TCS SET 1

1. **Find the greatest number that will divide 148 246 and 623 leaving remainders 4 6 and 11 respectively.**

    1) 20
    2) 12
    3) 6
    4) 48

    Solution: Option 2

    148-4=144
    246-6=240
    623-11=612
    Now form the options let's check which of the 4 divide 144,240 and 612 leaving 0 as remainder. Hence these 3 are divided by 12 leaving remainder 0 which mean 12 divides 148, 246 and 623 leaving remainder 4 6 and 11 respectively.

2. **On a 26-question test, five points were deducted for each wrong answer and eight points were added for each correct answer. If all the questions were answered, how many were correct if the score was zero?**

    1) 10
    2) 11
    3) 12
    4) 13

    Solution: Option 1

    If x number of questions are wrong and y number of questions are correct then,
    -5*x+8*y=0 and x+y=26. By solving these equations, we get
    x=16 & y=10

3. **George can do some work in 8 hours, Paul can do the same work in 10 hours while Hiari can do the same work in 12 hours. All the three of them start working at 9 a.m while George stops works at 11 a.m and remaining two complete the work. Approximately at what time will the work be finished?**

1) 11:30 am
2) 1 pm
3) 12:30 pm
4) 12 noon

Solution: Option 2

L.C.M(8,10,12) = 120
so, let the total work = 120 unit
George can do 15 unit work in 1 hr and Paul can do 12 unit and Hillary 10 unit in 1 hr.
so, 2*(15+12+10) + t*(12+10) = 120
On solving, t=3. So the answer will be (11 am+3 hr) = 1 pm

4. **Apple costs L rupees per kilogram for first 30 kgs and Q rupees per kilogram for each additional kilogram. If the price of 33 kilograms is 1167 and for 36kgs of Apples is 1284 then the cost of the first 10 kgs of Apples is**

1) Rs. 350
2) Rs. 1053
3) Rs. 117
4) Rs. 281

Solution: Option 1

Given that
$30L + 3Q = 1167$
$30L + 6Q = 1284$
Solving we get $Q = 39, L = 35$
So cost of first 10 kgs of apples = $35 \times 10 = 350$

5. **A^B means A raised to the power B. If f(x) = ax^4 – bx^2 + x + 5 and f(-3) = 2, then f(3) = ?**
   a. 3
   b. 8
   c. -2
   d. 1

Answer: b
Explanation:
$f(-3) = a(-3)^4 – b(-3)^2 + (-3) + 5 = 81a – 9b + 2 = 2$ So $81a – 9b = 0$,
$f(3) = a(3)^4 – b(3)^2 + (3) + 5 = 81a – 9b + 8$
Substituting the value of $81a – 9b = 0$ in the above we get $f(3) = 8$

BIZOTIC
For the love of education

6. **1/4 of the tank contains fuel. When 11 liters of the fuel is poured into the tank, the indicator rests at the 1/2 mark. Find the capacity of the tank in liters.**

    a. 44
    b. 36
    c. 6
    d. 8

    Answer: a
    Explanation:
    Let the capacity of the tank be x liters.
    Given, 1/4 of x + 11 = 1/2 of x
    By solving we get the x value as 44 liters.

    _____

7. **You have been given a physical balance and 7 weights of 47, 46, 43, 48, 49, 42, and 77 kgs. Keeping weights on one pan and object on the other, what is the maximum you can weigh less than 178 kgs.**

    a. 172
    b. 174
    c. 175
    d. 177

    Answer: b
    Explanation:
    The maximum weight that can be weighed less than 178 kgs is 174 (48 + 49 + 77 = 174 kgs).

    _____

8. **How many 6-digit even numbers can be formed from the digits 1, 2, 3, 4, 5, 6 and 7 so that the digits should not repeat and the second last digit is even?**

    a. 320
    b. 6480
    c. 2160
    d. 720

    Answer: d
    Explanation:
    To form 6-digit even number, the last digit should be an even number so 3 ways (2, 4, or 6) to fill the last digit and second last digit also should be even for which it will take 2 ways to fill. The last two digits are filled in 6 ways(2 x 3 = 6 ways). The rest of the 4 digits can be filled in 5P4 ways i.e. 120 ways. Hence altogether to fill 6-digit even number = 120 * 6 = 720 ways.

BIZOTIC
For the love of education

9. **Out of a group of swans, 7/2 times the square root of the total number are playing on the shore of the pond. The remaining 2 are inside the pond. Find the total number of swans.**

   a. 16
   b. 25
   c. 4
   d. 9

   Answer: a
   Explanation:
   Let the number of swans $= x^2$
   $x^2 = 7x/2 + 2 \rightarrow x^2 = (7x + 4)/2$
   $2x^2 = 7x + 4, \longrightarrow 2x^2 - 7x - 4 = 0$
   The roots of x are 4, -1/2. Here -1/2 is not possible, so the x value will be 4.
   The total number of swans is x^2 i.e 16.

10. **In a village, every weekend, three-eighth of the men and one-third of the women participate in a social activity. If the total number of participants is 54, and out of them 18 are men then the total number of men and women in the village is:**

    a. 180
    b. 156
    c. 204
    d. 228

    Answer: b
    Explanation:
    3/8th of men and 1/3rd of women participated and given that the total participants are 54.
    Out of total participants 54, 18 were men and the rest will be women (54-18 = 36 women).
    From this, we can say that $\rightarrow$ 3/8 * men = 18, therefore men = 48. And 1/3 of women = 36 $\rightarrow$ women = 108.
    The total number of men and women in the village is 156.

11. **If M is 30% of Q, Q is 20% of P, and N is 50% of P, then M/N = ?**

    a. 6/5
    b. 4/3

c. 3/25
d. 3/250

Answer: c
Explanation:
Q = 20% of P
M = 30% of Q —> 30% of (20% of P) —> 30/ 100 * 20/100 * P –> 6/100 * p
N = 50% of P –> 5/10 * P
M/ N = (6/100 * P) / (5/10 * P) = 6/50 = 3/25

_____

12. **There are 20 persons among whom two are sisters. Find the number of ways in which we can arrange them around a circle so that there is exactly one person between two sisters? Please note that the exact position on the circle does not matter (no seat numbers are marked on the circle), and only the relative positions of the people matter.**

    a. 2! * 19!
    b. None of these
    c. 2 * 18!
    d. 18!

    Answer: c
    Explanation:
    Fix the position of two sisters. Hence there are only 18 people left
    So there are 18 ways in which a person can sit between the two sisters. Now if we swap the bothers we get another 18 ways.
    So hence we have a total of = 2 * 18 combinations
    Consider the group of three people(two brothers and the person between them) as a single entity.
    we have another 17 people left so there are 18 entities to be arranged in total.
    Arranging 18 entities around a circle can be done in (18-1)! = 17! ways
    Total no of ways = 2 * 18 * 17! = 2 * 18!

13. **Find the length of the longest pole that can be placed in an indoor stadium 24m long, 18m wide and 16m high.**

    a. 36m
    b. 34m
    c. 30m
    d. 25m

    Answer: b
    Explanation:

    Length of the longest pole = diagonal of rectangular indoor stadium
    $= \sqrt{(l^2+b^2+h^2)}$
    $= \sqrt{(24^2+18^2+16^2)}$

= √(576+324+256)
= √1156
= 34 m

_____

14. **Of a set of 30 numbers, the average of first 10 numbers is equal to the average of last 20 numbers. Then the sum of the last 20 numbers is:**

a. Sum of first ten numbers
b. 2 X sum of the first ten numbers
c. Cannot be determined with the given data
d. 2 x sum of last ten numbers

Answer: b
Explanation:
Average = (sum of n numbers)/(n)
(sum of first 10 numbers)/10 = (sum of last 20 numbers)/20
Hence, (sum of last 20 numbers) = 2*(sum of first 10 numbers)

_____

15. **Thomas takes 7 days to paint a house completely whereas Raj would require 9 days to paint the same house completely. How many days will it take to paint the house if both of them work together (give answers to the nearest integer)?**

a. 4 days
b. 2 days
c. 5 days
d. 3 days

Answer: a
Explanation:
Work done by Thomas in a day = 1/7
Work done by Raj in a day = 1/9
Work done by both in a day = 1/7 +1/9 =16/63
Days required if they both work together = 63/16 = 3.9 = 4 days

_____

16. **The University of Vikramasila has enrolled nine Ph.D. candidates: Babu, Chitra, Dheeraj, Eesha, Farooq, Gowri, Hameed, Iqbal, Jacob.**

– Farooq and Iqbal were enrolled on the same day as each other, and no one else was enrolled that day.
– Chitra and Gowri were enrolled on the same day as each other, and no one else was enrolled that day.

– On each of the other days of hiring, exactly one candidate was enrolled.
– Eesha was enrolled before Babu.
– Hameed was enrolled before Dheeraj.
– Dheeraj was enrolled after Iqbal but before Eesha.
– Gowri was enrolled after both Jacob and Babu.
– Babu was enrolled before Jacob.

Who were the last two candidates to be enrolled?

a. Babu and Gowri
b. Eesha and Jacob
c. Babu and Chitra
d. Gowri and Chitra

Answer: d
Explanation:
1. Easha < Babu
2. Hameed < Dheeraj
3. Iqbal < Dheeraj < Easha
4. Jacob/Babu < Gowri
5. Babu < Jacob
From 1 and 5, Easha was before Babu and Jacob so she cannot be in the last two. Option b ruled out from 4 and 5, babu is before Jacob and Gowri so he cannot be in the last two. Options a, c ruled out. So option d is correct.

_____

17. **In a certain city, 60 percent of the registered voters are Party A supporters and the rest are Party B supporters. In an assembly election, if 75% of the registered Party A supporters and 20% of the registered Party B supporters are expected to vote for Candidate A, what percent of the registered voters are expected to vote for Candidate A?**

a. 20
b. 60
c. 75
d. 53

Answer: d
Explanation:
let there be x number of registered voters
60% are Party A supporters = 60% of x
40% are Party B supporters = 40% of x
Out of 60%, 75% voted for party A = 75%(60% of x) = 18x/40
Out of 40% ,20% voted for party B = 20%(40% of x) = 8x/100
=18x/40+8x/100=106x/200
Percentage of registered voters expected to vote for A = 106x/200*100 = 53% of x

18. **A number when successively divided by 5, 3, 2 gives the remainder of 0, 2 and 1 respectively in that order. What will be the remainders when the same number is divided successively by 2, 3 and 5 in that order?**

    a. 4, 1, 2
    b. 1, 0, 4
    c. 2, 1, 3
    d. 4, 3, 2

    Answer: b
    Explanation:
    Let us assume the number to be N. Now, N is first divided by 5 and leaves a remainder 0.
    So, N = 5X+0
    Then the quotient (X) is divided by 3 and leaves a remainder of 2. So, X = 3Y+2
    Again, the quotient (Y) is divided by 2 and leaves a remainder of 1. So, Y = 2Z+1
    Now, let us assume that Z = 1, then Y = 3, X = 11, N=55
    Now, 55/2 remainder is 1, 27/3 remainder is 0 and 9/5 remainder is 4. So the answer is 1, 0, 4

---

19. **Professor Nitwit obtains a hash number of a given positive integer > 3 as follows. He subtracts 2 from the number (to get the new number), and multiplies the new number by 2 to get a term. He repeats this with the new number (to get newer numbers and terms) until the number becomes 2 or 1. The hash is defined as the sum of all the terms generated in this process.**

    For example, with the number 5, he multiplies (5-2 =3) by 2 to get the first term 6. He multiplies (3-2=1) by 2 to get the second term 2. As the number has become 1, he stops. The hash is the sum of the two terms (6+2) or 8.

    If professor Nitwit is given 3 numbers 4, 9 and 13, what is the sum of the hash numbers he obtains for the three numbers?

    Explanation:

    We need to continuously subtract 2 from the given number until it becomes 1 or 2 and then we multiply each of those numbers by 2. Following the same,
    For example, as given for 5: $(3 + 1) \times 2 = 8$

    Now, let us apply the same for 4, 9, 13.
    4 : (2) x 2 = 4
    9 : $(7 + 5 + 3 + 1) \times 2 = 32$
    13 : $(11 + 9 + 7 + 5 + 3 + 1) \times 2 = 72$
    Sum of the hash numbers = 4 + 32 + 72 = 108

20. On a 26 question test, five points were deducted for each wrong answer and eight points were added for each correct answer. If all the questions were answered, how many were correct, if the score was zero?

a. 10
b. 12
c. 11
d. 13

Ans: a
Explanation:
Let x be the number of questions correct and therefore, (26- x) will be the wrong number of questions,
$8x – 5(26-x) = 0 \Rightarrow 8x – 130 + 5x = 0$
$13x = 130$, $x = 10$
Hence 10 questions were correct.

_____

21. Jake can dig a well in 16 days. Paul can dig the same well in 24 days. Jake, Paul and Hari together dig the well in 8 days. Hari alone can dig the well in

a. 96 days
b. 48 days
c. 32 days
d. 24 days

Ans: b
Explanation:
Let the total work to be done is 48 meters(LCM of 16, 24 and 8). Now Jake can dig (48/16) – 3 meters, Paul can dig (24/12) – 2 meters a day. Now all of them combined dug in 8 days so per day they dug 48/8 = 6 meters. So Of these 8 meters, Hari capacity is 1 meter. So he takes 48 /1 = 48 days to complete the digging job.

_____

22. Mark told John "If you give me half your money I will have Rs.75". John said, "if you give me one-third of your money, I will have Rs.75/- How much money did John have?

a. 45
b. 60
c. 48
d. 37.5

Ans: b
Explanation:
Let the money with Mark and John are M and J respectively.

BIZOTIC
For the love of education

Now
M + J/2 = 75
M/3 + J = 75
Solving we get M = 45, and J = 60.

_____

23. **The value of a scooter depreciates in such a way that its value of the end of each year is 3/4 of its value of the beginning of the same year. If the initial value of the scooter is Rs.40,000, what is the value at the end of 3 years?**

    a. Rs.13435
    b. Rs.23125
    c. Rs.19000
    d. Rs.16875

    Ans: d
    Explanation:
    Every year it depreciates 3/4 th of the previous year. So (3/ 4 x (3/4 x (3/4 of 40,000))) = 3*3*3*625 = 16875. Hence the value after 3 years is Rs. 16875

_____

24. **A man has a job, which requires him to work 8 straight days and rest on a ninth day. If he started work on Monday, find the day of the week on which he gets his 12th rest day.**

    a. Thursday
    b. Wednesday
    c. Tuesday
    d. Friday

    Ans: b
    Explanation:
    He works for 8 days and takes rest on the 9th day. So On the 12th rest day, there are 9 x 12 = 108 days passed. Number of odd days = (108 – 1) / 7 = 107 / 7 = 2. So the 12th rest day is Wednesday.

_____

25. **George can do a piece of work in 10 days, Paul in 12 days and Hari in 15 days. They all start the work together, but George leaves after 2 days and Paul leaves 3 days before the work is completed. In how many days is the work completed?**

    a. 5
    b. 6
    c. 9
    d. 7

Ans: d
Explanation:
Let the work be 60 units(LCM of 10, 12 and 15). If Paul worked for 3 days, and the remaining days of work are x days, total days to complete the work be x + 3 days. Now George's is 60/10 = 6, Paul is 5, Hari is 4.
(6 + 5 + 4) 2 + (5 + 4) (x – 3) + 5 x 3 = 60. On solving we get x = 4. So total days to complete the work is 7 days.

_____

26. How many arrangements will start and end with a vowel for TOGETHER?

a. 1060
b. 1080
c. 2024
d. 1050

Ans: a
Explanation:
No. of ways to put a vowel on start and end = 3 (i.e O..E, E..O, E..E). The number of ways to arrange other 6 letters = 6!/2! = 360 (letter T is two times). Total number of arrangements = 3*360 = 1080.

_____

27. In 4 years, Raj's father age is twice as raj, Two years ago, Raj's mother's age twice as raj. If Raj is 32 years old in eight years from now, what is the age of Raj's mother and father?

a. 32,34
b. 51,50
c. 32,36
d. 52,46

Ans: d
Explanation:
Raj present age = 32 – 8 = 24.
After 4 years Raj's age is 28. and Raj's father's age is 28 x 2 = 56, and his present age is 52.
Two years ago, Raj's age is 22. and his mother's age is 22 x 2 = 44. His mother's present age = 46

_____

28. A call center agent has a list of 305 phone numbers of people in alphabetic order of names (but she does not have any of the names). She needs to quickly contact Deepak Sharma to convey a message to him. If each call takes 2 minutes to complete, and every call is answered, what is the minimum amount of time in which she can guarantee to deliver the message to Mr. Sharma?

a. 18 minutes
b. 610 minutes
c. 206 minutes
d. 34 minutes

Ans: a
Explanation:
The call center calls the middle no. i.e. (305/2) = 152.5 say 152 and asks them their name to get an idea of whether to go to up or downside of 152 no directory and suppose person replies some name. The starting letter of the name will suggest the call center to decide to weather go up or down the name list.
So the process goes like >305->152–>76–>38–>19–>9–>4–>2–>1, the minimum time = 9*2 = **18 mins**.

_____

29. **In how many ways a team of 11 must be selected from 5 men and 11 women such that the team must comprise of not more than 3 men?**

   a. 1565
   b. 2456
   c. 1243
   d. 2256

Ans: d
Explanation:
The team may consist of 0 men + 11 women, 1 men + 10 women, 2 men + 9 women, or 3 men + 8 women.So Number of ways are =
11C11+5C1 ×× 11C10+5C2 ×× 11C9+5C3 ××11C8 = 2256 ways.

30. **Given that 0 < a < b < c < d, which of the following the largest?**

   a. (c+d) / (a+b)
   b. (b+d) / (a+c)
   c. (b+c) / (a+d)
   d. (a+d) / (b+c)

Ans: a
Explanation:
Let's assume the value of a , b, c and d as 1, 2, 3, 4 (a=1, b=2, c=3, and d=4), by solving we get the answer as (c+d) / (a+b).

_____