining sales = 5% (x-15000) = 0.05x – 750
    Total commission = 900 + 0.05x – 750
    = 150 + 0.05x ____(2)
    Equating both the equations
    150 + 0.05x = x – 47350
    0.95x = 47500
    x = 50000

14. If n is an integer such that 1nn352 is a six-digit number exactly divisible by 24, what will be the sum of the possible values of n?
    A. 15
    B. 27
    C. 9
    D. 21
    Answer: A
    Explanation:
    For a number to be divisible by 24, it should be divisible by both 8 and 3
    Divisibility rule for 8: Last three digits must be divisible by 8
    Divisibility rule for 3: The sum of the digits of the number should be a multiple of 3
    The number is already divisible by 8 as 352 is divisible by 8
    Sum of the given numbers = 1 + n + n + 3 + 5 + 2 = 11 + 2n
    n should be a single-digit number and can take values of 2, 5, 8
    Hence,
    Sum of all possible values of n = 2 + 5 + 8 = 15

15. What is the mean proportional (MP) between the MPs of (2/7 & 32/343) and (2 & 1/5000)?
    A. 3/35
    B. 4/35
    C. 2/35
    D. 2/175
    Answer: C
    Explanation:
    Let the MP of 2/7 and 32/343 be x
    x = √(2/7)*(32/343)
    = √(64/4901)
    = (8/49)
    Let the MP of 2 and 1/5000 be y
    y = √(2)*(1/5000)
    = √1/2500
    = 1/50
    MP of x and y = √(8/49)*(1/50)
    = √8/2450
    = √4/1225
    = 2/35

16. How much percentage is (0.025% of 240% of 1.5) of 0.9?
    A. 0.01
    B. 10
    C. 0.1
    D. 1
    Answer: C
    Explanation:
    (0.025/100) * (240/100) * 1.5 = 1/4000 * 24/10 * 1.5
    = 9/10000
    Let x% of 0.9 be 9/10000
    x% (0.9) = 9/10000
    (x/100) (0.9) = 9/10000
    x = (9/10000)*(100/0.9)
    x = 0.1

17. What is the mean deviation of the data: 8, 9, 12, 15, 16, 20, 24, 30, 32, 34?
    A. 8
    B. 10.2
    C. 0
    D. 9.2
    Answer: A
    Explanation:

Mean deviation = Sum of deviations from mean / Total observations
Mean = (8 + 9 + 12 + 15 + 16 + 20 + 24 + 30 + 32 + 34) /10
= 20
Mean deviation = (12 + 11 + 8 + 5 + 4 + 0 + 4 + 10 + 12 + 14) / 10
= 80/10
= 8

18. What is the diameter in cm of a solid right circular cylinder whose height is 6 cm and the area of the curved surface is five times the combined area of the two flat surfaces?
A. 3
B. 2.4
C. 1.2
D. 0.9
Answer: B
Explanation:
Flat surface area of cylinder = $2\pi r^2$
Curved surface area of cylinder = $2\pi rh$
$2\pi rh = 5 (2\pi r^2)$
$2h = 10r$
$2*6 = 10r$
$r = 1.2$
Diameter = $2r$
$= 2*1.2$
$= 2.4$ cm

19. In a competitive exam, 5 marks are awarded for every correct answer, and for every wrong answer, 2 marks are deducted. Sathwik scored 32 marks in this examination. If 4 marks have been awarded for each correct answer and 1 mark had been deducted for each incorrect answer, Sathwik would have scored 34 marks. If Sathwik attempted all the questions, how many questions were there in the test?
A. 20
B. 14
C. 12
D. 26
Answer: D
Explanation:
Let the number of questions answered correct = x
Let the number of questions answered wrong = y
$5x - 2y = 32$ ------- (1)
$4x - 1y = 34$ --------(2)
Solving both the equations,
$x = 12$ and $y = 14$
Number of questions in the test = $x + y = 12 + 14 = 26$

20. A sum invested on simple interest grows to Rs. 22500 and Rs. 25500 in seven and nine years respectively. What is the rate percentage of the interest?
    A. 7.5%
    B. 9.6%
    C. 13.5%
    D. 12.5%
    Answer: D
    Explanation:
    Amount for 7 years = Rs. 22500
    Amount for 9 years = Rs. 25500
    Hence,
    SI for 2 years = 25500 – 22500 = 3000
    So, SI for 1 year = 3000/2 = Rs. 1500
    SI for 7 years = 1500 * 7 = 10500
    Principal = 22500 – 10500 = 12000
    Simple Interest = PTR / 100
    1500 = (12000*1*R) / 100
    R = (1500*100)/12000
    R = 12.5%

21. Raju lends Rs. 3000 to Bharath and a certain sum to Charan at the same time at 6% per annum simple interest. If after 5 years, Raju altogether receives Rs. 1650 as the interest from Bharath and Charan, what is the sum lent to Charan?
    A. Rs. 2500
    B. Rs. 2750
    C. Rs. 3250
    D. Rs. 3300
    Answer: A
    Explanation:
    We know that Simple interest = $\frac{PNR}{100}$
    Simple Interest received from Bharath = $\frac{3000 \times 5 \times 6}{100}$ = Rs. 900
    Simple Interest received from Charan = (1650 - 900) = Rs. 750
    If the sum lent to Charan is Rs. C, then
    $\frac{C \times 5 \times 6}{100}$ = 750
    Thus, C = Rs. 2500

22. 10% of the voters did not cast their votes in an election between two candidates. 20% of the votes were found invalid. The winning candidate got 60% of the valid votes and won by a majority of 2,880 votes. What is the total number of voters who cast their vote?
    A. 18,000
    B. 25,000
    C. 20,000
    D. 24,000

Answer: A
Explanation:
Let the total number of voters be N
Number of voters who cast their vote = N – (10% of N) = 90% of N = 0.9N
Number of valid votes = 80% of 0.9N = 0.72N
Number of votes received by candidate A = 60% of 0.72N = 0.432N
Number of votes received by candidate B = (0.72N - 0.432N) = 0.288N
From the given data,
Number of votes received by candidate A - Number of votes received by candidate B = 2880
0.432N – 0.288N = 2880
0.144N = 2880
N = 20000
Number of voters who cast their vote = 0.9N = (0.9 × 20000) = 18000

23. Four men and two women can do a piece of work together in one day. If a woman is twice as efficient as a man, in how many days can a woman working alone do the work?
    A. 4
    B. 6
    C. 8
    D. 2
    Answer: A
    Explanation:
    Let the efficiency of 1 woman and 1 man be W and M respectively
    From the given data,
    W = 2M
    If M = 1 u/d then W = 2 u/d
    Given that 4 men and 2 women can do a piece of work together in one day
    Thus, the total work to be done = (4M + 2W) × 1 = (4 × 1) + (2 × 2) = 8 units
    To complete this work of 8 units time taken by 1 woman alone = 8/2 = 4 days

24. A train starting from station X was to arrive at station Y at 6:06 PM. It could travel at 62.5% of its usual speed and reach Y at 7 PM. At what time did it start from X?
    A. 4:44 PM
    B. 4:56 PM
    C. 4:36 PM
    D. 4:24 PM
    Answer: C
    Explanation:
    Increase in time taken = (7 PM – 6:06 PM) = 54 minutes
    Let the usual speed of the train be S
    Decreased speed of the train = 62.5% of S = 5S/8
    Since the speed is decreased to 5/8 times the time of travel would have been increased by 8/5 times
    If the usual time taken is T then the new time taken is 8T/5
    Thus, increase in time taken = 8T/5 – T = 54 minutes

3T/5 = 54
T = 90 minutes
Thus, the time at which the train starts from X is 90 minutes before 6:06 PM (i.e.) at 4:36 PM

25. The sum of two numbers is 2604 and their HCF is 124. Which is the smaller between them if their difference is the least possible?
A. 1116
B. 1240
C. 620
D. 496
Answer: B
Explanation:
Let the ratio of the two numbers be a : b where a < b
As the HCF of these two numbers is 124, the two numbers are 124a and 124b
From the given data,
124a + 124b = 2604
a + b = 21
Also given that the difference between the numbers is the least possible.
To satisfy this condition, the values of a and b should be 10 and 11 respectively
Thus, the required smaller number is 124a = (124 × 10) = 1240

TCS Ninja Verbal Ability Questions

1. For the four sentence (S1 to S4) paragraph given below, sentences S1 & S4 are given. From the options P, Q and R, choose appropriate sentences for S2 & S3.
   S-1: Some of the earliest currencies were objects from nature.
   S-2:
   S-3:
   S-4: They were similar in size, small and durable.
   P: Although they may seem a pretty random choice the shells had a number of advantages.
   Q: A notable example is cowrie shells first used as money about 1200 BCE.
   R: Counterfeiting dates to the invention of money.
   A. QP
   B. RQ
   C. PQ
   D. PR
   Answer: A
   Explanation:
   In order to find the appropriate sentences to be fixed as S-2 and S-3, let us first try to relate the given optional sentences (P, Q, R) with respect to the fixed ones (S-1 and S-4).
   If we consider the last sentence (i.e. S-4), there is a pronoun 'They' (They were similar in size, small and durable). We know that a pronoun can be introduced only after the introduction of a noun. Is the noun for this pronoun 'They' introduced in any of the fixed part of the paragraph?
   No. If we consider the first sentence S-1, there is a noun, 'objects from nature'. But this is not the noun for the pronoun in S-4. Because the noun in S-1, in general, represents some objects from nature which are considered as currencies. But S-4, in specific, describes a particular object that is similar in size, small and durable. One such specific object from nature is introduced as a noun in which of the given four optional sentences?
   Yes. One such specific object from nature is introduced in sentence Q (A notable example is cowrie shells first used as money about 1200 BCE). So, the noun for the pronoun in S-4 is 'Cowrie shells' which is introduced in sentence Q. So, sentence Q should definitely be included as a part in the answer option.
   Now in order to find the order for sentence Q, we have to first find the other sentence to be related to the paragraph. Between the remaining two optional sentences P and R, which one can be related to the paragraph?
   Yes. The phrase given in R is not even a sentence. It can be a title to the paragraph, but it cannot be related as a part of the paragraph. So, the other sentence to be related to the paragraph is sentence P. Also in sentence P, there is a pronoun 'they' (Although they may seem). The noun for this pronoun should also be 'Cowrie shells' which is introduced in sentence Q. As a pronoun can only follow the noun, the order in which the sentences are to be fixed in S-2 and S-3 is Q and P respectively (The sentence P with the pronoun can only follow the sentence Q with the noun). One such required order of QP is given in option A and hence is the correct answer.

2. Select the part of the sentence with error, if any.
Since sunrise to sunset my grandmother would sit by her wheel spinning and reciting prayers.
A. No error
B. My grandmother would sit by her wheel
C. Spinning and reciting prayers
D. Since sunrise to sunset
Answer: D
Explanation:
In the given sentence the time period is represented as 'Since sunrise to sunset'.
Here the given time period is a specific duration with a definite start and end time. In order to represent a specific time duration with a definite start and end time we use the prepositions 'from' and 'to'. Example: From 5 a.m. to 10 a.m., From Monday to Thursday etc..
Also the preposition 'since' is used to represent the start time of an action/ a happening which had started some time in the past and is still in progress even at the time of reporting. Example: The unit has been functioning great since 2013.
As the time reference presented in the question is with respect to a definite start and end time (sunrise and sunset) the appropriate preposition to be used in the given context is 'From ... to...'.
Thus, the use of the preposition 'since' in the sentence is not correct and so the part 'Since sunrise to sunset' is the one which has error in it. This part is given in option D and hence is the correct answer.
If we correct the error, the correct sentence is 'From sunrise to sunset my grandmother would sit by her wheel spinning and reciting prayers.'

3. Choose the option that best fits the blank.
The candidates _____ certificates the office could not verify were not permitted to appear before the interview board.
A. Whom
B. Whose
C. Who
D. Which
Answer: B
Explanation:
The word that precedes the blank is 'The candidates' and the word that follows the blank is 'certificates'. From the context it can be understood that 'the certificates belong to the candidates' or 'the candidates possess the 'certificates'.
If we consider the given options, all the options (whom, whose, who, which) are relative pronouns.
So, from the context it can be understood that the required relative pronoun to be fitted in the blank should reflect the sense of possession.
One such relative pronoun that reflects the sense of possession is 'whose' which is given in option B. Hence option B is the correct answer. If we relate the same, the correct sentence is 'The candidates whose certificates the office could not verify were not permitted to appear before the interview board.'
Use of other options:

'Whom' is used to represent a person when the person is in the object position of the verb. Example: I submitted the proposal to the person whom I met yesterday.

'Who' is used to represent a person when the person is in the subject position of the verb. Example: The person who received the proposal has approved the project.

'Which' is used to represent things and animals. Example: I read the letter which was delivered today.

Direction (Q4 to Q6): Read the passage given below and answer the questions.

It's apparently humankind's fate never to stop writing the history of pandemics. No matter how often they occur - and they do occur with great frequency - we collectively refuse to think about them until circumstances demand it. Then, when the immediate crisis passes, we put it out of our minds as quickly as possible. And so, we again are unprepared when the next contagion - in this case, COVID-19 - bursts upon us. Richard Conniff traces this alarming cycle in "How devastating pandemics change us," this month's cover story. It examines our long relationship with infectious diseases, from the hard lessons we've been forced to learn to the brave, and often difficult, characters who've risked their lives to save us.

Smallpox taught us that we could prevent disease through inoculation and, as the 1700s ended, vaccination. By the mid-1800s, cholera's lesson was about sanitation and the need for centralized water and sewer systems. About the same time, one man we've all heard of, Louis Pasteur, and one many of us haven't, Robert Koch, became the co-fathers of germ theory. Tools they created are still used to identify and fight what Conniff calls "an astonishing rogues' gallery of deadly pathogens."

And yet here we are, again, fighting on two fronts: the first, against a new coronavirus sweeping the planet to devastating effect; the second, with each other, over domestic and international politics and whether we're willing to pay the price of prevention.

It's an important question for our planet. While we debate, the next pandemic draws nearer.

4. Which statement is CORRECT according to the passage?
   A. Research about vaccines is not reliable
   B. All pandemics are not to be feared
   C. Pandemics keep occurring periodically
   D. There is no solution for a pandemic

   Answer: C

   Explanation:

   Option A:

   In option A, it is stated that 'Research about vaccines is not reliable'. But the author did not represent one such idea of the vaccines being not reliable in any part of the passage.

   In the second paragraph, it is also presented that 'Tools they created (related to germ theory and vaccination) are still used to identify and fight what Conniff calls "an astonishing rogues' gallery of deadly pathogens".' From this statement it can be understood that the concept of vaccination is

originally supported in the passage. As this idea contradicts the one given in option A, it cannot be the correct answer.

Option B:
In option B, it is stated that 'All pandemics are not to be feared'.
If we consider the first paragraph, it is presented that 'when the immediate crisis passes, we put it out of our minds as quickly as possible. And so, we again are unprepared when the next contagion - in this case, COVID-19 - bursts upon us.'
From these lines, it can be understood that according to the author, if we put the learnings from a crisis out of our minds, we become unprepared for the next one. So, the learnings are required to be retained to be prepared for the forthcoming crisis. This requirement also validates the fact that the upcoming crisis are also associated with ill features. In that case it is inappropriate to say that all pandemics are not to be feared. So, option B is not true according to the passage.

Option C:
Option C is given as: 'Pandemics keep occurring periodically'.
In the first paragraph it is stated that, 'No matter how often they occur - and they do occur with great frequency - we collectively refuse to think about them until circumstances demand it.'
From these lines, it can be understood that the statement 'Pandemics keep occurring periodically' is true according to the passage. So, option C is the correct answer.

Option D:
The statement given in option D is: 'There is no solution for a pandemic'.
The second paragraph altogether describes solutions achieved for different pandemics in the past. In that case, the statement given in option D (There is no solution for a pandemic) is also not true according to the passage. So, it cannot be the correct answer.

5. In the fourth paragraph which pandemic is the author referring?
   A. An unknown one
   B. Small pox
   C. COVID-19
   D. Cholera
   Answer: A
   Explanation:
   If we trace back to the fourth paragraph, it is stated that 'It's an important question for our planet. While we debate, the next pandemic draws nearer.'
   Here the next pandemic refers to the unknown one which is yet to occur. So, option A (An unknown one) is the correct answer.

6. What does the writer imply that we should do?
   A. Be vigilant about hygiene and health issues.
   B. Wear masks when we step out of our homes.
   C. Wash our hands and everything we touch carefully.
   D. Maintain social distancing and avoid public gatherings.

Answer: A

Explanation:

If we consider the given options, in options B, C and D some specific actions of wearing masks, washing hands and maintaining social distancing are listed. But such specific course of actions (especially specific to the current pandemic of COVID-19) are not related in any part of the passage. So, these three options cannot be the correct answer.

Also, if we consider the first paragraph, it is stated that 'No matter how often they occur - and they do occur with great frequency - we collectively refuse to think about them until circumstances demand it. Then, when the immediate crisis passes, we put it out of our minds as quickly as possible. And so we again are unprepared when the next contagion - in this case, COVID-19 - bursts upon us.'

From these lines it can be understood that according to the author our refusal to think about the issues until the circumstances demand makes us unprepared for the crisis. So, it is appropriate to say that the author urges us to be vigilant about hygiene and health issues. So, in all ways option A is the correct answer.

7. The part of the sentence below may contain a grammatical error. Identify the part.
A high-end machine was inaugurate at the city's Institute of Medical Sciences which will facilitate 3000 RT-PCR tests for Coronavirus in a day.
   A. A high-end machine was inaugurate
   B. at the city's Institute of Medical Sciences
   C. for Coronavirus in a day
   D. which will facilitate 3000 RT-PCR tests

   Answer: A

   Explanation:

   In the given sentence the verb is represented as 'was inaugurate'. The auxiliary verb 'was' can be followed either by the past participle form of verb (V3) to represent the verb in passive form or by the present participle form of verb (V4) to represent the verb in past continuous tense.

   So, the correct verb form can either be 'was inaugurated' or 'was inaugurating'. But in the verb given in the sentence, 'was' is followed by the simple present tense form of verb (V1), inaugurate, which is not an appropriate verb form/ structure.

   Thus, 'A high-end machine was inaugurate' is the part of the sentence that has an error in it. So, option A is the correct answer.

   If we correct the error, the correct sentence is: 'A high-end machine was inaugurated at the city's Institute of Medical Sciences which will facilitate 3000 RT-PCR tests for Coronavirus in a day.' Because, as per the context, the verb has to be represented in passive form.

8. The following sentence pair can be combined into a single sentence. Choose the sentence that best combines the two sentences without changing the meaning.
Nikhil researched the topic well. He was able to do his Viva Voice well.
   A. Nikhil researched the topic well unless he was able to do his Viva Voice well.
   B. Nikhil was able to do his Viva Voice well despite he researched the topic well.
   C. Nikhil researched the topic well therefore he was able to do his Viva Voice well.
   D. Nikhil was able to do his Viva Voice well although he researched the topic well.

Answer: C
Explanation:
In order to combine the given two sentences, let us first understand the relation between them. The first sentence describes how Nikhil had researched the topic and the second sentence describes how he had done his Viva Voice. These two units establish a cause and effect relationship.
Nikhil having researched the topic well would be the reason/ cause because of which he would have done the Viva Voice well.
So, the combined sentence should represent this cause and effect relationship.
Option A:
Nikhil researched the topic well unless he was able to do his Viva Voice well.
Here the conjunction used to connect the sentences is 'unless'. The conjunction unless is used in the case of conditional clauses. Example: Unless you prepare well, you cannot pass the exam.
But this did not reflect the required cause and effect relationship and hence is not the correct answer.
Option B:
Nikhil was able to do his Viva Voice well despite he researched the topic well.
Here the sentences are connected by the preposition 'despite'. The preposition 'despite' means 'not being affected by'. Example: He won the competition despite his poor health.
This preposition is used in the case of contrast ideas. Also, it cannot be used as a conjunction to connect two sentences. So, in all the ways option B is not the correct answer.
Option C:
Nikhil researched the topic well therefore he was able to do his Viva Voice well.
Here the conjunction 'therefore' is used to connect the given two sentences. In general, the conjunction 'therefore' is used to conclude the result of something. Example: He earned enormous goodwill and therefore was elected as the President.
So, this conjunction satisfies the required condition and reflects the needed cause and effect relationship. Hence option C is the correct answer.
Option D:
Nikhil was able to do his Viva Voice well although he researched the topic well.
Here the conjunction used to connect the sentences is 'although' which is used to relate contrast ideas. Example: Although he is rich, he is not happy.

As this conjunction also did not represent the required cause and effect relationship, option D is also not the correct answer.

9. Which one of the following sentences uses formal language?
   A. This presentation takes the cake!
   B. Shall we put this on our agenda for the next client week?
   C. I apologize for the technical glitch that occurred during our webinar yesterday.
   D. I'm disappointed with the sales figures, they need to look up!

   Answer: C
   Explanation:

In order to find the sentence that uses only the formal language, let us consider the sentences given in the options one by one.

Option A:
This presentation takes the cake!
In this sentence, the phrase 'take the cake' is used in the informal language to represent the worst or the best of its kind. Here. 'The presentation takes the cake' means that the presentation is either too good or too bad. As the sentence comprises an informal language, option A is not the correct answer.

Option B:
Shall we put this on our agenda for the next client week?
This sentence has a phrasal verb, 'put this on'. As per the given sentence, the contextual meaning of this phrasal verb 'put this on' is 'attach to'. But this phrasal verb also has another meaning as 'tease someone' in the informal language. Even though the contextual meaning is different, as the phrasal verb has another meaning in the informal language, option B cannot be the correct answer.

Option C:
I apologize for the technical glitch that occurred during our webinar yesterday.
The sentence given in option C is devoid of informal language. So, option C is the correct answer.

Option D:
I'm disappointed with the sales figures, they need to look up!
In this sentence, there is a phrasal verb 'look up'. The contextual meaning of this phrasal verb in the given sentence is 'improve'. But the phrasal verb also has another meaning as 'visit someone' in the informal language. Even though the contextual meaning is different, as the phrasal verb has another meaning in the informal language, option D cannot be the correct answer.

10. You are going to read a text about a man in a photograph. Some sentences are missing from the text. Choose from the list (a-c) the most appropriate sentence for each gap (1-2) in the text. There is one extra sentence that you do not need to use.

It was the first photograph that I had ever seen, and it fascinated me. I still remember holding it at every angle in order to catch the flickering light from the oil lamp on the dresser. ____(1)____. I had never met him, but I felt that I knew him. ____(2)____. I moved the photograph so that the shadow lay perfectly around his hollow cheeks. How different he looked!
a. The man in the photograph was unsmiling, but his eyes were kind.
b. I would tell him how wonderful he looked with the shadow that I had seen across his photograph, and I would most carefully suggest that he grew whiskers.
c. One evening when I was looking at the photograph, as I always did before I went to sleep, I noticed a shadow across the man's thin face.
A. (1)-a, (2)-c
B. (1)-b, (2)-a
C. (1)-c, (2)-b

D. (1)-c, (2)-a

Answer: A

Explanation:

If we consider the sentence that immediately follows the first blank, it has a pronoun 'him'. A pronoun can be introduced only after the introduction of a noun. If we consider the given optional sentences, one such noun is introduced in the sentence **a**. So, the first blank should be fitted with sentence **a**.

If we consider the remaining two optional sentences and the sentence that immediately follows the second blank, all are related to 'the shadow'. Among these sentences, the one which introduces this shadow is the sentence **c**. It can be understood either contextually or by considering the sentence structures; because in sentence **c** the noun 'shadow' is preceded by the indefinite article 'a' whereas in the other sentences it is preceded by the definite article 'the'. The definite article can be added only after the introduction. So, in all the ways, the first sentence that describes this 'shadow' is sentence **c** and so it should be the correct sentence to be fitted in the second blank.

Thus, the required combination of optional sentences to be fitted in each of the two given blanks is (1)-a and (2)-c. One such combination is given in option A and hence is the correct answer.

11. Select the most appropriate option to complete the sentence.

The final report on the project was _____ into three parts.

A. Broken up
B. Broken off
C. Broken away
D. Broken out

Answer: A

Explanation:

Let us first consider the meanings of phrasal verbs given in the options.

The phrasal verb 'break up' has more than one meaning. One of them is 'to stop or terminate something' and the other meaning is 'to split up or separate'.

The phrasal verb 'break off' also has more than one meaning. One of them is 'to remove something from a larger unit' and the other meaning is 'to suddenly end something'.

The phrasal verb 'break away' means 'to escape.'

The phrasal verb 'break out' also has more than one meaning. One of them is 'to occur suddenly' and the other meaning is 'to escape'.

If we relate the meaning of the phrasal verbs given in the options, the one that logically fits the context is 'to split up', which is given in option A. It is only appropriate to say that 'The final report was split up into three parts.' So, option A is the correct answer.

12. You are going to read a text about an interesting initiative. Some sentences are missing from the text. Choose from the list (a-c) the most appropriate sentence for each gap (1-2) in the text. There is one extra sentence that you do not need to use.

This year's Covid-19 pandemic has introduced a wide swath of Americans to the joys of gardens and gardening. ____(1)____. American's Rose Center is seeking Volunteers to participate during its

upcoming Volunteer Days from 8 a.m. to 3 p.m. on October 23 and 24. ____(2)____. Mask wearing and social distancing will be observed and a brown bag lunch will be provided to all who register.
a. Volunteers are welcome to come and work in the garden any time during the two days.
b. The fresh air and other healthful benefits of outdoor exercise, together with the good feeling of accomplishing some useful have drawn many to begin gardening or increase activities in the garden.
c. After the tour, Volunteers will be guided through tasks by garden team leaders.
A. 1-a, 2-c
B. 1-c, 2-a
C. 1-b, 2-a
D. 1-c, 2-b
Answer: C
Explanation:
Let us try to relate the given optional sentences to the given passage. In the sentence **a**, it is stated that 'Volunteers are welcome to come and work in the garden any time during the two days.' The two days specified in this sentence can be related to the days 'October 23 and 24' presented in the sentence that immediately precedes the second blank. So, the logically correct fit for the second blank is the sentence **a**.

Applying this condition, we can eliminate options A and D. Because only in options B and C the second blank is said to be fitted with sentence A.

If we consider the remaining two sentences **b** and **c**, in sentence **c** it is stated that 'After the tour, Volunteers will be guided through tasks by garden team leaders.' This sentence can be related to the passage only after describing the tour in the earlier part. As one such description of the tour is not represented in the passage, sentence C cannot be related to the passage. So, the first blank should be fitted with sentence **b**.

Thus, the required combination of optional sentences to be fitted in each of the two given blanks is 1-b and 2-a. One such combination is given in option C and hence is the correct answer.

13. Complete the following passage by filling in the blanks (1) and (2) with the right word from the list given below:
Compared with conventional agriculture, organic farming uses fewer pesticides, reduces soil erosion, decreases nitrate leaching into groundwater and surface water, and ____(1)_____ animal wastes back into the farm. These benefits are ___(2)_____ by higher food costs for consumers and generally lower yields.
Blank 1: a) recycling b) recycle c) recycles d) recycled
Blank 2: a) increased b) balanced c) counterbalanced d) encountered
A. 1-d, 2-b
B. 1-d, 2-a
C. 1-c, 2-c
D. 1-b, 2-d

Answer: C
Explanation:
If we consider the sentence with the first blank, it lists a number of units such as uses fewer pesticides, reduces soil erosion, decreases nitrate leaching etc.. We know that by the rule of parallelism, if a number of units are listed in a sentence then all the units of the list are to be represented in grammatically same structure.

As the verb in each of the units of the list in the given sentence is represented in the simple present tense form of verb (V1), the verb to be fitted in the first blank should also be represented in the simple present tense form. Because '_____ animal wastes back into the farm' is also a unit in the list.

Also, the subject for the simple present tense form of verb to be fitted in the first blank is 'Organic farming' which is a singular subject. So, the verb to be fitted in the blank should also be represented in singular form.

Among the options given for blank 1, the verb in simple present tense and singular form is given only in option C. So, the first blank should be fitted with option C.

If we consider the combined options, one such combination of the first blank to be fitted with option C is given only in the combined option C. Hence the combined option C (the combination of 1-c and 2-c) is the correct answer.

14. Fill in the blanks with the most appropriate pair of words from the options given below:
The Mughal Emperor Akbar, _____ 25th October 1605, shortly _____ his 63rd birthday due to yesterday.
A. dies on/ when
B. died on/ after
C. died at/ after
D. died in/ before
Answer: B
Explanation:
The sentence given in the question presents some details regarding the death of the Mughal Emperor Akbar. As this is a past event, the verb to be fitted in the first blank should be represented in past tense. With this requirement we can eliminate option A. Because the verb given in option A (dies) is represented in simple present tense form and so it doesn't meet the requirement.
In order to find the correct answer from the remaining three filtered options (B, C and D) we have to find the appropriate preposition to follow the verb 'died'.
The preposition 'in', as a preposition of time, is used to represent very general information. Example: in 1995, in January etc..
The preposition 'on', as a preposition of time, is used to represent partly general and partly specific information. Example: on Monday, on 15th August etc.

The preposition 'at', as a preposition of time, is used to represent very specific information. Example: at 5:00 p.m.
Here the first blank is immediately followed by a time reference which is represented in the form of a date, 25th October 1605. As the date provides a partly general and partly specific information, the correct preposition to be related to the first blank is 'on', which is given in option B (among the filtered options). Thus, option B is the correct answer and the correct sentence is 'The Mughal Emperor Akbar, died on 25th October 1605, shortly after his 63rd birthday due to yesterday.'

15. For the four-sentence (S1 to S4) paragraph below, sentences S1 and S4 are given. From the options P, Q and R, choose appropriate sentences for S2 and S3 respectively.
S-1: A global partnership will be making 120 million rapid coronavirus tests available to 133 economically less-advantaged nations at heavily discounted prices, the World Health Organization (WHO) announced.
S-2:
S-3:
S-4: The plan is the result of a series of agreements between the two pharmaceutical companies and several non-profit organizations and the Global Fund.
P: They will cost the purchasing nations $5 or less apiece.
Q: Testing is a critical cornerstone of the COVID-19 response, enabling countries to trace and contain the virus now.
R: The tests will be supplied by U.S.-based Abbott and South Korea's SD Biosensor, over a period of six months.
A. PQ
B. QP
C. RP
D. PR
Answer: C
Explanation:
If we consider S-4, it is stated that 'The plan is the result of a series of agreements between the two pharmaceutical companies and several non-profit organizations and the Global Fund.' The two pharmaceutical companies in this sentence refers to U.S.-based Abbott and South Korea's SD Biosensor which are introduced in sentence R. To give some additional information regarding the two companies, first the two companies are to be introduced. So, it can be concluded that sentence R should be related to the passage and it should be a part of the required order of sentences.
Also, the sentence S-4 starts as 'The plan is the result of a series of agreements..' Is the plan represented in S-4 described in any of the optional sentences? Yes, here the plan refers to the plan to cost the purchasing nations $5 or less apiece, which is described in sentence P. Also, the sentence P starts as 'They will cost..' Here the pronoun 'they' refers to U.S.-based Abbott and South Korea's SD Biosensor which are introduced in sentence R. As a pronoun can be introduced only after the introduction of a noun, sentence P (with the pronoun) should follow the sentence R (with the noun) in the required order.
So, if we relate all, sentences R, P and S-4 form a logical order as RPS-4. So, S-2 and S-3 are to be fixed as sentences R and P respectively. Option C, RP is the correct answer.

16. You are going to read a text about glaciers. Some sentences are missing from the text. Choose from the list (a-c) the most appropriate sentence for each gap (1-2) in the text. There is one extra sentence that you do not need to use.

Since the early 1900s, many glaciers around the world have been rapidly melting. ___(1)___. Specifically, since the industrial revolution, carbon dioxide and other greenhouse gas emissions have raised temperatures, even higher in the poles. ___(2)___. Scientists project that if emissions continue to rise unchecked the Arctic could be ice free in the summer as soon as the year 2040 as ocean and air temperatures continue to rise rapidly.

a. More than a third of remaining glaciers of the world would have melted by 2030.

b. As a result, glaciers are rapidly melting, calving off into the sea and retreating on land.

c. Human activities are at the root of this phenomenon.

A. (1)-c, (2)-b

B. (1)-c, (2)-a

C. (1)-a, (2)-b

D. (1)-b, (2)-c

Answer: A

Explanation:

If we consider the given optional sentences, sentence A is given as 'More than a third of remaining glaciers of the world would have melted by 2030.' This sentence gives some information regarding a particular quantity of the remaining glaciers. The information regarding the remaining glaciers can be related only after describing the original/ initial quantity. Example: It is only appropriate to say that 'Originally 50% of the apples are sold and then a third of the remaining are eaten.' So, in order to relate information regarding the remaining part, the original part should be described in prior. But one such information regarding the original or initial quantity of glaciers is not represented in any part of the given passage. So, the sentence **a** cannot be related to the given passage.

Applying this condition, we can eliminate options B and C. Also, sentence **c** is given as 'Human activities are at the root of this phenomenon.' Here 'this phenomenon' refers to the phenomenon of 'rapid melting of many glaciers around the world' which is described in the sentence that immediately precedes the first blank. As a pronoun can be introduced only after the introduction of a noun, we can conclude that the first blank should be fitted with sentence **c**. Thus, the second blank will be fitted with the remaining optional sentence **b**.

Thus, the required combination of optional sentences to be fitted in each of the two given blanks is (1)-c and (2)-b. One such combination is given in option A and hence is the correct answer.

17. The following three sentences can be revised into one better sentence. Choose the sentence that is the best revision:
I was at the fair. I got lost. I got scared.
A. I am scared after I am lost at the fair.
B. I went to fair and got scared as I was lost.
C. I am lost at the fair so I am too scared.
D. I got lost at the fair and was scared.
Answer: D
Explanation:
Here the three given sentences are presented in past tense. So, the combined sentence should also be represented in past tense. Applying this condition, we can eliminate option A and option C. Because in these two options, the combined sentence is represented in present tense.
In option B, the combined sentence is given as: 'I went to fair and got scared as I was lost.' But the action of the person going to the fair is not described in any of the given individual sentences. So, the sentence given in option B is not the correct combination of the given sentences.
Thus, the remaining option D is the correct answer. If we consider the same, the sentence 'I got lost at the fair and was scared' is the one which relates all the three given sentences without changing the meaning.

Direction (Q18 to Q20): Read the passage given below and answer the questions:

When behavioral ecologist Liz Derryberry saw a news report of coyotes crossing the Golden Gate Bridge in March, she immediately thought of her birds. For over a decade, Derryberry has studied the white-crowned sparrow and how urban noise has disrupted and degraded the species' ability to communicate.
With most San Franciscans staying at home due to the coronavirus pandemic, she decided to seize an unprecedented opportunity to study how this small, scrappy songbird responded when human noises disappeared.
"I realized we gotta do this, and we gotta do this now," she says.
By recording the species' calls among the abandoned streets of the Bay Area in the following months, Derryberry and colleagues have revealed that the shutdown dramatically improved the birds' calls, both in quality and efficiency. Male birds in particular rely on their songs to defend territory and find mates.
"The songs didn't change as much as we predicted—they changed even more," says Derryberry, of the University of Tennessee, Knoxville. "It highlights just how big of an effect noise pollution has."
The research, published today in science, is among the first to scientifically evaluate the effects of the pandemic on urban wildlife. It also adds to a burgeoning field of research into how the barrage of human-made noise has disrupted nature, from ships drowning out whale songs to automobile traffic jamming bat sonar.

18. What purpose do the calls of the birds serve?
A. They help them locate other birds.
B. They show them the direction during flight.
C. They help the male secure their territory.

D. They assist them in finding food.

Answer: C

Explanation:

If we trace back to the given passage, the purpose of the birds' calls was listed in the fourth paragraph. If we consider the same, it is stated that 'Male birds in particular rely on their songs to defend territory and find mates.'

So, the purposes listed in the passage are to defend territory and find mates. Between these two units the purpose to defend territory is described in option C.

Thus, option C 'They help the male secure their territory' is the correct answer.

19. The results of Derryberry and her companion's research were unexpected because _____.
    A. The bird songs became louder and better when human noises reduced.
    B. The bird songs became fewer and less audible when fewer humans watched them.
    C. It revealed that birds did not change their songs or their other habits.
    D. It showed that birds migrated from their original homes due to the pandemic.

    Answer: A

    Explanation:

    In the fifth paragraph it is stated that: "The songs didn't change as much as we predicted—they changed even more," says Derryberry, of the University of Tennessee, Knoxville. "It highlights just how big of an effect noise pollution has."

    From these lines it can be understood that the change in the songs did not occur as they had predicted. From the phrase 'they changed even more' it can be concluded that the change in the songs exceeded their expectation. One such required sense of the songs having become better than the expectation is reflected in option A.

    Thus, option A 'The bird songs became louder and better when human noises reduced' is the correct answer.

20. Which word does the writer use to describe the extent of research on noise pollution?
    A. Disrupted
    B. Improved
    C. Burgeoning
    D. Drowning

    Answer: C

    Explanation:

    Here 'the extent of research on noise pollution' is a noun. So, the word that describes this noun, or in other words, the word that gives some additional information about this noun should be an adjective for the noun.

    If we trace back to the last paragraph, it is stated that: 'It also adds to a burgeoning field of research into how the barrage of human-made noise has disrupted nature, from ships drowning out whale songs to automobile traffic jamming bat sonar.'

21. Find out the correct option from the alternatives provided for the question given below.
    On public occasions, she was very punctilious about forms and manners.
    A. Serious

B. Careful
C. Artificial
D. Casual
Answer: B
Explanation:
Punctilious means showing great attention to detail or correct behaviour. The only option that means similar is 'Careful'. Thus option B is the correct answer.

22. Choose a suitable **antonym** for the given word.
AWARE
A. Oblivious
B. Careless
C. Doubtful
D. Unsure
Answer: A
Explanation:
Aware means knowing about or realizing something; conscious of somebody/something. Option B, Option C and Option D can be eliminated.
Oblivious means not noticing or realizing what is happening around you.
Hence, the correct answer is Option A.

23. A sentence has been given in Active/Passive Voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active Voice.
Call in the next candidate.
A. Let the next candidate be call.
B. Call the next candidate.
C. Let the next candidate called.
D. Let the next candidate be called.
Answer: D
Explanation:
The given sentence is in Active Voice because verb here in V1 form.
Hence, Option A and Option B can be eliminated because in Passive Voice we use V3 form.
The passive form of the verb will have 'be' form. Hence, Option C can be eliminated.
So, Option D will be the correct answer.

24. A sentence has been given in Active/Passive Voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active Voice.
He increased his pace as the sunset approached.
A. His pace is increased by him as the sunset approached.
B. His pace was increased by him as the sunset approached.
C. His pace has increased by him as the sunset approached.
D. His pace has been increased by him as the sunset approached.
Answer: B
Explanation:

The given sentence is in Active Voice. Also, the given sentence is in Past Simple.
Past Simple uses 'was; when we convert it to Passive Voice. The only option which contains 'was' is option B. Thus, Option B is the correct answer.

25. In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best express the same sentence in Indirect/Direct speech.
They said, "We have been supporting Barcelona FC since its inception".
A. They said that they had supported Barcelona FC since its inception.
B. They say that they has been supporting Barcelona FC since its inception.
C. They said that they were supporting Barcelona FC since its inception.
D. They said that they had been supporting Barcelona FC since its inception.
Answer: D
Explanation:
Reporting verb is in Past Tense, hence the change will happen.
Given sentence is in Present Perfect Continuous. In Reporting Speech Present Perfect Tense will be changed in Past Perfect Continuous.
Have been -> Had been
Pronoun change will also happen.
We -> They
Hence, the reporting speech would be: ***They*** *said that* ***they had been*** *supporting Barcelona FC since its inception.*
Thus, the correct answer is option D

TCS Ninja Reasoning Ability Questions

1. Among 5 objects P, Q, R, S and T
   i. R is twice as heavy as T
   ii. S is one and half times as heavy as Q
   iii. Q and R together weigh as much as S and T together
   iv. P and S together are one and half time as heavy as Q and T together

   Which among the five is the heaviest of all?

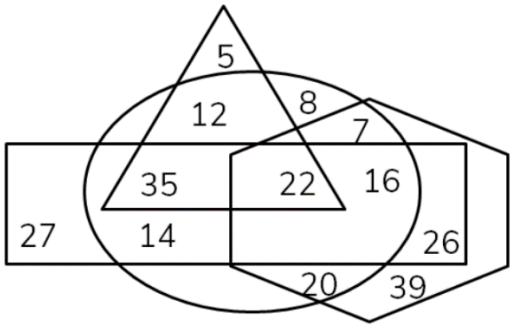
   A. Q
   B. S
   C. P
   D. R

   Answer: B

   Explanation:

   From statement (i), R = 2T --- Eq (1)
   From statement (ii), S = 1.5Q --- Eq (2)
   From statement (iii), Q+R = S+T --- Eq (3)
   From statement (iv), P+S = 1.5(Q+T) --- Eq (4)
   Substitute Eq (1) and Eq (2) in Eq (3)
   Q+2T = 1.5Q+T
   0.5Q = T
   Q = 2T --- Eq (5)
   Substitute Eq (5) in Eq (2)
   S = 1.5(2T)
   S = 3T --- Eq (6)
   Substitute Eq (5) and Eq (6) in Eq (4)
   P+3T = 1.5(2T+T)
   P+3T = 4.5T
   P = 1.5T
   Now, it is obvious that T will be a positive value as T is the weight of a person.
   So, among all the above values, S = 3T will be highest and hence S will be the heaviest of all.

2. In the following diagram, the triangle stands for 'males', the circle for 'doctors', the rectangle for 'government employed', the hexagon for 'corona warriors'. The numbers in different segments show the number of persons for that segment. How many government-employed doctors are either corona warriors or males or both?



A. 22
B. 73
C. 35
D. 38

Answer: B

Explanation:

Here we need to find government-employed doctors who are either corona warriors or males or both.
To find out the number of government-employed doctors who are corona warriors, we need to check the intersection of rectangle, circle and hexagon and the value is 16.
To find out the number of government-employed doctors who are males, we need to check the intersection of rectangle, circle and triangle and the value is 35.
To find out the number of government-employed doctors who are both corona warriors and males, we need to check the intersection of rectangle, circle, hexagon and triangle and the value is 22.
So, the total number of government-employed doctors who are either corona warriors or males or both = 16+35+22 = 73.

3. There are five rods K, L, M, N and O. The weight of O is twice L. The weight of L is equal to the weights of K and M together. The weight of M is twice the weight of K. The weight of N is three times the weight of M. If the weight of N is 90 kg, what will be the weight of O?

A. 120 kg
B. 60 kg
C. 105 kg
D. 90 kg

Answer: D

Explanation:

Given,
The weight of O is twice L
O = 2L --- Eq (1)
The weight of L is equal to the weights of K and M together
L = K+M --- Eq (2)
The weight of M is twice the weight of K
M = 2K --- Eq (3)
The weight of N is three times the weight of M
N = 3M --- Eq (4)
Given, N = 90 kg --- Eq (5)
From Eq (4), 3M = 90
M = 30 kg --- Eq (6)
Substitute Eq (6) in Eq (3)
30 = 2K
K = 15 kg
Substitute the value of K and M in Eq (2)
L = 15 + 30 = 45 kg
Now, substitute the value of L in Eq (1)
O = 2(45) = 90 kg

4. Which is the odd term in the following series?
   CMQ, FPT, JTX, OYC, UFI
   A. FPT
   B. OYC
   C. JTX
   D. UFI
   Answer: D
   Explanation:
   CMQ: The difference between C and M is 10. The difference between M and Q is 4.
   FPT: The difference between F and P is 10. The difference between P and T is 4.
   JTX: The difference between J and T is 10. The difference between T and X is 4.
   OYC: The difference between O and Y is 10. The difference between Y and C is 4 (Here, the place value of C is 29 because, after Z which is the 26th letter, the 27th letter will be A, the 28th letter will be B and so on)
   UFI: The difference between U and F is 11 (Here the place value of F is 32). The difference between F and I is 3.
   So, UFI is the odd term of the given series.

Directions for questions 5 and 6: The number of employees working in six different departments of two companies A and B are given below. Study the given data and answer the questions that follow.

Company A	
Department	**Number of Employees**
Marketing	256
HR	72
Production	504
Accounts	68
Operations	256
Planning	46
Total	**1202**

Company B	
Department	**Number of Employees**
Marketing	524
HR	108
Production	736
Accounts	122
Operations	146
Planning	58
Total	**1694**

5. If 30 employees of the Planning department quit Company B and join the Planning department of Company A, then what is the percentage of employees in the Planning Department in the total employees in Company A?
   A. 5.34%
   B. 6.16%
   C. 6.32%
   D. 4.48%
   Answer: B
   Explanation:
   Given, 30 employees quit Company B and join the Planning department of Company A.
   Number of employees in the Planning department of Company A = 46+30 = 76
   Total employees in Company A = 1232
   Percentage of employees in the Planning Department in the total employees in Company A = (76/1232) × 100 = 6.16%

6. What is the percentage difference between the employees working in the Production department of Company A and Company B?
   A. 2.8%
   B. 1.2%
   C. 1.5%
   D. 3.2%
   Answer: C
   Explanation:
   Number of employees in the Production department of Company A = 504
   Total employees in Company A = 1202
   Percentage of employees in the Production Department in Company A = (504/1202) X 100 = 41.9%
   Number of employees in the Production department of Company B = 736
   Total employees in Company B = 1694
   Percentage of employees in the Production Department in Company B = (736/1694) X 100 = 43.4%
   Percentage difference between the employees working in the Production department of Company A and Company B = 43.4 - 41.9 = 1.5%

7. Nehal, Iqbal, Ronit, Malini and Harbhajan participate in any one of the five activities i.e Quiz, Singing, Dance, Debate and Mimicry. Ronit participates in Singing. Harbhajan does not participate in Debate and Mimicry. Malini does not participate in Mimicry. Iqbal participates in Quiz. Who participates in Debate?
   A. Malini
   B. Nehal or Malini
   C. Nehal
   D. Cannot be determined
   Answer: A
   Explanation:
   Given,
   Ronit participates in Signing

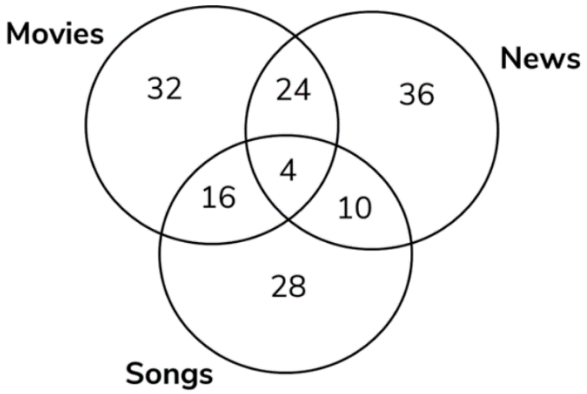
Iqbal participates in Quiz
Harbhajan does not participate in Debate and Mimicry. Harbhajan cannot participate in Singing and Quiz too as Ronit and Iqbal are participating. So, Harbhajan should participate in Dance.
Malini does not participate in Mimicry and cannot participate in Singing, Quiz and Dance as Ronit, Iqbal and Harbhajan are participating. So, Malini should participate in the Debate.

8. Given below is a question followed by two statements I and II, each containing some information. Decide which of the statements are sufficient to answer the question that follows.
How many Rs. would Shalini need to spend to buy 11 pencils and 14 pens?
Statements:
   I. Shalini spent an amount of Rs. 201 to buy 15 pencils and 12 pens.
   II. Shalini spent an amount of Rs. 121 to buy 7 pencils and 9 pens.
A. The combination of statements I and II are not sufficient.
B. Statement II alone is sufficient.
C. Statement I alone is sufficient.
D. The combination of statements I and II are necessary.
Answer: D
Explanation:
Let us assume the cost of one pencil is x and the cost of one pen is y.
From statement (I),
$15x + 12y = 201$ --- Eq (1)
By using the above equation, we cannot find out the value of x and y individually. So, statement I alone is not sufficient.
From statement (II),
$7x + 9y = 121$ --- Eq (2)
By using the above equation, we cannot find out the value of x and y individually. So, statement II alone is not sufficient.
If we combine statement (I) and statement (II),
By solving Eq (1) and Eq (2), $x = 7$ and $y = 8$.
So, the value of 11 pencils and 14 pens = $(11 \times 7) + (14 \times 8) = 189$.
So, the combination of statements I and II are necessary.

9. In a row, seven people are standing for march past.
   I. B is standing right to A and left to C.
   II. D is standing left to E but right to C.
   III. F is standing right to E and left to G.
Who is standing in the middle of the row?
A. D
B. Either B or G
C. A
D. Either C or E
Answer: A
Explanation:
Given,

B is standing right to A and left to C
A B C
D is standing to the right of C and left of E
A B C D E
F is standing right to E and left to G.
A B C D E F G
This is the final arrangement.
So, D is standing in the middle of the row.

Directions for questions 10 and 11: Consider the Venn diagram given below.



10. The number in the Venn diagram indicates the number of persons/ people watching TV programmes. The diagram is drawn after surveying 150 persons in a population of 12,000. How many persons/ people can be expected to watch at least two TV programmes?
    A. 4320
    B. 3200
    C. 5232
    D. 5400
    Answer: A
    Explanation:
    Number of persons who watch at least two TV programmes as per the Venn diagram = 24 + 16 + 10 + 4 = 54
    (When we say at least two TV programmes, it can be exactly two TV programmes or three TV programmes as well)
    54 people watch at least two TV programmes out of 150 people.
    Given that the total population is 12,000.
    So, the number of persons who are expected to watch at least two TV programmes = (12,000*54)/150 = 4320

11. The number in the Venn diagram indicates the number of persons/ people watching TV programmes. The diagram is drawn after surveying 150 persons in a population of 12,000. How many persons/ people can be expected to watch News only?
    A. 2280

B. 3200
C. 4320
D. 2880
Answer: D
Explanation:
Number of persons who watch News only as per the Venn diagram = 36
36 people watch News only out of 150 people.
Given that the total population is 12,000.
So, the number of persons who are expected to watch News only = (12,000*36)/150 = 2880

12. In a certain code, P + R means P is the son of R; P – R means P is the wife of R and P x R means P is the father of R.
If A + B - Q x S, then which of the following is true?
A. A is the grandson of S
B. S is the uncle of A
C. A is the brother of S
D. A is the sister of S
Answer: C
Explanation:
A + B means A is the son of B.
B - Q means B is the wife of Q.
Q x S means Q is the father of S.
So, A and S will be siblings and A is male.
Hence, A is the brother of S.

13. Which is the wrong term in the following series?
pbd, reh, thl, vlp, xnt
A. xnt
B. pbd
C. thl
D. vlp
Answer: D
Explanation:
Let us take the first letter in all the terms.
p, r, t, v, x
The difference between the consecutive letters in the series is 2.
Let us consider the second letter in all the terms.
b, e, h, l, n
The difference between b and e is 3
The difference between e and h is 3
The difference between h and l is 4
The difference between l and n is 2
Here instead of l, if it has been k, all the consecutive letters in the series would have a difference of 3.

Let us take the third letter in all the terms.
d, h, l, p, t
The difference between consecutive letters in the series is 4.
So, the wrong term in the series is vlp. (It should be vkp)

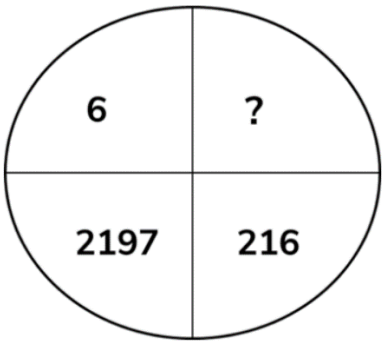
14. In a certain code, P @ R means P is the grandson of R; P $ R means P is the brother of R; P # R means P is the mother of R.
If A @ B # C $ D, then how is B related to D?
A. Mother
B. Husband
C. Son
D. Sister
Answer: A
Explanation:
A @ B means A is the grandson of B
B # C means B is the mother of C
C $ D means C is the brother of D.
C and D are siblings and B is the mother of C.
So, B is the mother of D as well.

15. Seven friends O, P, Q, R, S, T and U are standing in a row.
    1. Q is to the right of U
    2. P is between T and S
    3. O is to the right of Q and left of S
    4. U is between Q and R

Who is exactly in the middle of the row?
A. R
B. Q
C. S
D. O
Answer: D
Explanation:
Q is to the right of U
U Q
O is to the right of Q and left of S
U Q O S
P is between T and S
U Q O S P T
U is between Q and R
R U Q O S P T
So, O is in the middle of the row.

16. Choose a pair similar to the following.
MDXF: OBZD
A. ILPR: KNRT
B. SGFN : UEHL
C. CLPQ : MXCF
D. BMXT: COZW
Answer: B
Explanation:
The pattern for MDXF : OBZD is +2, -2, +2, -2.
Option A: ILPR: KNRT - The pattern here is +2, +2, +2, +2
Option B: SGFN : UEHL - The pattern here is +2, -2, +2, -2
Option C: CLPQ : MXCF - The pattern here is +10, +12, -13, -11
Option D: BMXT: COZW - The pattern here is +1, +2, +2, +3
So, the same pattern is observed in Option B.

17. What number will come in place of the question mark?



A. 16
B. 15
C. 17
D. 13
Answer: D
Explanation:
In the given figure,
The diagonal elements 6 and 216 are having a pattern
$6^3 = 216$
Here, ? and 2197 are the diagonal elements and they should have the same pattern.
So, the cube root of 2197 should replace the question mark.
Hence, the cube root of 2197 is 13.

18. Following are the criteria for admitting a student to a post-graduation course in a reputed college.
The student must
I. have passed XII standard with more than 50% marks.
II. have secured at least 60% marks at graduation level.

III. be of at least 21 years of age or more as on 01.01.2020.
IV. have secured more than 55% marks in the entrance test.

In the case of the student, who satisfies all other criteria except,

a) (II) above, but has obtained at least 70% marks in the entrance test, should be referred to the HOD.
b) (I) above, but has obtained at least 80% marks at graduation level, should be referred to the Dean.

Nisha was born on 08.04.1998. She secured 65% marks in XII standard, 70% marks in graduation and also scored 60% marks in the entrance test.

A. The student is not to be admitted.
B. The student is to be admitted.
C. The student is to be referred to the HOD.
D. The student is to be referred to the Dean.

Answer: B

Explanation:

Nisha should be admitted to the Post-Graduation course as she met all the conditions given.

19. The pair of letters given below has a certain relationship. Select the pair of letters from the given alternatives that have the similar relationship.

BLV : HRB

A. HQR : SCW
B. UOV : RZS
C. KTV : HIT
D. EOY : KUE

Answer: D

Explanation:

The pattern of BLV : HRB is +6, +6, +6 (Here B is 28)
Option A: HQR : SCW - The pattern is +11, +12, +5 (Here C is 29)
Option B: UOV : RZS - The pattern is -3, +11, -3
Option C: KTV : HIT - The pattern is -3, -11, -2
Option D: EOY : KUE - The pattern is +6, +6, +6 (Here E is 31)
Thus, option D have the same relationship as observed in the given pair.

20. Which option will replace the question mark?

3, 21, 5, 19, 8, 16, 12, 12, 17, ?

A. 17
B. 18
C. 7
D. 9

Answer: C

Explanation:

Let us consider all the even place terms separately and odd place terms separately.
Odd place terms:
3, 5, 8, 12, 17

The difference from 3 to 5 is 2
The difference from 5 to 8 is 3
The difference from 8 to 12 is 4
The difference from 12 to 17 is 5
Even place terms:
21, 19, 16, 12, ?
The difference from 21 to 19 is -2
The difference from 19 to 16 is -3
The difference from 16 to 12 is -4
By observing the above pattern, the next difference should be -5.
So, the number in place of the question mark should be 12 - 5 = 7.

21. Given below is a question followed by two statements I and II, each containing some information. Decide which of the statements are sufficient to answer the question that follows.
Among six family members O, P, Q, R, S and T, how many are male in the family?
Statements:
I. Q is the wife of P and the mother of T. R is the grandmother of O and the mother of P
II. T is the granddaughter of S. R is the grandmother of O and T.
A. Both the statements I and II together are not sufficient
B. Statement II alone is sufficient
C. Both the statements I and II together are necessary
D. Statement I alone is sufficient
Answer: A
Explanation:
From statement I we get the following details:
Q is a female (As Q is the wife of P)
P is a male (As Q is the wife of P)
R is a female (As R is the grandmother of O and the mother of P)
But the genders of O, S and T are not known. So, statement I alone is not sufficient to answer the question.
From statement II we get the following details:
T is a female (As T is the granddaughter of S)
R is a female (As R is the grandmother of O and T)
But the genders of O, P, Q and S are not known. So, statement II alone is not sufficient to answer the question.
Even if we combine both the statements, the genders of O and S are not known. So, both the statements together are not sufficient to answer the question.

22. Three sentences are followed by four conclusions numbered I, II, III and IV. Assuming the statements to be true, if they do not conform to real world knowledge, decide which of the conclusion(s) logically follows/follow from the statements.
Statements:
All organizers are participants
Some organizers are managers

All managers are females

Conclusions:

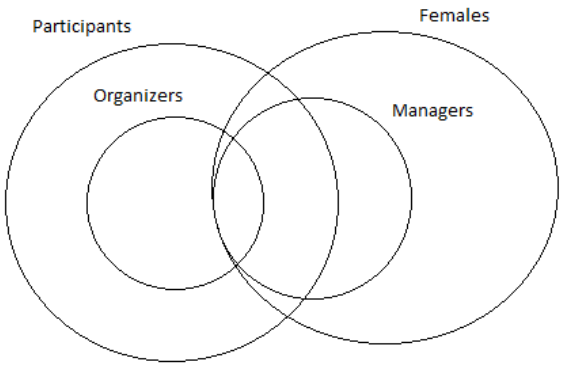
I. Some participants are managers
II. Some females are participants
III. No female is an organizer
IV. All participants are females

A. Only conclusion I, II and III follow
B. Only conclusion I and IV follow
C. Only conclusion I and II follow
D. Only conclusion II, III and IV follow

Answer: C

Explanation:

The following Venn diagram can be drawn from the given statements:



Out of the four given conclusions only conclusion I and II are true as per the Venn diagram.

23. The following are the criteria of recruitment for the post of Technical Assistants at an Organization.

The candidates must:

(a) have completed B.Tech in Electrical Engineering with more than 80% marks
(b) be willing to execute a bond of not leaving the job at least for two years
(c) have secured more than 85% marks in the written test and more than 70% marks in the Personal Interview
(d) be willing to relocate to the head office located at New Delhi

However, if the candidate fulfils all the above criteria except

(e) at (b), but has at least two years work experience as Technical Assistant, his/her case is to be referred to the General Manager.
(f) at (c), but has also completed M.Tech in Electrical Engineering, his/her case is to be referred to the Head (Operations).

Preksha has completed B.Tech and M.Tech in Electrical Engineering with 82% marks in both the examinations. She has secured 72% marks in Personal Interview and 88% marks in written test. She is willing to relocate to the head office at New Delhi. She is willing to execute a bond of not leaving the job for one year. She has got three years' work experience as Technical Assistant.

A. Her case is to be referred to the Head(Operations)
B. The candidate would be recruited

C. The candidate would not be recruited
D. Her case is to be referred to the General Manager

Answer: D

Explanation:

Preksha fulfils all criteria except (b). As she has also got work experience of 3 years, her case is to be referred to the General Manager.

24. Two statements are given followed by three conclusions numbered I, II and III. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusion logically follow(s) from the statements.

Statements:

All animals are plants
All plants are shrubs

Conclusions:

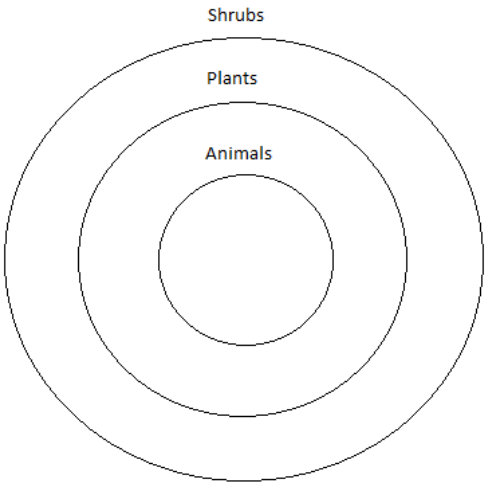
I. Some shrubs are plants
II. Some animals are not shrubs
III. All animals are shrubs

A. None of the conclusions follow
B. Only conclusion I and II follow
C. Only conclusion I and III follow
D. Only conclusion II follows

Answer: C

Explanation:

The following Venn diagram can be drawn from the given statements:



Out of the three given conclusions only conclusion I and III are true as per the Venn diagram.

25. In a certain code, a + b means a is the wife of b; a x b means a is the brother of b and a / b means a is the son of b.
If T / Z x U / W, then which of the following is true?
A. W is the wife of Z

B. U is the aunt of T
C. U is the uncle of T
D. T is the daughter of Z

Answer: C

Explanation:

T / Z means T is the son of Z
Z x U means Z is the brother of U
U / W means U is the son of W
From the given data,
W has two children Z and U
Z and U are brothers
T is the son of Z
So, U is T's father's brother (i.e.) U is T's uncle

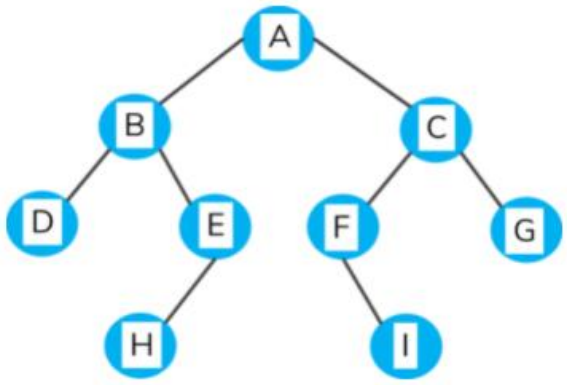
TCS Ninja Programming Logic Questions

1. There are two integer numbers X and Y that are between 0 to 25. The user stores the value under a 5-bit number. How many minimum bits are required to store the result of the below expression?
   Res=3*(X-Y)
   A. 8
   B. 5
   C. 7
   D. 8
   Answer: D
   Explanation: If we perform X-Y the possible answers shall be from -75 to 75. In order to store this, we need 8 bits.

2. Find Prefix and suffix for the below infix problem statement.
   Infix Expression: 11 +20/5*(20-15)^6^5
   A. Prefix Expression: 11 20 15 20 5 - ^^*6 5/+
      Postfix Expression: +20/11*5-20^^15 6 5
   B. Prefix Expression: 11 20 5 20 15-6 5^^*/+
      Postfix Expression: +11/20 *5^^ -20 15 6 5
   C. Prefix Expression: 11 20 5 20 15 - ^^^/+6 5
      Postfix Expression: +11/^^-20*5 20 15 6 5
   D. Prefix Expression: +11/20*5^^-20 15 6 5
   E. Postfix Expression: 11 20 5 20 15 -6 5^^/+
   Answer: D
   Explanation:
   Provided the Infix expression the equivalent prefix expression is +11/20*5^^-20 15 6 5 and equivalent postfix expression is 11 20 5 20 15 -6 5^^/+.

3. Write the name of a library of functions that is used to perform arithmetic operations on BigInteger and BigDecimal.
   A. import java
   B. java import
   C. java.import.mathmatics
   D. import.java.math.*
   Answer: import java.math.*;
   Explanation: java.math consists of all the required functions related to BigInteger and BigDecimal.

4. Consider the following tree. What will be the preorder traversal?



A. D H E B I F G C A
B. D H E B A F I G C
C. A B D E H C F I G
D. H I D E F G B C A

Answer: C

Explanation: In pre-order traversal, we have to visit the root first and then left, and finally right. Hence, option C is the correct answer.

5. Which argument is passed to fflush()?
   A. no parameters
   B. stdin
   C. stdout
   D. stderr

   Answer: Option B

   Explanation: In order to clear the input stream buffer we have to pass stdin to flush.

6. What is the name of the method that examines a particular data entity and determines what data elements need to be associated?
   A. Entity-relationship diagram
   B. Logic Data modelling
   C. Customer Entities
   D. Functional Primitive

   Answer: A

   Explanation:

   An ER diagram shows the relationship among entity sets. An entity set is a group of similar entities and these entities can have attributes. In terms of DBMS, an entity is a table or attribute of a table in the database, so by showing the relationship among tables and their attributes, ER diagram shows the complete logical structure of a database.

7. What will be the output of the below code?

```
public class Main
{
    static int num = 30;

    static class Inner {
        void msg() {
            System.out.println(‘Num : num++);}
        }
    }
  public static void main(String[] args) {
      Main.Inner tw = new Main.Inner();
      tw.msg();
  }
}
```

A. Num: 30
B. Num: 31
C. Compilation Error
D. Runtime Error

Answer: Num: 30

Explanation:

The output will be a compilation error. When there is a single quote, Java and other statically typed languages have char as the following expression. But here we have typed a string. Along with that, the quotes are not closed. It also has an extra closing curly bracket. So the given syntax is invalid.

```
public class Main
{
    static int num = 30;

    static class Inner {
        void msg() {
            System.out.println("Num :" + num++);
        }
    }

  public static void main(String[] args) {
      Main.Inner tw = new Main.Inner();
      tw.msg();
  }
}
```

Had the program been same as the above, we would have an output:

Num: 30

This is because this is the post increment operator. So the value of num is incremented after printing Num.

However, had we used ++num, the output would be:

Num: 31

The pre-increment operator works before the current value of num is printed.

8. We cannot overload _____ operator.
   A. : :
   B. []
   C. ()
   D. +
   Answer: A
   Explanation: Scope resolution operator(::) helps us in accessing the global variable, accessing function outside the class, access the namespace and so on. This operator can never be overloaded.

9. Which data structure is used to convert an expression from one form to another form?
   A. Graph
   B. Stack
   C. LinkedList
   D. Queue
   Answer: B
   Explanation:
   In order to convert an Infix expression to postfix or vice versa we need to use a stack for the same.
   The compiler scans the expression either from left to right or from right to left.
   Consider the below expression: **x op1 y op2 z op3 d w**
   If op1 = +, op2 = *, op3 = +
   The compiler first scans the expression to evaluate the expression y * z, then again scans the expression to add x to it. The result is then added to d after another scan.
   The repeated scanning makes it very in-efficient. It is better to convert the expression to postfix(or prefix) form before evaluation.
   The corresponding expression in postfix form is xyz*+w+. The postfix expressions can be evaluated easily using a stack.

10. Which of the following options best suits for 'Memory Leak Occurred'?
    A. Resource allocation pending while debugging the code
    B. Program releases resources allocated in the memory
    C. Program does not free the memory which is allocated dynamically
    D. Occurs due to address assignment failure.
    Answer: C
    Explanation: Whenever we are allocating memory dynamically, we have to delete the memory before the execution of the program completes else a memory leak will happen. If a program has memory leaks, then its memory usage is satirically increasing since all systems have a limited amount of memory and memory is costly. Hence it will create problems.

11. Select the best suitable answer for the below functions.
    sizeof()
    strlen()
    A. sizeof() - Returns size of string including null characters
       strlen() - Returns size of string excluding null characters
    B. sizeof() - Returns size of string including null characters

strlen() - Returns size of string including null characters

C. sizeof() - Returns size of string excluding null characters
strlen() - Returns size of string excluding null, characters

D. sizeof() - Returns size of string excluding null characters
strlen() - Returns size of string including null characters

Answer: A

Explanation: sizeof() always gives the total size of any datatype allocated by the compiler. Where the strlen() gives the length of the string i.e number of characters in a string.

12. In a Singly Circular Linked List, how many address fields are there?
    A. 1+1
    B. 2+1
    C. 1
    D. 2

    Answer: C

    Explanation: Always a singly linked list will have a data field and an address field.
    The last node of the linked list will be pointing the head if it is a circular linked list else it will be pointing to null.

13. The primary mission of an analyst or systems designer is to:
    A. calculate the Return on Investment
    B. development of Software Evaluation Tool
    C. create a Data Flow Diagram
    D. extract the physical requirements of the users and convert them to software

    Answer: Option D

    Explanation: An System designers are intended to create software based on the requirements of their clients. They need to extract the physical requirements of the users and convert them to software.

14. _____ is a process to identify the key aspects of an entity and hiding the rest.
    A. Encapsulation
    B. Inheritance
    C. Abstraction
    D. Polymorphism

    Answer: C

    Explanation: Abstraction is hiding the implementation and showing the functionality alone. Whereas Encapsulation binds the variables data and code acting o data to one single unit.

15. Which one is not a type of topology?
    A. Star-topology
    B. Circuit-topology
    C. Ring-topology
    D. Bus-topology

    Answer: B

Explanation: A Network Topology is the arrangement with which computer systems or network devices are connected to each other. We have Star-topology, Ring-topology, Bus-topology, Mesh-topology, Tree-topology, etc.

16. The statement printf ("%d, 25 ? 5 ? 0 : 5 : 25); will print
    A. 5
    B. Compile-time error
    C. 0
    D. 25
    Answer: C
    Explanation: The statement that was used is nothing but a ternary or conditional operator.

17. Integer m=10, n= 35, p=5, d=6
    Comment about the output of the given two statements
    Print m*n + p/d
    Print p/d + m*n
    A. Differ by 10
    B. Same
    C. Differ by 20
    D. Differ due to left and right precedence
    Answer: B
    Explanation:
    m*n + p/d = 10*35 + 5/6 = 350 + 0 = 350
    p/d + m*n = 5/6 + 10*35 = 0 + 350 = 350
    Both gives the same answer.

18. When we implement stack by using linked list then:
    A. Insertion of the node is done from the end and deletion from the end
    B. Insertion of the node is done from beginning and deletion from end
    C. Insertion of the node is done from beginning and deletion from beginning
    D. Insertion of the node is done from end and deletion from beginning
    Answer: C
    Explanation: Whenever you are implementing a stack using Linked list both insertion and deletion should happen at the same end. Here both A and C are correct. But in stack always we will deal the data in the top i.e. beginning hence option c is the best answer.

19. Match the followings:

Index 1	Math functions in C language	Index 2	Output in float data type
A	ceil(3.6)	1	32.000000
B	floor(3.6)	2	3.000000
C	pow(2,5)	3	12.000000
D	abs(-12)	4	25.000000
		5	4.000000
		6	0.000000

A. A-5, B-2, C-4, D-3
B. A-2, B-5, C-4, D-3
C. A-5, B-2, C-1, D-6
D. A-2, B-6, C-1, D-3
E. A-5, B-2, C-1, D-3

Answer: E

Explanation:

ceil(3.6) = 4.000000
floor(3.6) = 3.000000
pow(2, 5) = 32.000000
abs(-12) = 12

All these functions are part of the math.h header in C.
Internally, ceil is implemented as
double ceil (double d)
double floor (double d)
double pow (double a, double b)
int abs (int i)
When we pass in integers in place of double as arguments to ceil, floor, pow, the ints are typecasted to double and used in the function.
Whereas the abs function is internally implemented to take in int datatype as argument and return int as well.

20. The kind of software testing you can do when you have both the source code and the executable code in hand, is called as?
A. Red Box Testing
B. Black Box Testing
C. White Box Testing
D. Blue Box Testing

Answer: C

Explanation:

White Box Testing is a software testing technique in which internal structure, design, and coding of software are tested to verify the flow of input-output and to improve design, usability, and security. In white-box testing, code is visible to testers so it is also called Clear box testing, Open box testing, Transparent box testing, Code-based testing, and Glass box testing

21. Predict the output.

```c
#include<stdio.h>
int main()
{
  printf("%d", sizeof('a'));
  return 0;
}
```

A. 2 or 4
B. 1 or 3
C. Garbage value
D. ASCII value of a

Answer: A

Explanation:

'a' is character. Inside, sizeof when we pass character 'a', its ASCII value 97 will be sent. 97 is an integer here, so sizeof ('a') will either give 2 or 4.

22. Predict the output.

```c
#include<stdio.h>
int main()
{
  int a = b = c = d = 10;
  printf("%d, %d, %d, %d", a, b, c, d);
}
```

A. Error
B. 10, 10, 10, 10
C. GV, GV, GV, 10
D. GV, GV, GV, GV

Answer: A

Explanation:

Variable a, b, c, and d are initialised incorrectly in the code. Hence, the code will give error. Thus, option A is the correct answer.

23. Which of the following statements is true about C language?
    A. There is a maximum limit to number of case instances inside a switch statement
    B. A *do while* loop is used to ensure that the statements within the loop are executed at least once
    C. Two case constants within the same switch statement can have the same value

D. Continue keyword skips one iteration of loop

Answer: B

Explanation: 'A *do while* loop is used to ensure that the statements within the loop are executed at least once', is the correct answer. Rest of the options are wrong.

24. How many times will the loop given below be executed?

```
#include<stdio.h>
int main()
{
  int i;
  for(i = 0; i < 5; i++)
  {
    printf("Hello\n");
  }
}
```

A. 3
B. 2
C. 1
D. 5

Answer: D

Explanation:

for loop will executed till the condition becomes false.
i is an integer which can go till 5
when i = 0 the condition of for loop is true hence hello will be printed
likewise for i=1, 2, 3, 4 word hello will be printed
But when i = 5 the loop condition becomes false hence it will not be executed.
So, loop will be executed 5 times.

25. Which of the following is true for the given statement?

while (0 == 0) { }

A. It has syntax error as there are no statements within braces{}
B. It will run forever
C. It compares 0 with 0 and since they are equal it will exit the loop immediately
D. It has syntax error as the same number is being compared with itself

Answer: B

Explanation:

while is an iterator and it will iterate till the condition becomes false.
In the given condition *while* (0 ==0); 0 ==0 is always true. Hence the loop will run forever.

TCS Ninja Hands-on Coding Questions

1. **Sweet seventeen**

Problem statement:
Given a maximum of four digit to the base 17(10 -> A, 11 -> B, 12 -> C, 16 -> G) as input, output its decimal value.
Input – 1
1A
Expected Output
27
Input – 2
23GF
Expected Output
10980

Code Solution in C

```c
#include <stdio.h>
#include <math.h>
#include <string.h>
int main(){
  char hex[17];
  long long decimal, place;
  int i = 0, val, len;
  decimal = 0;
  place = 1;
  scanf("%s",hex);
  len = strlen(hex);
  len--;
  for(i = 0;hex[i]!='\0';i++)
  {
    if(hex[i]>='0'&& hex[i]<='9'){
      val = hex[i] - 48;
    }
    else if(hex[i]>='a'&& hex[i]<='g'){
      val = hex[i] - 97 + 10;
    }
    else if(hex[i]>='A'&& hex[i]<='G'){
      val = hex[i] - 65 + 10;
    }
    decimal = decimal + val * pow(17,len);
    len--;
  }
  printf("%lld",decimal);
  return 0;
}
```

Code Solution in C++

```
#include <iostream>
#include <math.h>
#include <string.h>
using namespace std;
int main(){
  char hex[17];
  long long decimal;
  int i = 0, val, len;
  decimal = 0;
  cin>> hex;
  len = strlen(hex);
  len--;

  for(i = 0;hex[i]!='\0';i++)
  {
    if(hex[i]>='0'&& hex[i]<='9'){
      val = hex[i] - 48;
    }
    else if(hex[i]>='a'&& hex[i]<='g'){
      val = hex[i] - 97 + 10;
    }
    else if(hex[i]>='A'&& hex[i]<='G'){
      val = hex[i] - 65 + 10;
    }
    decimal = decimal + val * pow(17,len);
    len--;
  }

  cout<< decimal;

  return 0;
}
```

Code Solution in Java

```java
import java.util.*;
class Main
{
  public static void main(String[] args) {
    HashMap<Character,Integer> hmap = new HashMap<Character,Integer>();
    hmap.put('A',10);
    hmap.put('B',11);
    hmap.put('C',12);
    hmap.put('D',13);
    hmap.put('E',14);
    hmap.put('F',15);
    hmap.put('G',16);
    hmap.put('a',10);
    hmap.put('b',11);
    hmap.put('c',12);
    hmap.put('d',13);
    hmap.put('e',14);
    hmap.put('f',15);
    hmap.put('g',16);
    Scanner sin = new Scanner(System.in);

                String s = sin.nextLine();
    long  num=0;
    int k=0;

                for(int i=s.length()-1;i>=0;i--)
    {
        if((s.charAt(i)>='A'&&s.charAt(i)<='Z')||(s.charAt(i)>='a' &&s.charAt(i)<='z'))
           {
               num = num + hmap.get(s.charAt(i))*(int)Math.pow(17,k++);
           }
        else
           {
            num = num+((s.charAt(i)-'0')*(int)Math.pow(17,k++));
    }
    }
    System.out.println(num);
  }
}
```

Python Code Solution

```python
num = str(input())
print(int(num,17))

```

2. A Sober Walk

Problem statement:
Our hoary culture had several great persons since time immemorial and king vikramaditya's nava ratnas (nine gems) belongs to this ilk. They are named in the following shloka:

धनवंतरी क्षषणकाडमरसिंह राड्ड चेठालमद्ड धटकर्परः कर्मिदाक
ख्यति कराहमिहिरि नृम्ते समाभ्य्म रत्नति वै क्स्मस्मिनति तिम्द्म्

Among these, Varahamihira was an astrologer of eminence and his book Brihat Jataak is reckoned as the ultimate authority in astrology.
He was once talking with Amarasimha, another gem among the nava ratnas and the author of Sanskrit thesaurus, Amarakosha.
Amarasimha wanted to know the final position of a person, who starts from the origin 0 0 and travels per following scheme.

- He first turns and travels 10 units of distance
- His second turn is upward for 20 units
- Third turn is to the left for 30 units
- Fourth turn is the downward for 40 units
- Fifth turn is to the right(again) for 50 units

... And thus he travels, every time increasing the travel distance by 10 units.

Constraints:
2<=n<=1000
Input-1
3
Expected output:
-20 20
Input -2
4
Expected output:
-20 -20

Code Solution in C

```c
#include<stdio.h>
#include<stdlib.h>
int main()
{
    int n;
    scanf("%d",&n);
    char c = 'R';
    int x = 0, y = 0;
    while(n){
        switch(c){
            case 'R':
                x = abs(x) + 10;
                y = abs(y);
                c ='U';
                break;
            case 'U':
                y = y + 20;
                c = 'L';
                break;
            case 'L':
                x = -(x + 10);
                c = 'D';
                break;
            case 'D':
                y = -(y);
                c = 'R';
                break;
            }
        n--;
    }
    printf("%d %d", x, y);

}
```

Code Solution in C++

```cpp
#include<iostream>
#include<stdlib.h>
using namespace std;
int main()
{
    int n;
    cin>>n;
    char c = 'R';
    int x = 0, y = 0;
    while(n){
        switch(c){
            case 'R':
                x = abs(x) + 10;
                y = abs(y);
                c ='U';
                break;
            case 'U':
                y = y + 20;
                c = 'L';
                break;
            case 'L':
                x = -(x + 10);
                c = 'D';
                break;
            case 'D':
                y = -(y);
                c = 'R';
                break;
            }
        n--;
    }
    cout<< x<< " " << y;
}
```

Code Solution in Java

```java
import java.util.*;
import java.lang.*;
class Main {
  public static void main (String[] args) {
      Scanner sc = new Scanner(System.in);
      int n=sc.nextInt();
      char c = 'R';
        int x = 0, y = 0;
        while(n>0){
        switch(c){
            case 'R':
                x = Math.abs(x) + 10;
                y = Math.abs(y);
                c ='U';
                break;
            case 'U':
                y = y + 20;
                c = 'L';
                break;
            case 'L':
                x = -(x + 10);
                c = 'D';
                break;
            case 'D':
                y = -(y);
                c = 'R';
                break;
            }
        n--;
    }
    System.out.println(x+" "+y);
  }
}
```

Code Solution in Python

```python
n = int(input())
c = 'R'
x,y=0,0
for i in range(n):
    if c=='R':
        x = abs(x) + 10;
        y = abs(y);
        c ='U';
    elif c=='U':
        y = y + 20;
        c = 'L';
    elif c=='L':
        x = -(x + 10);
        c = 'D';
    elif c=='D':
        y = -(y);
        c = 'R';
print(x,y)
```

3. Word is key

Problem Statement:

One programming language has the following keywords that cannot be used as identifiers:
break, case, continue, default, defer, else, for, func, goto, if, map, range, return, struct, type, var
Write a program to find if the given word is a keyword or not

Example-1

Input

defer

Expected Output

defer is a keyword

Example-2

Input

While

Expected Output

while is not a keyword

Code Solution in C

```c
#include<stdio.h>
#include<string.h>
int main(){

    char str[16][10] = {"break", "case", "continue", "default", "defer", "else","for",
    "func", "goto", "if", "map", "range", "return", "struct", "type", "var"};

    char input[20];

    int flag = 0;
    scanf("%s",input);

    for(int i = 0; i<16;i++){
        if(strcmp(input,str[i]) == 0){
            flag = 1;
            break;
        }
    }

    if(flag==1){
        printf("%s is a keyword",input);
    }
    else{
        printf("%s is not a keyword",input);
    }
    return 0;
}
```

Code Solution in C++

```cpp
#include<iostream>
#include<string.h>
using namespace std;
int main(){

    char str[16][10] = {"break", "case", "continue", "default", "defer", "else","for",
    "func", "goto", "if", "map", "range", "return", "struct", "type", "var"};
    char input[20];
    int flag = 0;
    cin >> input;
    for(int i = 0; i<16;i++){
        if(strcmp(input,str[i]) == 0){
            flag = 1;
            break;
        }
    }
    if(flag==1){
        cout << input << " is a keyword";
    }
    else{
        cout << input << " is not a keyword";
    }
    return 0;
}
```

Code Solution in Java

```java
import java.util.Scanner;
class Main
{
    public static void main(String args[])
    {

     String str[]= {"break", "case", "continue", "default", "defer", "else","for", "func", "goto",
     "if", "map", "range", "return", "struct", "type", "var"};

    int flag = 0;
    Scanner sc = new Scanner(System.in);
    String input=sc.nextLine();

    for(int i = 0; i<16;i++){

        if(str[i].equals(input)){
            flag = 1;
            break;
        }
    }

    if(flag==1){
        System.out.println(input+" is a keyword");
    }
    else{
        System.out.println(input+" is not a keyword");
    }

}
}
```

Code Solution in Python

```python
keyword = {"break", "case", "continue", "default", "defer", "else", "for",
"func", "goto", "if", "map", "range", "return", "struct", "type", "var"}

input_var = input()
if input_var in keyword:
    print(input_var+ " is a keyword")
else:
    print(input_var+ " is not a keyword")
```

4. **Oddly even**

Given a maximum of 100 digit numbers as input, find the difference between the sum of odd and even position digits.

Input 1:

4567

Expected output:

2

Explanation

Sum of odd position digits 4 and 6 is 10. Sum of even position digits 5 and 7 is 12. The difference is 12-10=2.

Input #2:

9834698765123

Expected output:

1

Input 3:

5476

Expected output:

2

Code Solution in C

```c
#include <stdio.h>
#include <string.h>
#include <stdlib.h>
int main()
{
    int a = 0,b = 0,i = 0, n;
    char num[100];
    scanf("%s",num);
    n = strlen(num);
    while(n>0)
    {
        if(i==0)
        {
            a+=num[n-1]-48;
            n--;
            i=1;
        }
        else
        {
            b+=num[n-1]-48;
            n--;
            i=0;
        }
    }
    printf("%d",abs(a-b));

    return 0;
}
```

Code Solution in C++

```cpp
#include <iostream>
#include <string.h>
#include <stdlib.h>
using namespace std;

int main()
{
    int a = 0,b = 0,i = 0, n;
    char num[100];

    cin>> num;
    n = strlen(num);
    while(n>0)
    {
        if(i==0)
        {
            a+=num[n-1]-48;
            n--;
            i=1;
        }
        else
        {
            b+=num[n-1]-48;
            n--;
            i=0;
        }
    }
    cout<< abs(a-b);

    return 0;
}
```

Code Solution in Java

```java
import java.util.*;
public class Main
{
  public static void main(String[] args) {
    Scanner sin = new Scanner(System.in);
    String s=sin.nextLine();
        long num = 0, num1 = 0;
    num=num + s.charAt(0)-'0';
    for(int i=1;i<s.length();i++)
    {
        if(i%2==0)
            num = num + s.charAt(i)-'0';
       else
         num1 = num1 + s.charAt(i)-'0';
    }
    System.out.println(Math.abs(num-num1));
  }
}
```

Code Solution in Python

```python
num = [int(d) for d in str(input())]
even,odd = 0,0
for i in range(0,len(num)):
    if i % 2 ==0:
        even = even + num[i]
    else:
        odd = odd + num[i]

print(abs(odd-even))
```

5. **Minting Mints**

Problem statement:

It was one of the places, where people need to get their provisions only through fair price (“ration”) shops. As the elder had domestic and official work to attend to, their wards were asked to buy the items from these shops. Needless to say, there was a long queue of boys and girls. To minimize the tedium of standing in the serpentine queue, the kids were given mints. I went to the last boy in the queue and asked him how many mints he has. He said that the number of mints he has is one less than the sum of all the mints of kids standing before him in the queue. So I went to the penultimate kid to know how many mints she has.

She said that if I add all the mints of kids before her and subtract one from it, the result equals the mints she has. It seemed to be the uniform response from everyone. So, I went to the boy in the head of queue consoling myself that he would not give the same response as others. He said, “I have four mints”.

Given the number of first kid’s mints (n) and the length (len) of queue as input, write a program to display the total number of mints with all the kids.

Constraints:

2<n<10

1<len<20

Example-1

Input

4 2

Expected output:

7

Example-2

Input

14 4

Expected output

105

Code Solution in C

```c
#include<stdio.h>
int main()
{
  int s,n,sum=0;
  scanf("%d %d",&s,&n);
  int a[n];
  a[0]=sum=s;
  for(int i=1;i<n;i++)
  {
    a[i]=sum-1;
    sum=sum+a[i];
  }
  printf("%d ",sum);
}
```

Code Solution in C++

```cpp
#include<bits/stdc++.h>
using namespace std;
int main()
{
   int s,n,sum=0;
   cin>>s>>n;
   int a[n];
   a[0]=sum=s;
   for(int i=1;i<n;i++)
   {
     a[i]=sum-1;
     sum=sum+a[i];
   }
   cout<<sum<<" ";
}
```

Code Solution in Java

```java
import java.util.*;
class Main {
  public static void main (String[] args) {
    int s,n,sum=0;
    Scanner sc=new Scanner(System.in);
    s=sc.nextInt();
    n=sc.nextInt();
      int a[]=new int[n];
      a[0]=sum=s;
      for(int i=1;i<n;i++)
      {
    a[i]=sum-1;
    sum=sum+a[i];
      }
      System.out.print(sum);
  }
}
```

Code Solution in Python

```
x, y = input().split()
s=int(x)
n=int(y)
a=[]
sum=s
a.append(s)
for i in range(1,n):
    a.append(sum-1)
    sum=sum+a[i];

print(sum)

```

6. **To zero or not to zero**

Problem statement:

Given a pair of positive integers m and n (m < n; 0 < m < 999; 1 < n < = 999), write a program to smartly affix zeroes, while printing the numbers from m to n.

Example-1

Input

5 10

Expected output

05 06 07 08 09 10

Example-2

Input

9 100

Expected output

009 010 011 012 013 014 015 016 017 018 019 020 021 022 023 024 025 026 027 028 029 030 031 032 033 034 035 036 037 038 039 040 041 042 043 044 045 046 047 048 049 050 051 052 053 054 055 056 057 058 059 060 061 062 063 064 065 067 068 069 070 071 072 073 074 075 076 077 078 079 080 081 082 083 084 085 086 087 088 089 090 091 092 093 094 095 096 097 098 099 100

Example-3

Input

1 9

Expected output

1 2 3 4 5 6 7 8 9

Code Solution in C

```c
#include <stdio.h>
int main()
{
    int up,low;
    scanf("%d %d",&low,&up);
    for(int i=low; i<=up; i++)
    {
        if(up>=100)
            printf("%03d ",i);
        else if(up>=10)
            printf("%02d ",i);
        else
            printf("%d ",i);
    }
    return 0;
}
```

Code Solution in C++

```cpp
#include <iostream>
using namespace std;
int main()
{
    int up,low;
    cin >> low >> up;
    for(int i=low; i<=up; i++)
    {
        if(up>=100)
            printf("%03d ",i);
        else if(up>=10)
            printf("%02d ",i);
        else
            printf("%d ",i);
    }
    return 0;
}
```

Code Solution in Java

```java
import java.util.*;
class Main {
  public static void main (String[] args) {
      Scanner sc =new Scanner(System.in);
      int low =sc.nextInt();
      int up =sc.nextInt();
      for(int i=low; i<=up; i++)
        {
        if(up>=100)
            System.out.printf("%03d ",i);
        else if(up>=10)
            System.out.printf("%02d ",i);
        else
            System.out.printf("%d ",i);
      }
  }
}
```

Code in Python

```
x, y = input().split()
low=int(x)
up=int(y)
for i in range(low,up+1):
    if(up>=100):
        print("%03d" %i,end=' ')
    elif(up>=10):
        print("%02d" %i,end=' ')
    else:
        print(i,end=' ')

```

7. **Geometric Series**

Problem statement:

Consider the following series: 1,1,2,3,4,9,8,27,16,81,32,243,64,729,128,2187...

Write a program to find the N^{th} term in the series.

This series is a mixture of 2 series - all the odd terms in this series form a geometric series and all the even terms form yet another geometric series. The value N in a positive integer that should be read from STDIN. The Nth term that is calculated by the program should be written to STDOUT. Other than value of nth term, no other character / string or message should be written to STDOUT.

Sample Input – 1

5

Sample Output – 1

4

Sample Input – 2

10

Sample Output – 2

81

Code Solution in C

```c
#include<stdio.h>
int main()
{
  int n;
  scanf("%d", &n);
  if(n % 2 == 1)
  {
     int a = 1;
     int r = 2;
     int term_in_series = (n+1)/2;
     int res = a * pow(2, term_in_series - 1);
     printf("%d ", res);
  }
  else
  {
     int a = 1;
     int r = 3;
     int term_in_series = n/2;
     int res = a * pow(3, term_in_series - 1);
     printf("%d ", res);
    }
   return 0;
}
```

Code Solution in C++

```cpp
#include<iostream>
#include <math.h>
using namespace std;
int main()
{
  int n;
  cin>>n;
  if(n % 2 == 1)
  {
     int a = 1;
     int r = 2;
     int terms= (n+1)/2;
     int res = a * pow(2, terms - 1);
     cout<<res;
  }
  else
  {
     int a = 1;
     int r = 3;
     int terms = n/2;
     int res = a * pow(3, terms - 1);
     cout<<res;
    }
   return 0;
}
```

Code Solution in Java

```java
import java.util.*;
public class Main
{
  public static void main(String[] args) {
    Scanner sin = new Scanner(System.in);
    int n = sin.nextInt();
    System.out.println(n%2==0?(int)Math.pow(3,(n-1)/2):(int)Math.pow(2,(n-1)/2));
  }
}
```

Code Solution in Python

```python
num = int(input())
if(num%2==0):
  num = num // 2
  print(3**(num-1))
else:
  num = num // 2 + 1
  print(2**(num-1))
```

8. **ODD/EVEN Series**

Problem Statement:

Consider the below series: 0,0,2,1,4,2,6,3,8,4,10,5,12,6,14,7,16,8

Write a program to find the n^{th} term in this series.

This series is a mixture of 2 series all the odd terms in this series form even numbers in ascending order and every even terms is derived from the previous term using the formula (x/2). The value n is a positive integer that should be read from STDIN and the n^{th} term that is calculated by the program should be written to STDOUT. Other than the value of the nth term no other characters /strings or message should be written to STDOUT.

Sample Input – 1

5

Sample Output – 1

4

Sample Input – 2

100

Sample Output – 2

49

Code Solution in C

```c
#include<stdio.h>
int main()
{
  int n,a,d,t_s1,t_s2,n_term;
  scanf("%d",&n);
    if(n%2==1)
    {
      a=0,d=2;
      t_s1=(n+1)/2;
      n_term=a+(t_s1-1)*d;
      printf("%d",n_term);
    }
  else
    {
        a=0,d=1;
        t_s2=n/2;
        n_term=a+(t_s2-1)*d;
        printf("%d",n_term);
    }


}
```

Code Solution C++

```
#include<iostream>
using namespace std;
int main()
{
  int n,a,d,t_s1,t_s2,n_term;
  cin>>n;
    if(n%2==1)
    {
      a=0,d=2;
      t_s1=(n+1)/2;
      n_term=a+(t_s1-1)*d;
      cout<<n_term;
    }
  else
    {
        a=0,d=1;
        t_s2=n/2;
        n_term=a+(t_s2-1)*d;
        cout<<n_term;
    }

  return 0;
}
```

Code Solution in Java

```java
import java.util.Scanner;
class Main
{
  public static void main(String[] args)
  {
    Scanner sc = new Scanner(System.in);
    int n = sc.nextInt();
    int a = 0, b = 0;
    if(n % 2 == 0)
    {
      for(int i = 1 ; i <= (n-2) ; i = i+2)
      {
        a = a + 2;
        b = a / 2;
      }
      System.out.print(b);
     }
     else
     {
       for(int i = 1 ; i < (n-2) ; i = i+2)
       {
         a = a + 2;
         b = a / 2;
       }
       a = a + 2;
       System.out.print(a);
     }
   }
}
```

Code Solution in Python

```python
n = int(input())
a=0
b=0

for i in range(1,n+1):
    if(i%2!=0):
        a= a+2
    else:
        b= b+1

if(n%2!=0):
    print('{}'.format(a-2))
else:
    print('{}'.format(b-1))
```

9. **Sum of previous terms**

Problem Statement:

Consider the series given below: 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377 ,610, 987,.....

Write a program to find the Nth term in this series.

This series is formed as below:

1.term(1)=1

2.term(2)=2

3.term(N)=term(N-1)+term(N-2)for N>2

The value N is a positive integer that should be read from STDIN. The Nth term that is calculated by the program should be written to STDOUT, other than the value of nth term no other characters /strings and messages should be written to STDOUT.

For example if N =15, the value of 15^{th} n term is 987 which is the sum of 13^{th} and 14^{th} terms .

You can assume that the value of n will not exceed 30

Sample Input – 1

15

Sample Output – 1

987

Sample Input – 2

10

Sample Output – 2

89

Code Solution in C

```c
#include<stdio.h>
int main()
{
  int n, t1=1,t2=2,cur=0,i;
  scanf("%d",&n);
  if(n>30)
  {
      printf("Invalid Input");
      return 0;
  }
  else
  {
    if(n==1 || n==2)
    {
        printf("%d",n);
    }
    else
    {
        for(i=3;i<=n;i++)
        {
            cur=t1+t2;
            t1=t2;
            t2=cur;
        }
      printf("%d",cur);
    }
  }
}
```

Code Solution in C++

```
#include<iostream>
using namespace std;
int main()
{
  int n, t1=1,t2=2,cur=0,i;
  cin>>n;
  if(n>30)
  {
      cout<<"Invalid Input";
      return 0;
  }
  else
  {
    if(n==1 || n==2)
    {
        cout<<n;
    }
    else
    {
        for(i=3;i<=n;i++)
        {
            cur=t1+t2;
            t1=t2;
            t2=cur;
        }
      cout<<cur;
    }
  }
  return 0;
}
```

Code Solution in Java

```java
import java.util.*;
import java.lang.Math;
class Main {
  public static void main (String[] args) {
      int t1=1,t2=2,cur=0,i;
      Scanner sc=new Scanner(System.in);
    int n=sc.nextInt();
        if(n>30)
        {
          System.out.println("Invalid Input");
          System.exit(0);
        }
        else
        {
            if(n==1 || n==2)
            {
                System.out.println(n);
            }
            else
            {
                for(i=3;i<=n;i++)
                {
                    cur=t1+t2;
                    t1=t2;
                    t2=cur;
                }
                System.out.println(cur);
            }
        }
  }
}
```

Code Solution in Python

```python
n= int(input())
t1=1
t2=2
cur=0
if(n>30):
    print("Invalid Input")
else:
    if(n==1 or n==2):
        print(n)
    else:
        for i in range(3,n+1):
            cur=t1+t2
            t1=t2
            t2=cur
        print(cur)
```

10. A Perfect Number

Problem Statement:

Check whether a number is perfect number or not.

A perfect number is a positive integer that is equal to the sum of its proper positive divisors.

Example:

Input:

6

Output:

Yes (1 + 2 + 3 = 6)

Sample Input – 1

50

Sample Output – 1

No

Sample Input – 2

7

Sample Output – 2

No

Code Solution in C

```c
#include<stdio.h>
int main()
{
 int n,i,sum=0;
 scanf("%d", &n);
 for(i = 1; i < n; i++)
 {
  if(n % i == 0)
      sum=sum+i;
 }
 if(sum == n)
  printf("Yes");
 else
    printf("No");
  return 0;
}
```

Code Solution in C++

```cpp
#include <iostream>
#include <cctype>
using namespace std;
int main(){
    int n,i=1,sum=0;
    cin >> n;
       while(i<n){
       if(n%i==0)
       sum=sum+i;
       i++;
}

if(sum==n)
    cout <<"Yes";
else
    cout <<"No";

return 0;
}
```

Code Solution in Java

```java
import java.util.*;
public class Main{
public static void main(String[] args)
{
  Scanner sc = new Scanner(System.in);
  int num = sc.nextInt();
  int i, sum = 0;
  for(i=1; i<num; i++)
  {
    if(num%i == 0)
    {
      sum += i;
    }
  }
  if(sum == num)
  {
    System.out.print("Yes");
  }
  else
  {
    System.out.print("No");
  }
  }
}
```

Code Solution in Python

```python
num = int(input())
sum = 0
for i in range (1,num):
  if(num % i == 0):
    sum = sum + i
if(sum == num):
  print("Yes")
else:
  print("No")
```