TCS New Pattern Placement paper 2013

[**Next>>**](http://www.campusgate.co.in/2011/09/tcs-placement-paper-conducted-at-jntuk.html)

*As you already aware of the fact that TCS has changed the database of questions for its aptitude test.  The questions below give you an overview of the models to be prepared.  But don't depend on these models only.  We solved these questions only as an indicative purpose.  You are requested to go through all the arithmetic topics given in this site so that you become confident of sitting for TCS or any other written test.  All the best... The question below have been taken from*[*https://campus.tcs.com/OpenSeesame/*](https://campus.tcs.com/OpenSeesame/)

***Solutions for New Open sesame -2014 PDF Questions by TCS has been Prepared.***[***Click Here***](http://www.campusgate.co.in/2013/09/open-sesame-new-tcs-questions-2014.html)

1.  If 3y + x > 2 and x + 2y≤3, What can be said about the value of y?
A. y = -1
B. y >-1
C. y <-1
D. y = 1
Answer: B

Multiply the second equation with -1 then it will become - x - 2y≥ - 3.  Add the equations.  You will get y > -1.

2. If the price of an item is decreased by 10% and then increased by 10%, the net effect on the price of the item is
A. A decrease of 99%
B. No change
C. A decrease of 1%
D. An increase of 1%
Answer: C

If a certain number is increased by x% then decreased by x% or vice versa, the net change is always decrease.  This change is given by a simple formula −(*x*10)2= −(1010)2= −1%.  Negitive sign indicates decrease.

3. If m is an odd integer and n an even integer, which of the following is definitely odd?
A. (2m+n)(m-n)
B. (*m*+*n*2)+(*m*−*n*2)
C. *m*2+*mn*+*n*2
D. m +n
Answer: C and D (Original Answer given as D)

You just remember the following odd ± odd = even; even ± even = even; even ± odd = odd
Also odd x odd = odd; even x even = even; even x odd = even.

4.  What is the sum of all even integers between 99 and 301?
A. 40000
B. 20000
C. 40400
D. 20200
Answer: D

The first even number after 99 is 100 and last even number below 301 is 300.  We have to find the sum of even numbers from 100 to 300.  i.e., 100 + 102 + 104 + ............... 300.
Take 2 Common.  2 x ( 50 + 51 + ...........150)
There are total 101 terms in this series.  So formula for the sum of n terms when first term and last term is known is n2(a+l)
So 50 + 51 + ...........150 = 1012(50+150)
So 2 x 1012(50+150) = 20200

5. There are 20 balls which are red, blue or green.  If 7 balls are green and the sum of red balls and green balls is less than 13, at most how many red balls are there?
A. 4
B. 5
C. 6
D. 7
Answer: B

Given R + B + G = 17; G = 7; and R + G < 13.  Substituting G = 7 in the last equation, We get R < 6.  So maximum value of R = 6

6.  If n is the sum of two consecutive odd integers and less than 100, what is greatest possibility of n?
A. 98
B. 94
C. 96
D. 99
Answer : C

We take two odd numbers as (2n + 1) and (2n - 1).
Their sum should be less than 100. So (2n + 1) + (2n - 1) < 100 ⇒ 4n < 100.
The largest 4 multiple which is less than 100 is 96

7. *x*2 < 1/100, and x < 0 what is the highest range in which x can lie?
A. -1/10 < x < 0
B. -1 < x < 0
C. -1/10 < x < 1/10
D. -1/10 < x
Answer: A

Remember:
(x - a)(x - b) < 0 then value of x lies in between a and b.
(x - a)(x - b) > 0 then value of x does not lie inbetween a and b. or ( −∞, a) and (b, −∞) if a < b
*x*2 < 1/100 ⇒
(*x*2−1/100)<0⇒(*x*2−(1/10)2)<0⇒(*x*−1/10)(*x*+1/10)<0
So x should lie inbetween - 1/10 and 1/10.  But it was given that x is -ve. So x lies in -1/10 to 0

8.  There are 4 boxes colored red, yellow, green and blue.  If 2 boxes are selected, how many combinations are there for at least one green box or one red box to be selected?
A. 1
B . 6
C. 9
D. 5
Answer: 5

Total ways of selecting two boxes out of 4 is 4*C*2 = 6.  Now, the number of ways of selecting two boxes where none of the green or red box included is only 1 way.  (we select yellow and blue in only one way).  If we substract this number from total ways we get 5 ways.

9. All faces of a cube with an eight - meter edge are painted red.  If the cube is cut into smaller cubes with a two - meter edge, how many of the two meter cubes have paint on exactly one face?
A. 24
B. 36
C. 60
D. 48
Answer : A

If there are n cubes lie on an edge, then total number of cubes with one side painting is given by 6×(*n*−2)2.  Here side of the bigger cube is 8, and small cube is 2.  So there are 4 cubes lie on an edge. Hence answer = 24

10. Two cyclists begin training on an oval racecourse at the same time.  The professional cyclist completes each lap in 4 minutes; the novice takes 6 minutes to complete each lap.  How many minutes after the start will both cyclists pass at exactly the same spot where they began to cycle?
A. 10
B. 8
C. 14
D. 12
Answer: D

The faster cyclyst comes to the starting point for every 4 min so his times are 4, 8, 12, .........  The slower cyclist comes to the starting point for every 6 min so his times are 6, 12, 18, .........  So both comes at the end of the 12th min.

11. M, N, O and P are all different individuals; M is the daughter of N; N is the son of O; O is the father of P; Among the following statements, which one is true?
A. M is the daughter of P
B. If B is the daughter of N, then M and B are sisters
C. If C is the granddaughter of O, then C and M are sisters
D. P and N are bothers.
Answer: B

From the diagram it is clear that If B is the daughter of N, then M and B are sisters.  Rectangle indicates Male, and Oval indicates Female.

12. In the adjoining diagram, ABCD and EFGH are squres of side 1 unit such that they intersect in a square of diagonal length (CE) = 1/2.  The total area covered by the squares is

A. Cannot be found from the information
B. 1 1/2
C. 1 7/8
D. None of these
Answer:  C



Let CG = x then using pythogerous theorem CG2+GE2=CE2
⇒  *x*2+*x*2=(1/2)2⇒2*x*2=1/4⇒*x*2=1/8
Total area covered by two bigger squares = ABCD + EFGE - Area of small square = 2 - 1/8 = 15/8

13. There are 10 stepping stones numbered 1 to 10 as shown at the side.  A fly jumps from the first stone as follows; Every minute it jumps to the 4th stone from where it started - that is from 1st it would go to 5th and from 5th it would go to 9th and from 9th it would go to 3rd etc.  Where would the fly be at the 60th minute if it starts at 1?
A. 1
B. 5
C. 4
D. 9
Answer : A

Assume these steps are in circular fashion.
Then the fly jumps are denoted in the diagram.  It is clear that fly came to the 1st position after 5th minute.  So again it will be at 1st position after 10th 15th .....60th. min.

So the fly will be at 1st stone after 60th min.

14. What is the remainder when 617+1176  is divided by 7?
A. 1
B. 6
C. 0
D. 3
Answer: C

617 = (7−1)17 =
17C0.717−17C1.716.11.....+17C16.71.116−17C17.117

If we divide this expansion except the last term each term gives a remainder 0.  Last term gives a remainder of - 1.

Now From Fermat little theorem, [ap−1p]Rem=1
So [1767]Rem=1

Adding these two remainders we get the final remainder = 0

15. In base 7, a number is written only using the digits 0, 1, 2, .....6.  The number 135 in base 7 is 1 x 72+ 3 x 7 + 5 = 75 in base 10.  What is the sum of the base 7 numbers 1234 and 6543 in base 7.
A. 11101
B. 11110
C. 10111
D. 11011
Answer: B



In base 7 there is no 7.  So to write 7 we use 10.  for 8 we use 11...... for 13 we use 16, for 14 we use 20 and so on.
So from the column d, 4 + 3 = 7 = 10, we write 0 and 1 carried over.  now 1 + 3 + 4 = 8 = 11, then we write 1 and 1 carried over.  again 1 + 2 + 5 = 8 = 11 and so on

16. The sequence {An} is defined by A1 = 2 and An+1=An+2n what is the value of A100
A. 9902
B. 9900
C. 10100
D. 9904
Answer: A
We know that A1 = 2 so A2=A1+1=A1+2(1)=4
A3=A2+1=A2+2(2)=8
A4=A3+1=A3+2(3)=14
So the first few terms are 2, 4, 8, 14, 22, ......
The differences of the above terms are 2, 4, 6, 8, 10...
and the differences of differences are 2, 2, 2, 2.  all are equal.  so this series represents a quadratic equation.
Assume  An = *an*2+*bn*+*c*
Now A1 = a + b + c = 2
A2 = 4a + 2b + c = 4
A3 = 9a + 3b + c = 8
Solving above equations we get a = 1, b = - 1 and C = 2
So substituting in An = *n*2+*bn*+*c* = *n*2−*n*+2
Substitute 100 in the above equation we get 9902.

17.Find the number of rectangles from the adjoining figure (A square is also considered a rectangle)



A. 864
B. 3276
C. 1638
D. None

Answer: C

To form a rectangle we need two horizontal lines and two vertical lines.  Here there are 13 vertical lines and 7 horizontal lines.  The number of ways of selecting 2 lines from 13 vertical lines is 13*C*2 and the number of ways of selecting 2 lines from 7 horizontals is 7*C*2. So total rectangles = 7*C*2*x*13*C*2

18. A, B, C and D go for a picnic.  When A stands on a weighing machine, B also climbs on, and the weight shown was 132 kg.  When B stands, C also climbs on, and the machine shows 130 kg.  Similarly the weight of C and D is found as 102 kg and that of B and D is 116 kg.  What is D's weight
A. 58kg
B. 78 kg
C. 44 kg
D. None
Answer : C

Given A + B = 132; B + C = 130; C + D = 102, B + D = 116
Eliminate B from 2nd and 4th equation and solving this equation and 3rd we get D value as 44.

19.  Roy is now 4 years older than Erik and half of that amount older than Iris.  If in 2 years, roy will be twice as old as Erik, then in 2 years what would be Roy's age multiplied by Iris's age?
A. 28
B. 48
C. 50
D. 52
Answer: 48

20. X, Y, X and W are integers.  The expression X - Y - Z is even and the expression Y - Z - W is odd.  If X is even what must be true?
A. W must be odd
B. Y - Z must be odd
C. W must be odd
D. Z must be odd
Answer: A or C (But go for C)

21.  Mr and Mrs Smith have invited 9 of their friends and their spouses for a party at the Waikiki Beach resort.  They stand for a group photograph.  If Mr Smith never stands next to Mrs Smith (as he says they are always together otherwise). How many ways the group can be arranged in a row for the photograph?
A. 20!
B. 19! + 18!
C. 18 x 19!
D. 2 x 19!
Answer: C

22.  In a rectanglular coordinate system, what is the area of a triangle whose vertices whose vertices have the coordinates (4,0), (6, 3) adn (6 , -3)
A. 6
B. 7
C. 7.5
D. 6.5
Answer: A

23. A drawer holds 4 red hats and 4 blue hats.  What is the probability of getting exactly three red hats or exactly three blue hats when taking out 4 hats randomly out of the drawer and immediately returning every hat to the drawer before taking out the next?
A. 1/2
B. 1/8
C. 1/4
D. 3/8
Answer: B

24. In how many ways can we distribute 10 identical looking pencils to 4 students so that each student gets at least one pencil?
A. 5040
B. 210
C. 84
D. None of these
Answer: C

25. The prime factorization of intezer N is A x A x B x C, where A, B and C are all distinct prine intezers.  How many factors does N have?
A. 12
B. 24
C. 4
D. 6
Answer: A

26. Tim and Elan are 90 km from each other.they start to move each other simultanously tim at speed 10 and elan 5 kmph. If every hour they double their speed what is the distance that Tim will pass until he meet Elan
A. 45
B. 60
C. 20
D. 80
Answer: B

27. A father purchases dress for his three daughter. The dresses are of same color but of different size .the dress is kept in dark room .What is the probability that all the three will not choose their own dress.
A.  2/3
B.  1/3
C.  1/6
D.  1/9
Answer: B

28. N is an integer and N>2, at most how many integers among N + 2, N + 3, N + 4, N + 5, N + 6,  and N + 7 are prime integers?
A. 1
B. 3
C. 2
D. 4
Answer: C

29. A turtle is crossing a field.  What is the total distance (in meters) passed by turtle? Consider the following two statements
(X) The average speed of the turtle is 2 meters per minute
(Y) Had the turtle walked 1 meter per minute faster than his average speed it would have finished 40 minutes earlier
A. Statement X alone is enough to get the answer
B. Both statements X and Y are needed to get the answer
C. Statement Y alone is enough to get the answer
D. Data inadequate
Answer: B

30. Given the following information, who is youngest?
C is younger than A; A is talled than B
C is older than B; C is younger than D
B is taller than C; A is older than D
A. D
B. B
C. C
D. A
Answer: B

31. If P(x) = ax4+bx3+cx2+dx+e has roots at x = 1, 2, 3, 4 and P(0) = 48, what is P(5)
A. 48
B. 24
C. 0
D. 50
Answer: A

TCS latest Pattern Questions with Explanations - 2

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1) The water from one outlet, flowing at a constant rate, can fill the swimming pool in 9 hours. The water from second outlet, flowing at a constant rate can fill up the same pool in approximately in 5 hours. If both the outlets are used at the same time, approximately what is the number of hours required to fill the pool?
Ans: Assume tank capacity is 45 Liters.  Given that the first pipe fills the tank in 9 hours.  So its capacity is 45 / 9 = 5 Liters/ Hour.  Second pipe fills the tank in 5 hours.  So its capacity is 45 / 5 = 9 Liters/Hour. If both pipes are opened together, then combined capacity is 14 liters/hour.   To fill a tank of capacity 45 liters, Both pipes takes 45 / 14 = 3.21 Hours.

2) If 75 % of a class answered the first question on a certain test correctly, 55 percent answered the second question on the test correctly, and 20 percent answered neither of the questions correctly, what percentage answered both correctly?
It is a problem belongs to sets. We use the following formula n(A∪B) = n(A) + n(B) - n(A∩B)
Here n(A∪B) is the people who answered atleast one of the questions.
It was given that 20% answered neither question then the students who answered atleast one question is 100% - 20% = 80%
Now substituting in the formula we get 80% = 75% + 55% - n(A∩B)
⇒ n(A∩B) = 50%

3) A student's average ( arithmetic mean) test score on 4 tests is 78. What must be the students score on a 5th test for the students average score on the 5th test to be 80?
Ans: We know that Average =Sum of the observations No of observations
So Sum of 4 test scores = 78×4=312
Sum of 5 tests scores = 80×5=400
⇒ 5th test score=400-312=88

**Alternative method:** If the student scores 78 in the fifth test also, what could be his average? No change. Is it not?
But to bring the average to 80, he must have scored enough marks extra so that each of the five subject scores increase upto 80. i.e., he should have scored 2 x 5 = 10 runs extra in the fifth subject.  So 5th subject score is 78 + 10 = 88

4) Rural households have more purchasing power than do urban households at the same income level, since some of the income urban and suburban households use for food and shelter can be used by the rural households for other needs. Which of the following inferences is best supported by the statement made above?
(A) The average rural household includes more people than does the average urban or suburban household.
(B) Rural households have lower food and housing costs than do either urban or suburban households.
(C) Suburban households generally have more purchasing power than do either rural or urban households.
(D) The median income of urban and suburban households is generally higher than that of rural households.
(E) All three types of households spend more of their income on housing than on all other purchases combined.
Ans: If average rural household includes more people, then how come they have more purchasing power? Infact, they have less purchasing power as they have to feed more people.  Option A ruled out.
Option C does not explain why rural households have more purchasing power than urban.  Ruled out.
If median income of urban and suburban households is generally higher than rural households they are likely to have more purchasing power, assuming other parameters constant.  But this does not explain why rural households have more purchasing power. Options D ruled out.
Option E does not provide any explanation why rural households have more purchasing power. Ruled out.
Option B is correct as, If rural households spend less income on food and shelter due to less prices they definitely have more disposable income to spend.

5) Jose is a student of horticulture in the University of Hose. In a horticultural experiment in his final year, 200 seeds were planted in plot I and 300 were planted in plot II. If 57% of the seeds in plot I germinated and 42% of the seeds in plot II germinated, what percent of the total number of planted seeds germinated?
Ans: Total seeds germinated in Plot I = 57% of 200 = 114
Total seeds germinated in Plot II = 42% of 300 = 126
Total germinated seeds = 114 + 126 = 240
The percentage of germinated seeds of the total seeds = 240500×100 = 48%

6) A closed cylindrical tank contains 36*π* cubic feet of water and its filled to half its capacity. When the tank is placed upright on its circular base on level ground, the height of water in the tank is 4 feet. When the tank is placed on its side on level ground, what is the height, in feet, of the surface of the water above the ground?
Ans: We know that the volume of cylinder = *πr*2*h*
Given tank hight = 4ft.
⇒ *πr*24 = 36*π*
⇒ r = 3
So the radius is 3 which means the diameter is 6.



As the cylinder is filled to initially exactly half of the capacity, When this cylinder is placed on its side, Water comes upto the height of the radius.
So water comes upto 3 ft.

7) The present ratio of students to teachers at a certain school is 30 to 1. If the student enrollment were to increase by 50 students and the number of teachers were to increase by 5, the ratio of the teachers would then be 25 to 1 What is the present number of teachers?
Assume the present students and teachers are 30K, K
After new recruitments of students and teachers the strength becomes  30K + 50, K + 5 respectively. But given that this ratio = 25 : 1
⇒30*K*+50*K*+5=251
Solving we get K = 15
So present teachers are 15.

8) College T has 1000 students. Of the 200 students majoring in one or more of the sciences,130 are majoring in Chemistry and 150 are majoring in Biology. If at least 30 of the students are not majoring in either Chemistry or Biology, then the number of students majoring in both Chemistry and Biology could be any number from
If we assume exactly 30 students are not  majoring in any subject then the students who take atleast one subject = 200 - 30 = 170
We know that n(A∪B) = n(A) + n(B) - n(A∩B)
⇒ 170 = 130 + 150 - n(A∩B)
Solving we get n(A∩B)  = 110.
i.e., Students who can take both subjects are 110

But If more than 30 students are not taking any subject, what can be the maximum number of students who can take both the subjects?

As there are 130 students are majoring in chemistry, assume these students are taking biology also. So maximum students who can take both the subjects is 130



So the number of students who can take both subjects can be any number from 110 to 130.

9) Kelly and Chris are moving into a new city. Both of them love books and thus packed several boxes with books. If Chris packed 60% of the total number of boxes, what was the ratio of the number of boxes Kelly packed to the number of boxes Chris packed?
Simple questions.  If chris packs 60% of the boxes, kelly packs remaining 40%
So Kelly : Chris = 40% : 60% = 2 : 3

10) Among a group of 2500 people, 35 percent invest in municipal bonds, 18 percent invest in oil stocks, and 7 percent invest in both municipal bonds and oil stocks. If 1 person is to be randomly selected from 2500 people, what is the probability that the person selected will be one who invests in municipal bonds but not in oil stocks?
Ans: Here 2500 is redundant



From the diagram we know that only ones who invested in municipal bonds are 28%, the probability is 28 / 100 = 7/25

11) Machine A produces bolts at a uniform rate of 120 every 40 second, and Machine B produces bolts at a uniform rate of 100 every 20 seconds. If the two machines run simultaneously, how many seconds will it take for them to produce a total of 200 bolts?
Ans: Machine A produces 120/40 = 3 bolts in 1 second and machine B produces 100/20 = 5 bolts in one second.
Hence, both of them will produce 8 bolts per second.
Hence, they wil take 200/8 = 25 seconds to produce 200 bolts.

12) How many prime numbers between 1 and 100 are factors of 7150?
Ans: 7, 150 = 2×52×11×13
So there are 4 distinct prime numbers that are below 100

13) Analysing the good returns that Halocircle Insurance Pvt Ltd was giving, Ratika bought a 1-year, Rs 10,000 certificate of deposit that paid interest at an annual rate of 8% compounded semi-annually.What was the total amount of interest paid on this certificate at maturity?
This is a question on compound interest to be calculated semi annually.
In the case of semi annual compounding, Interest rate becomes half and Number of periods becomes 2 per year.
So A = P(1+*R*100)*n*
⇒*A*=10,000(1+4100)2=10,000×2625
= 10,816
Interest = A - P = 10, 816 - 10,000 = 816

14) Juan is a gold medalist in athletics. In the month of May, if Juan takes 11 seconds to run y yards, how many seconds will it take him to run x yards at the same rate?
Ans: If juan takes 11 seconds to run Y yards, for 1 yard he will take 11 / y seconds.  To run x yards his time will be 11 / y × x = 11x/ y

15) A certain company retirement plan has a rule of 70 provision that allows an employee to retire when the employee's age plus years of employment with the company total at least 70. In what year could a female employee hired in 1986 on her 32nd birthday first be eligible to retire under this provision?
Assume it has taken x years to the female employee to reach the rule of 70.
So her age should be 32 + x.  Also she gains x years of experience.
⇒ (32 + x) + x = 70
⇒ x = 19.
Her age at the time of retirement = 1986 + 19 = 2005

16) Of the following, which is the closest approximation of (50.2\*0.49)/199.8 ?
ans: For approximation (50.2×0.49)/199.8 can be taken as
50×0.5/200 = 25/200 = 1/8 = 0.125

17) Andalusia has been promoting the importance of health maintenance. From January 1,1991 to January 1,1993, the number of people enrolled in health maintenance organizations increased by 15 percent. The enrollment on January 1,1993 was 45 million. How many million people(to the nearest million) was enrolled in health maintenance organizations on January 1,1991?
Ans: If a number K is to be increased by x % it should be multiplied by (100+*x*)100
So When the enrollment in January 1, 1991 is multiplied by (100+*x*)100 we got 45 million.
*K*×(100+15)100=45
K = 45×100115 = 39.13

18) What is the lowest possible integer that is divisible by each of the integers 1 through 7, inclusive?
Ans: If a number has to be divisible by each number from 1 to 7, that number should be L.C.M of(1,2,3,4,5,6,7) = 420

19) If the area of a square region having sides of length 6 cms is equal to the area of a rectangular region having width 2.5 cms, then the length of the rectangle, in cms, is
Ans: Given Area of the square = Area of rectangle
⇒*a*2=*l*.*b*
Substituting the above values in the formula
⇒62=*l*.2.5
⇒ l = 14.4 cm

20) A tank contains 10,000 gallons of a solution that is 5 percent sodium chloride by volume. If 2500 gallons of water evaporate from the tank, the remaining solution will be approximately what percentage of sodium chloride?
Ans: Sodium chloride in the original solution = 5% of 10,000 = 500
Water in the original solution = 10,000 - 500 = 9,500
If 2,500 Liters of the water is evaporated then the remaining water = 9,500 - 2,500 = 7,000
Sodium chloride concentration = 500500+7000×100 = 6.67 %
(concentration should be calculated always on the total volume)

21) After loading a dock, each worker on the night crew loaded 3/4 as many boxes as each worker on the day of the crew. If the night crew has 4/5 as many workers as the day crew, what fraction of all the boxes loaded by two crews did the day crew load?
 Assume the number of boxes loaded in dayshift is equal to 4, then the number of boxed loaded in night shift = 3
Assume the worked on dayshift = 5, then workers on night shift = 4



So boxes loaded in day shift = 4 x 5 = 20, and boxes loaded in night shift = 3 x 4 = 12
so fraction of boxes loaded in day shift = 2020+12=58

22) A bakery opened yesterday with its daily supply of 40 dozen rolls. Half of the rolls were sold by noon and 80 % of the remaining rolls were sold between noon and closing time. How many dozen rolls had not been sold when the bakery closed yesterday?
Ans: If half of the rolls were sold by noon, the remaining are 50 % (40) = 20.
Given 80% of the remaining were sold after the noon to closing time
⇒ 80% (20) = 16
Unsold = 20 - 16 = 4

23) If N=4P, where P is a prime number greater than 2, how many different positive even divisors does n have including n?
Ans: N = 22×P1
We know that total factors of a number which is in the format of a*P*×b*Q*×c*R*... = (P + 1). (Q + 1). (R + 1) .... = (2 + 1).(1 + 1) = 6
Also odd factors of any number can be calculated easily by not taking 2 and its powers.
So odd factors of 22×P1 = the factors of P1 = (1 + 1) = 2
Even factors of the number = 6 - 2 = 4

24) A dealer originally bought 100 identical batteries at a total cost of q rupees. If each battery was sold at 50 percent above the original cost per battery, then, in terms of q, for how many rupees was each battery sold?
Ans: Per battery cost = q / 100
If each battery is sold for 50% gain, then selling price = CostPrice×(100+*Gain*100)
⇒ *q*100×(100+50100)=3*q*200

25) The price of lunch for 15 people was 207 pounds, including a 15 percent gratuity of service. What was the average price per person, EXCLUDING the gratuity?
Ans: Let the net price excluding the gratuity of service = x pounds
Then, total price including 15% gratuity of service = *x*×(100+15100) = 1.15 x pounds
So, 1.15 x = 207 pounds
 ⇒ x = 207 / 1.15 = 180 pounds
Net price of lunch for each person = 180 / 15 = 12 pounds

TCS latest Pattern Questions with Explanations - 3

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1) Of the following, which is the closest approximation of (50.2\*0.49)/199.8 ?
Ans: For approximation (50.2×0.49)/199.8 can be taken as
50×0.5/200 = 25/200 = 1/8 = 0.125

2) How many prime numbers between 1 and 100 are factors of 7150?
Ans: 7, 150 = 2×52×11×13
So there are 4 distinct prime numbers that are below 100

3)  Among a group of 2500 people, 35 percent invest in municipal bonds, 18 percent invest in oil stocks, and 7 percent invest in both municipal bonds and oil stocks. If 1 person is to be randomly selected from 2500 people, what is the probability that the person selected will be one who invests in municipal bonds but not in oil stocks
Ans: Here 2500 does not require.



From the diagram we know that only ones who invested in municipal bonds are 28%, the probability is 28 / 100 = 7/25

4) Country Club has an indoor swimming club. Thirty percent of the members of a swim club have passed the lifesaving test. Among the members who have not passed the test, 12 have taken the preparatory course and 30 have not taken the course. How many members are there in the swim club?
Ans: 30 + 12 = 42 did not pass the test. This is equal to 70 % of the total members. So total members = 100/ 70 x 42 = 60

5) A necklace is made by stringing N individual beads together in the repeating pattern red bead, green bead, white bead, blue bead and yellow bead. If the necklace begins with a red bead and ends with a white bead, then N could be:
Ans: The pattern is R G W B Y R G W B Y R .......
So, White bead comes at  these positions 3rd, 8th, 13th, 18th...
If we take this as a arithmetic progression, then this series can be expressed as 3 + (n - 1) 5. ( From the formula for general term of AP = a + (n-1)d).
This can be expressed as 5n - 2
We check the answer options so only 68 satisfy the condition.

6) A dog taken four leaps for every five leaps of hare but three leaps of the dog is equal to four leaps of the hare. Compare speed?
Ans: In terms of number of leaps, the ratio of the Dog and hare speeds are 4 : 5
But Given that 3 leaps of dog = 4 leaps of hare,.  i.e., Leap lengths = 4 : 3 (If Dog is covering in 3 leaps what hare as covered in 4 leaps then Leap lengths are inversely proportional)
So Dog speed = 4 x 4 = 16
Hare speed = 5 x 3 = 15
So speeds ratio = 16 : 15

7)  There are two boxes,one containing 39 red balls & the other containing 26 green balls.you are allowed to move the balls b/w the boxes so that when you choose a box random & a ball at random from the chosen box,the probability of getting a red ball is maximized.this maximum probability is
Ans: Very interesting question.
As we are allowed to move the balls, we keep only one red ball in first box and move all the remaining balls to the second box
So fist box contains 1 redball, second box contains 38 red + 26 green = 64 balls
Probability of choosing any box is 1/ 2.
So probability of taking one red ball = 12×(1)+12(3864)≃0.8

8)  In how many ways can 3 postcards can be posted in 5 postboxes?
Ans: First card can go into any of the five boxes, Second can go into any of the five boxes, Third can go into any of the five boxes = 5×5×5=125

9)  Apple costs L rupees per kilogram for first 30kgs and Q rupees per kilogram for each additional kilogram. If the price of 33 kilograms is 11.67and for 36kgs of Apples is 12.48 then the cost of first 10 kgs of Apples is
Ans: By framing equations we get
30L+3Q=11.67
30L+6Q=12.48
Eliminate Q by multiplying the first equation by 2 and subtracting second equation from the first
Then we get L = 0.362
Cost of 10 kgs of apples = 0.362 x  10 = 3.62

10) letters in the word ABUSER are permuted in all possible ways and arranged in alphabetical order then find the word at position 49 in the permuted alphabetical order?
a) ARBSEU
b) ARBESU
c) ARBSUE
d) ARBEUS
Ans: The best way to solve this problems is Just ask how many words starts with A. If we fix A, then the remaining letters can be arranged in 5! ways = 120. So the asked word must start with A.
Arrange all the given letters in alphabetical order. ABERSU
Let us find all the words start with AB.   AB\*\*\*\* = 4!= 24 ways
Now we find all the words start wit AE.  AE\*\*\*\*= 4!= 24 ways
So next word start with AR and remaining letters are BESU
So option B

11) A is twice efficient than B. A and B can both work together to complete a work in 7 days. Then find in how many days A alone can complete the work?
Ans: Let us assume A can do 2 units of work each day, then B can do only 1 unit a day.  If both can complete the work in 7 days, total work done by these two togeter = (2 + 1 ) x 7 = 21 units
If these 21 units to be done by A alone, then he will take 21 / 2 = 10.5 days.

12) In  a 8 x 8 chess board what is the total number of squares.
Ans: The total number of squares in a n x n chess board is equal to "the sum of first n natural number squares"
i.e., *n*(*n*+1)(2*n*+1)6
So Substituting 8 in the above formula we get 204

13) X, Y, W and Z are intezers and the expressing X - Y - Z is even and Y - W - Z is odd.  If X is even then which of the following is true?
(a) Y must be odd
(b) Y-Z must be odd
(c) W must be odd
(d) Z must be odd
Ans. If X is even and X - Y - Z is even then Y and Z both should be odd or both should be even.
If Y - W - Z is odd, and Y and Z are also odd W should be odd
If Y - W - Z is even, and Y and Z are even then W should be odd.
So option C is correct. i.e., W must be ODD

14) The remainder when 1!+2!+3!...+50! divided by 5! will be
The remainder when the terms greater than 5! are divided by 5! becomes 0 so we need to consider the terms upto 4!.
So remainder will be whatever is obtained by dividing 1!+2!+3!+4! with 5!.
So remainder is obtained by dividing (1+2+6+24)= 33 with 5! ( 120)
So remainder is 33.

15)  If there are Six periods in each working day of a school, In how many ways can one arrange 5 subjects such that each subject is allowed at least one period?
Ans. To arrange 6 periods with 5 subjects, then one subject can be arranged in two slots.
5 Subjects can be arranged in 6 periods in 6P5 ways and now we have 1 period which we can fill with any of the 5 subjects in 5 ways. so 6P5×5=3600
Alternate method:
Assume the subjects are X1, X2, A, B , C, D,. Here X is the subject which repeats. So arranging 6 objects in 6 places will be equal to 6! = 720 (here no need to divide this number with 2! as even though the subject is same, but not identical)
But this repeated subect can be any of the five. So total arrangements are 720 x 5 = 3600

16)  An article manufactured by a company consists of two parts X and Y. In the process of manufacturing of part X, 9 out 100 parts many be defective. Similarly , 5 out of 100 are likely to be defective in the manufacturer of Y. Calculate the probability that the assembled product will not be defective?
a) 0.6485
b) 0.6565
c) 0.8645
d) none of these
Ans: Probability that the part X is nondefective is = 1 - 9/100=.91
Probablity that the part Y is nondefective is = 1 - 5/100=.95
so, Probablity of nondefective product=0.91×0.95=0.8645

TCS Latest Placement Paper Questions - 2014 (4)

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1. Adam sat with his friends in the Chinnaswamy stadium at Madurai to watch the 100 metres running race organized by the Asian athletics Association. Five rounds were run. After every round half the teams were eliminated. Finally, one team wins the game. How many teams participated in the race?
Ans: Total five rounds were run. So in the final round 2 teams must have participated.  In the penultimate round 4 teams, and 3rd round 8, 2nd round 16 and in the first round 32 teams must have participated as in each round half of the teams got eliminated.

2. From the top of a 9 metres high building AB, the angle of elevation of the top of a tower CD is 30º and the angle of depression of the foot of the tower is 60º. What is the height of the tower?
Ans:



Ans:  We have to find the value of CD.  We use Sine rule to find the answer easily. Sine rule is *aSinA*=*bSinB*=*cSinC*

 In triangle BDE, 9*Sin*60=*xSin*30

So 93√2=*x*12⇒*x*=93√

In triangle BCD, *CDSin*30=93√*Sin*60

*CD*12=93√3√2⇒*CD*=3
So height of the tower = 9 + 3 = 12

3. 49 members attended the party. In that 22 are males, 27 are females. The shake hands are done between males, females, male and female. Total 12 people given shake hands. How many such kinds of such shake hands are possible?
Ans:  If only 12 people shaked their hands, then total hand shakes are 12*C*2 = 66

4. Ferrari S.P.A is an Italian sports car manufacturer based in Maranello, Italy. Founded by Enzo Ferrari in 1928 as Scuderia Ferrari, the company sponsored drivers and manufactured race cars before moving into production of street-legal vehicles in 1947 as Ferrari S.P.A. Throughout its history, the company has been noted for its continued participation in racing, especially in Formula One where it has employed great success. Rohit once bought a Ferrari. It could go 4 times as fast as Mohan’s old Mercedes. If the speed of Mohan’s Mercedes is 35 km/hr and the distance traveled by the Ferrari is 490 km, find the total time taken for Rohit to drive that distance.
Ans:  As Ferrari's speed is four times that of the mercedes, Its speed is 35 x 4 = 140
So time taken by the ferrari = 490 / 140 = 3.5 Hours

5. A sheet of paper has statements numbered from 1 to 40. For all values of n from 1 to 40, statement n says: ‘Exactly n of the statements on this sheet are false.’ Which statements are true and which are false?
a) The even numbered statements are true and the odd numbered statements are false.
b) The odd numbered statements are true and the even numbered statements are false.
c) All the statements are false.
d) The 39th statement is true and the rest are false
Ans: Assume there is only one statement is there.  The statement should read "Exactly 1 statement on this sheet is false" .  If the truth value of the statement is true, then given statement should be false. This is contradiction. If the statement is false, Then the given statement is true. but there is not other true statement.
Assume there are two statements.  By the above logic, 2nd statement should not be true.  But 1st statement is true as it truthfully says the truthfulness.   By this logic we know that If there are "n" statements, (n-1)th statement is the only true statement And all other are false

6. If there are 30 cans out of them one is poisoned if a person tastes very little he will die within 14 hours so if there are mice to test and 24 hours to test, what is the minimum no. of mice’s required to find poisoned can?
Ans:



If only 3 person are used, by giving wine drops suggested by the diagram, we can find the poisoned casks upto 8.
for example, If the 2nd and 3rd persons die, then 7th cask is poisoned. As a rule of thumb, If we have n mice, we can easily find the poison casks upto 2*n*.  As the number of casks are less than 32 we can use only 5 mice.

 7. How many 9 digit numbers are possible by using the digits 1, 2, 3, 4, 5 which are divisible by 4 if the repetition is allowed?
Ans: If A number has to be divisible by 4, the last two digits must be divisible by 4. So possibilities are, 12, 24, 32, 44, 52.  And the of the remaining 7 places, each place got filled by any of the five digits.  So these 7 places got filled by 5 x 5 x .....(7 times) = 57 ways. So total ways are 5 x 57 = 58

8. A hare and a tortoise have a race along a circle of 100 yards diameter. The tortoise goes in one direction and the hare in the other. The hare starts after the tortoise has covered 1/5 of its distance and that too leisurely. The hare and tortoise meet when the hare has covered only 1/8 of the distance. By what factor should the hare increase its speed so as to tie the race?



Assume the circumference of the circle is 200 meters.  Hare and tortoise started at the same point but moves in the opposite direction. It is given that by that time tortoise covered 40 m (1/5th of the distance), Hare started and both met after hare has covered 25. This implies, in the time hare has covered 25m, hare has covered 200 - 40 - 25 = 135 meters.
So Hare : tortoise speeds = 25 : 135 = 5 : 27
Now Hare and tortoise has to reach the starting point means, Hare has to cover 175 meters and Tortoise has to cover only 25 meters in the same time.
As time =DistanceSpeed=2527=1755×*K*
Ie., Hare has to increase its speed by a factor K. Solving we get K = 37.8

9. For the FIFA world cup, Paul the octopus has been predicting the winner of each match with amazing success. It is rumored that in a match between 2 teams A and B, Paul picks A with the same probability as A’s chances of winning. Let’s assume such rumors to be true and that in a match between Ghana and Bolivia; Ghana the stronger team has a probability of 2/3 of winning the game. What is the probability that Paul will correctly pick the winner of the Ghana-Bolivia game?
a) 1/9
b) 4/9
c) 5/9
d) 2/3
The probability that Paul correctly picks the winner = (A's Chances of winning)x(Pauls picking the winner corectly) + (A's chances of loosing) x (Paul picks wrongly) = 23×23+13×13=59

10. 36 people {a1, a2… a36} meet and shake hands in a circular fashion. In other words, there are totally 36 handshakes involving the pairs, {a1, a2}, {a2, a3}, …, {a35, a36}, {a36, a1}. Then size of the smallest set of people such that the rest have shaken hands with at least one person in the set is
a) 12
b) 11
c) 13
d) 18
Ans:  {a1, a2}, {a2, a3},{a3, a4}, {a4, a5},{a5, a6}, {a6, a7} …, {a35, a36}, {a36, a1}
From the above arrangement, If we separate a3, a6, a9, .....a36.  Total 12 persons the reamining persons must have shaked hand with atleast one person. So answer is 12.

11. There are two boxes, one containing 10 red balls and the other containing 10 green balls. You are allowed to move the balls between the boxes so that when you choose a box at random and a ball at random from the chosen box, the probability of getting a red ball is maximized. This maximum probability is
If rearrangement is not allowed, then actual probability of picking up a red ball = 12(10)+12(0)=12
As we are allowed to move the ball, we keep only 1 red in the first box, and shirt the remaining 9 to the second.
So = 12(1)+919(0)=1419

12. The difference between two no is 9 and the product of the two is 14. What is the square of their sum?
We know that (a+b)2=(a−b)2 + 4ab
Substituting a - b = 9, and ab = 14, (*a*+*b*)2=(9)2+4(14)=137

13. There are two water tanks A and B, A is much smaller than B. While water fills at the rate of one liter every hour in A, it gets filled up like 10, 20, 40, 80, 160 in tank B. (At the end of first hour, B has 10 liters, second hour it has 20, third hour it has 40 and so on). If tank B is 1/32 filled after 21 hours, what is the total duration required to fill it completely?
Ans: The data related to the first tank A is not necessary. As you can see, the capacity that gets filled in the tank B after each hour is doubled.  So If the tank is 1/32nd part is full after 21 hours, it is 1/16th part full after 22 hours, 1/8th part full after 23 hours, 1/4th part full after 24 hours, 1/2 full after 25 hours, completely full after 26 hours.

14. 3 friends A, B, C went for week end party to McDonald’s restaurant and there they measure there weights in some order In 7 rounds. A, B, C, AB, BC, AC, ABC. Final round measure is 155kg then find the average weight of all the 7 rounds?
Average weight = [(a + b + c + (a+b) + (b+c) + (c+a)+(a+b+c)] / 7 = 4 (a+b+c) /7 = 4 x 155/7 = 88.5 kgs

15. A grand father has 3 grand children. Age difference of two children among them is 3. Eldest child age is 3 times the youngest child’s age and the eldest child age is two year more than the sum of age of other two children. What is the age of the eldest child?
Ans: As the eldest son's age is 3 times that of the youngest, eldest son's age should be a multiple of 3. From the given options take 15 as the eldest son's age.  Then youngest son's age becomes 5. But Eldest sons age is 2 more than the sum of the remaining two sons. So Sum of the remaining two sons is 13. So the age of the middle son is 13 - 5 = 8.  Which satisfies another condition in the question that the difference between the two sons age is 3. So answer is 15.

16. In a mixture of a, b and c,  if a and b are mixed in 3:5 ratio and b and c are mixed in 8:5 ratio and if the final mixture is 35 liters, find the amount of b?
Ans: As b is common in both ratios, we should equate b in both ratios by multiplying suitable numbers.
a:b = 3 : 5 = 24 : 40
b:c = 8 : 5 = 40 : 25
Now a : b : c = 24 : 40 : 25.
Amount of b in the mixture = 4089×35 = 15.73

17. After the typist writes 12 letters and addresses 12 envelopes, she inserts the letters randomly into the envelopes (1 letter per envelope). What is the probability that exactly 1 letter is inserted in an improper envelope?
Ans: Tricky one but simple.  How do you put exactly 1 letter in the wrong envelope? we need minimum two.  So answer is 0.

18. 10 suspects are rounded by the police and questioned about a bank robbery. Only one of them is guilty. The suspects are made to stand in a line and each person declares that the person next to him on his right is guilty. The rightmost person is not questioned. Which of the following possibilities are true?
A. All suspects are lying.
B. leftmost suspect is innocent.
C. leftmost suspect is guilty
a) A only
b) A or C
c) A or B
d) B only
There are only 2 cases. Either left one is guilty or one of the remaining 9 to his right is guilty.
So If the left most is guilty, All the statements including the guilty one are lies. A and C are correct.
Or If Any one except left most one is guilty, Then one of the statements given by the person should be true.  In this case all the suspects are lying does not hold. So If B is correct, A is not correct. i.e., only A or B is correct.  Option C is correct.

19. A hollow cube of size 5 cm is taken, with a thickness of 1 cm. It is made of smaller cubes of size 1 cm. If 1face of the outer surface of the cube are painted, totally how many faces of the smaller cubes remain unpainted?
The Hallow cube volume = *n*3−(*n*−2)2, Here n is the number of small cubes lie on the big cube edge.
Now n = 5 so Hallow cube volume = 53−(5−2)2=125−27=98
So 98 small cubes required to make a hallow cube of size 5 cm.  Now total surfaces = 6 x 98 = 588
Now if the bigger cube is painted 4 sides, total 4 x 25 small faces got paint. So remaining small faces which does not have paint after cutting is 588 - 100 = 488

20. My flight takes of at 2am from a place at 18N 10E and landed 10 Hrs later at a place with coordinates 36N70W. What is the local time when my plane landed?
a) 12 noon
b) 6: 40 AM
c) 5: 20 PM
d) 6:50 AM
Remember, while moving from east to west countries lag in time. Remember when Test cricket starts in England? 3. 30 in afternoon.  Right? ie., We are in after noon means they are in morning.
If the coordinates change from 10 E to 70W, the plane has moved a total of 80 degrees. We know that with each degree time increases by 4 minutes while going from east to west. (How?   24 x 60 min / 360 degrees, So 1 degree = 4 min)
So total time change = 4 x 80 = 320 min = 5 hrs + 20 minutes.
After 10 hours local time is (2 am + 10 - 5.20 hrs) = 6.40 AM.

TCS Latest Placement Paper Questions - 2014 (5)

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1. Ray writes a two digit number.  He sees that the number exceeds 4 times the sum of its digits by 3.  If the number is increased by 18, the result is the same as the number formed by reversing the digits.  Find the number.
a) 35
b) 42
c) 49
d) 57
Solution: Let the two digit number be xy.
4(x + y) +3 = 10x + y .......(1)
10x + y + 18 = 10 y + x ....(2)
Solving 1st equation we get 2x - y = 1 .....(3)
Solving 2nd equation we get y - x = 2 .....(4)
Solving 3 and 4, we get x = 3 and y = 5

2. a, b, c are non negitive integers such that 28a+30b+31c = 365. a + b + c = ?
a) Greater than 14
b) less than or equal to 11
c) 13
d) 12
In a calender,
Number of months having 28 days = 1
Number of months having 30 days = 4
Number of months having 31 days = 7
28 x 1 + 30 x 4 + 31 x 7 = 365
Here, a = 1, b = 4, c = 7.

a+b+c = 12

3. George can do a piece of work in 8 hours. Paul can do the same work in 10 hours, Hari can do the same work in 12 hours.  George, paul and hari start the same work at 9 am, while george stops at 11 am, the remaining two complete the work. What time will the work complete?
a) 11.30 am
b) 12 noon
c) 12.30 pm
d) 1 pm
Let the total work = 120 units.
As George completes this entire work in 8 hours, his capacity is 15 units /hour
Similarly, the capacity of paul is 12 units / hour
the capacity of Hari is 10 units / hour
All 3 started at 9 am and worked upto 11 am. So total work done upto 11 am = 2 x (15 + 12 + 10) = 74
Remaining work = 120 - 74 = 46
Now this work is to be done by paul and hari.  46 / (12 + 10) = 2 hours (approx)

So work gets completed at 1 pm

4. If x^y denotes x raised to the power y, Find last two digits of (1141^3843) + (1961^4181)
a) 02
b) 82
c) 42
d) 22

Remember 1 raised to any power will give 1 as unit digit.
To find the digit in the 10th place, we have to multiply, 10th digit in the base x unit digit in the power.



So the Last two digits of the given expression = 21 + 61 = 82

5. J can dig a well in 16 days. P can dig a well in 24 days. J, P, H dig in 8 days.  H alone can dig the well in How many days?

a) 32

b) 48

c) 96

d) 24

Assume the total work = 48 units.

Capacity fo J = 48 / 16 = 3 units / day

Capacity of P = 48 / 24 = 2 units / day

Capacity of J, P, H = 48 / 8 = 6 units / day

From the above capacity of H = 6 - 2 - 3 = 1

So H takes 48 / 1 days = 48 days to dig the well

6. If a lemon and apple together costs Rs.12, tomato and a lemon cost Rs.4 and an apple costs Rs.8 more than a  lemon.  What is the cost of lemon?

L + A = 12 ...(1)

T + L = 4 .....(2)

L + 8 = A

Taking 1 and 3, we get A = 10 and L = 2

7. 3 mangoes and 4 apples costs Rs.85. 5 apples and 6 peaches costs 122.  6 mangoes and 2 peaches costs Rs.144.  What is the combined price of 1 apple, 1 peach, and 1 mango.

a) 37

b) 39

c) 35

d) 36

3m + 4a = 85 ..(1)

5a + 6p = 122 ..(2)

6m + 2p = 144 ..(3)

 (1) x 2 => 6m + 8a = 170

4 x (3) =>  6m + 2p = 144

Solving we get 8a - 2p = 56 ..(4)

(2) =>  5a + 6p = 122

3 x (4) = 24a - 6p = 168

Solving we get a = 10, p = 12, m = 15

So a + p + m = 37

8. An organisation has 3 committees, only 2 persons are members of all 3 committee but every pair of committee has 3 members in common. what is the least possible number of members on any one committee?

a) 4

b) 5

c) 6

d) 1



Total 4 members minimum required to serve only on one committee.

9. There are 5 sweets - Jammun, kaju, Peda, Ladu, Jilebi which can be consumed in 5 consecutive days. Monday to Friday. A person eats one sweet a day, based on the following constraints.

(i) Ladu not eaten on monday

(ii) If Jamun is eaten on Monday, Ladu should be eaten on friday.

(iii) Peda is eaten the day following the day of eating Jilebi

(iv) If Ladu eaten on tuesday, kaju should be eaten on monday

based on above, peda can be eaten on any day except

a) tuesday

b) monday

c) wednesday

d) friday

From the (iii) clue, peda must be eaten after jilebi. so Peda should not be eaten on monday.

10. If YWVSQ is 25 - 23 - 21 - 19 - 17, Then MKIGF

a) 13 - 11 - 8 - 7 - 6

b) 1 - 2-3-5-7

c) 9 - 8 - 7 - 6 - 5

d) 7 - 8 - 5 - 3

MKIGF = 13 - 11 - 9 - 7 - 6

Note: this is a dummy question. Dont answer these questions

11. Addition of 641 + 852 + 973 = 2456 is incorrect.  What is the largest digit that can be changed to make the addition correct?

a) 5

b) 6

c) 4

d) 7

 641

 852

 9**6**3

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2466

largest among tens place is 7, so 7 should be replaced by 6 to get 2456

12. Value of a scooter depriciates in such a way that its value at the end of each year is 3/4th of its value at the beginning of the same year. If the initial value of scooter is 40,000, what is the value of the scooter at the end of 3 years.

a) 23125

b) 19000

c) 13435

d) 16875

value of the scooter at the end of the year = 40000×(34)3 = 16875

13. At the end of 1994, R was half as old as his grandmother.  The sum of the years in which they were born is 3844.  How old R was at the end of 1999

a) 48

b) 55

c) 49

d) 53

In 1994, Assume the ages of GM  and R = 2k, k

then their birth years are 1994 - 2k, 1994 - k.

But given that sum of these years is 3844.

So 1994 - 2k + 1994 - k = 3844

K = 48

In 1999, the age of R is 48 + 5 = 53

14. When numbers are written in base b, we have 12 x 25 = 333, the value of b is?

a) 8

b) 6

c) None

d) 7

Let the base = b

So, (b+2)(2b+5) = (*b*+2)(2*b*+5)=3*b*2+3*b*+3

2*b*2+9*b*+10=3*b*2+3*b*+3

*b*2−6*b*−7=0

Solving we get b = 7 or -1

So b = 7

15. How many polynomials of degree >=1 satisfy *f*(*x*2)=[*f*(*x*)]2=*f*(*f*(*x*)

a) more than 2

b) 2

c) 0

d) 1

Let f(x) = *x*2

*f*(*x*2)=[*x*2]2=*x*4

(*f*(*x*))2=[*x*2]2=*x*4

*f*(*f*(*x*))=*f*(*x*2)=[*x*2]2=*x*4

Only 1

16. Figure shows an equilateral triangle of side of length 5 which is divided into several unit triangles.  A valid path is a path from the triangle in the top row to the middle triangle in the bottom row such that the adjacent triangles in our path share a common edge and the path never travels up (from a lower row to a higher row) or revisits a triangle.  An example is given below. How many such valid paths are there?

a) 120

b) 16

c) 23

d) 24



Sol:

Number of valid paths = (n-1) ! = (5-1)! = 24

17. In the question, A^B means, A raised to power B. If x\*y^2\*z < 0, then which one of the following statements must be true?

(i) xz < 0 (ii) z < 0  (iii) xyz < 0

a) (i) and (iii)

b) (iii) only

c) None

d) (i) only

As y^2 is always positive,  x\*y^2\*z < 0 is possible only when xz < 0. Option d is correct.

18. The marked price of a coat was 40% less than the suggested retail price.  Eesha purchased the coat for half the marked price at the fiftieth anniversary sale.  What percentage less than the suggested retail price did Eesha pay?

a) 60

b) 20

c) 70

d) 30

Let the retail price is Rs.100. then market price is (100-40) % of 100 = 60.  Eesha purchased the coat for half of this price. ie., 30 only. which is 70 less than the retail price. So Option C is correct.

TCS Latest Placement Paper Questions - 2014 (6)

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1. A cow and horse are bought for Rs.2,00,000. The cow is sold at a profit of 20% and the horse is sold a t a loss of 10%.  The overall gain is Rs.4000, the Cost price of cow?
a) 130000
b) 80000
c) 70000
d) 120000
Ans: Overall profit = 4000200000×100=2%
By applying alligation rule, we get



So cost price of the cow = 2/5 x 200000 = 80,000

2. A circle has 29 points arranged in a clock wise manner from o to 28.  A bug moves clockwise manner from 0 to 28.  A bug moves clockwise on the circle according to following rule.  If it is at a point i on the circle, it moves clockwise in 1 sec by (1 + r) places, where r is the remainder (possibly 0) when i is divided by 11.  If it starts in 23rd position, at what position will it be after 2012 sec.
Ans: After 1st second, it moves 1 + (23/11)r = 1 + 1 = 2, So 25th position
After 2nd second, it moves 1 + 25/11 = 1 + 3 = 4, So 29th position = 0
After 3rd second, it moves 1 + 0/11 = 1 + 0 = 1, So 1st position
After 4th second, it moves 1 + 1 = 3rd position
after 5th, 1 + 3/11 = 4 So 7th
After 6th, 1 + 7/11 = 8 so 15th
After 7th, 1 + 15/11 = 5 so 20th
After 8th, 1 + 20/11 = 10th, So 30th = 1st
So it is on 1st after every 3 + 5n seconds.  So it is on 1st position after 2008 seconds (3 + 5 x 401) So on 20th after 2012 position.

3. In a city 100% votes are registered, in which 60% vote for congress and 40% vote for BJP.  There is a person A, who gets 75% of congress votes and 8% of BJP votes.  How many votes got by A?
Assume total votes are 100. So A got
75% of 60 = 45
20% of 40 = 8
A total of 53%

4. Mean of 3 numbers is 10 more than the least of the numbers and 15 less than greatest of the 3.  If the median of 3 numbers is 5, Find the sum of the 3 numbers?
Ans: Median is when the given numbers are arranged in ascending order, the middle one. Let the numbers are x, 5, y where x is the least and y is greatest.
Given that *x*+5+*y*3=*x*+10
and *x*+5+*y*3=*y*−15
Solving we get x = 0 and y = 25.
So sum of the numbers = 0 + 5 + 25 = 30

5. A and B start from house at 10am. They travel fro their house on the MG road at 20kmph and 40 kmph.  there is a Junction T on their path.  A turns left at T junction at 12:00 noon, B reaches T earlier, and turns right.  Both of them continue to travel till 2pm. What is the distance between A and B at 2 pm.
Distnace between House and T junction = 20 x 2 = 40.
ie., B reached T at 11 am.
B continued to right after 11 am and travelled upto 2. So distance covered by him = 3 x 40 = 120
A reached T at 12 noon and travelled upto 2 So distanced travelled by him = 2 x 20 = 40
So total distance between them = 120 + 40 = 160 km

6. In a particular year, the month of january had exactly 4 thursdays, and 4 sundays.  On which day of the week did january 1st occur in the year.
a) monday
b) tuesday
c) wednesday
d) thursday
Ans: If a month has 31 days, and it starts with sunday, Then Sundays, Mondays, tuesdays are 5 for that month. If this month starts with monday, then mondays, tuesdays, and wednesdays are 5 and remaining days are 4 each. so this month start with Monday.

7. A, E, F, and G ran a race.
A said "I did not finish 1st /4th
E said "I did not finish 4th"
F said "I finished 1st"
G said "I finished 4th"
If there were no ties and exactly 3 children told the truth, when who finishes 4th?
a) A
b) E
c) F
d) G
Ans: Option D

8. A child was looking for his father. He went 90 m in the east before turning to his right.  he went 20 m before turning to his right afain to lok for his father at his uncles place 30 m from this point.  His father was not there.  From there he went 100m north before meeting hiss father in a street.  How far did the son meet his father from the starting point.
a) 90
b) 30
c) 80
d) 100



From the diagram, AB = 90 - 30 = 60 and BD = 100 - 20 = 80
*AD*=*AB*2+*BD*2−−−−−−−−−−√ =602+802−−−−−−−−√ =100

9. In an office, at various times during the day the boss gives the secretary a letter to type, each time putting the letter on top of the pile in the secretary's inbox. Secretary takes the top letter and types it.  Boss delivers in the order 1, 2, 3, 4, 5 which cannot be the order in which secretary types?
a) 2, 4, 3, 5, 1
b) 4, 5, 2, 3, 1
c) 3, 2, 4, 1, 5
d) 1, 2, 3, 4, 5
Ans: Option B

10. At 12.00 hours, J starts to walk from his house at 6 kmph. At 13.30, P follows him from J's house on his bicycle at 8 kmph. When will J be 3 km behind P?
By the time P starts J is 1.5 hr x 6 = 9 km away from his house.
J is 3 km behind when P is 3 km ahead of him. ie., P has to cover 12 km.  So he takes 12 / (8 - 6) = 6 hrs after 13.30. So the required time is 19.30Hrs

11. J is faster than P.  J and P each walk 24 km.  Sum of the speeds of J and P is 7 kmph.  Sum of time taken by them is 14 hours.  Then J speed is equal to
a) 7 kmph
b) 3 kmph
c) 5 kmph
d) 4 kmph
Given J > P
J + P = 7, only options are (6, 1), (5, 2), (4, 3)
From the given options, If J = 4 the P = 3. Times taken by them = 244+243=14

12. In a G6 summit held at london. A french, a german, an italian, a british, a spanish, a polish diplomat represent their respective countries.
(i) Polish sits immediately next to british
(ii) German sits immediately next to italian, British or both
(iii) French does not sit immediately next to italian
(iv) If spanish sits immediately next to polish, spanish does not sit immediately next to Italian
Which of the following does not violate the stated conditions?
a) FPBISG
b) FGIPBS
c) FGISPB
d) FSPBGI
e) FBGSIP
Ans: Option B

13. Raj drives slowly along the perimeter of a rectangular park at 24 kmph and completes one full round in 4 min.  If the ratio of length to bredth of the park is 3 : 2, what are the dimansions?
a) 450 m x 300 m
b) 150 m x 100 m
c) 480 m x 320 m
d) 100 m x 100 m
24 kmph = 24×100060=400 m / min
In 4 minutes he covered 4 x 400 = 1600 m
This is equal to the perimeter 2 ( l + b) = 1600
But l : b = 3:2
Let l = 3k, b = 2k
Substituting, we get 2 ( 3k + 2k ) = 1600 => k = 180
So dimensions are 480 x 320

14. M is 30% of Q, Q is 20% of P and N is 50% of P. What is M / N
ans: Take P = 100, then N = 50, Q = 20, M = 6. So M/N = 3/25

15. At what time between 6 and 7 are the hands of the clock coincide?
Ans.  Total = 3600
For hour = 360/12 = 300/hr
For Minute = full rotation = 3600/hr
Let the line is 't' , for 6 = 6\*30=1800
then
30 t + 180=360 t
330t = 180
t = 180/330
t = 6/11 hr 6/11\*60=360/11=32611
Ans. is 6:32

16. Series 1, 4, 2, 8, 6, 24, 22, 88 ?
Sol :  The given series is in the format: x 4, -2, x4, -2, x4, -2, x4....
        1x4 = 4
 4-2=2
 8-2=6
 6x4=24
 24-2=22
 22x4=88
 88-2=86
Ans: 86

17. 4 Women & 6 men have to be seated in a row given that no two women can sit together. How many different arrangements are there.
Sol : Let us first sit all the 6 men in 6 positions in 6! ways.  Now there are 7 gaps between them in which 4 women can sit in 7*P*4 ways.
So total ways are 6! x 7*P*4

18.  *xy*+*yx*=46 Find x & y values ?
Sol: 145+451=46
      Hence x = 1, y = 45

19.  In 10 years, A will be twice as old as B was 10 years ago.  If A is  now 9 years older than B the present age of B is
Soln: A +10=2(B-10) ........(1)
      A =B + 9 ......... (2)
      from equations. 1 & 2
      we get B = 39  A will be 39+9=48 years old.

20. A student can select one of 6 different math book, one of 3 different chemistry book & one of 4 different science book.In how many different ways students can select book of math, chemistry & science.
Sol:  6*C*1×3*C*1×4*C*1 = 6x3x4=72 ways

21. Sum of two number is 50 & sum of three reciprocal is 1/12 so find these two numbers
Sol :  x+y = 50 .....(1)  x=50-y ....(2)
1*x*+1*y*=112 ⇒*y*+*xxy*=112⇒12(*y*+*x*)=*xy* ...(3)
 put (2)  in  (4)
 ⇒ 12(y+50-y)=(50-y)y
 ⇒ 12y+600-12y=50y-*y*2
 ⇒ *y*2-50y+600=0
 ⇒ *y*2-30y-20y+600=0
 ⇒ y(y-30)-20(y-30)=0
 ⇒ (y-20) (y-30)=0
 y=20 or y=30
 if y=20 then x = 30
 or y=30 then x = 20
 two numbers are 30 & 20

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1. Dinalal divides his property among his four sons after donating Rs.20,000 and 10% of his remaining property. The amounts received by the last three sons are in arithmetic progression and the amount received by the fourth son is equal to the total amount donated. The first son receives as his share RS.20,000 more than the share of the second son. The last son received RS.1 lakh less than the eldest son. 10. Find the share of the third son.
a) Rs.80,000
b) Rs.1,00,000
c) Rs.1,20,000
d) Rs.1,50,000
Ans: Assume the amounts received by the 2nd, 3rd, and 4th sons are a+d, a, a-d (as they are in AP)
Now Eldest son received Rs.20,000 more than the 2nd son.  So He gets a+d+20,000
Last son received 1 lakh less than the eldest son. So (a+d+20,000) - (a-d) = 1,00,000 ⇒ 2d = 80,000 ⇒ d = 40,000
So Amounts received by the 4 sons are a + 60,000, a+40,000, a, a - 40,000
It was given that the youngest son's share is equal to 20,000 + 12(His property)
Assume His property = K rupees.
Then 20,000 +  12(K) = a - 40,000  ...........(1)
and the Remaining property = Sum of the properties received by all the four son's together.
Remaining property = 910(K-20,000)
⇒910(K-20,000) = ( a + 60,000 ) + (a+40,000) + a +( a - 40,000) ..(2)
Solving We get K = 40,000 and a = 1,20,000
So third son got Rs.1,20,000

In a quadratic equation, (whose coefficients are not necessarily real) the constant term is not 0. The cube of the sum of the squares of its roots is equal to the square of the sum of the cubes of its roots. Which of the following is true?
a)Both roots are real
b) Neither of the roots is real
c) At least one root is non-real
d)At least one root is real
Ans:  Assume the given quadratic equation is *ax*2+*bx*+*c*=0 whose roots are p, q.
Now given that (*α*2+*β*2)3=(*α*3+*β*3)2
By expanding we get, *α*6+3.*α*4.*β*2+3.*α*2.*β*4+*β*6=*α*6+*β*6+2.*α*3.*β*3
3.*α*2.*β*2(*α*2+*β*2)=2.*α*3.*β*3
3.(*α*2+*β*2)=2.*α*.*β*
3.(*α*2+*β*2)+6.*α*.*β* −6.*α*.*β* =2.*α*.*β*
3.(*α* +*β*)2=8.*α*.*β* ...(1)
We know that sum of the roots = *α* +*β* =−*ba*
product of the roots = *α*.*β* =*ca*
Substituting in the equation (1) we get 3.(−*ba*)2=8.*ca*⇒3.*b*2=8.*a*.*c*

The nature of the roots can be determined by finding the magnitude of the determinant = *b*2−4*ac*
But we know that ac = 3*b*28
So *b*2−4*ac* = *b*2−4.3*b*28= −*b*88<0
So the roots are imaginary.

3. A man sold 12 candies in 10$ had loss of b% then again sold 12 candies at 12$ had profit of b% find the value of b.
Ans: Here 12 candies is immaterial.
Loss % = *CP*−*SPCP*×100
So Here SP = 10 and loss% = b%

*CP*−10*CP*×100=*b*⇒*CP*−10*CP*=*b*100

In the second case he got a profit of b%

So Profit % = *SP*−*CPCP*×100

So Here SP = 12 and profit% = b%

12−*CPCP*×100=*b*⇒12−*CPCP*=*b*100

Solving 1 and 2 we get b = 1/11 or 9.09%

4. find the total number of combinations of 5 letters a,b,a,b,b taking some or all at a time?
Ans: 1 letter can be chosen in 2 ways. a or b
2 letters can be chosen in 3 way. aa, ab, bb
3 letters can be chosen in 3 ways. bbb, aab, bba
4 letters can be chosen in 2 ways. aabb, bbba
5 letters can be chosen in 1 way.
So total ways are 11

5. what is the sum of all the 4 digit numbers that can be formed using all of the digits 2,3,5 and 7?
Ans: use formula (n-1)! x (111..n times) x (Sum of the digits)
here n is number of different letters
So answer is  3 ! x 1111 x 17

6. 30^72^87 divided by 11 gives remainder
Ans: Fermat little theorem says, *ap*−1*p* remainder is 1.
ie., 3010  or 810when divided by 11 remainder is 1.
The unit digit of 7287 is 8 (using cyclicity of unit digits) [Click here](http://www.campusgate.co.in/2011/10/finding-unit-and-last-two-digits-of.html)
So 7287 = 10K + 8
30(10*K*+8)11=(3010)*K*.30811=1*k*.30811
8811=22411=(25)4.2411=1611=5

7.  1234567891011121314151617181920......424344 what is remainder when divided by 45?
Ans: Let N = 1234567891011121314151617181920......424344
Remainder when N is divided by 5 is 4.  So N = 5K + 4 .....(1)
Remainder when N is divided by 9 is Sum of the digits of N divided by 9. We know that 1+2+3+...44 = 990 Which gives digit sum as 9. So remainder when N is divided by 9 is 0.
So N = 9L .....(2)
Equation (1) and (2) we 9L = 5K + 4
For K = 1 this equation gets satisfied. So least possible number satisfies the condition is 9
So The general format of N = w(LCM of (9, 5)) + Least number satisfies the condition.
So N = w.45 + 9
When N is divided by 45, we get 9 as remainder.

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1. The wages of 24 men and 16 women amounts to Rs.11600 per day. Half the number of men and 37 women earn the same amount per day.  What is the daily wage of a man?
Let the wage of a man is m and woman be w.
24m+16w=11600
12m+37w = 11600
Solving we get m = 350

2. The sum of three digits a number is 17.  The sum of square of the digits is 109.  If we substract 495 from the number, the number is reversed.  Find the number.
Let the number be abc.
Then a + b + c= 17 .....(1)
*a*2+*b*2+*c*2=109 .....(2)
100a+10b+c -495 = 100c+10b+a ......(3)
From 3, we get a - c = 5
So the possibilities for (a, c, b) are (6,1,10), (7,2,8), (8,3,6), (9,4,4)
From the above, (8,3,6) satisfies the condition.

3. A calculator has a key for squaring and another key for inverting.  So if x is the displayed number, then pressing the square key will replace x by x^2 and pressing the invert key will replace x by 1/x.  If initially the number displayed is 6 and one alternatively presses the invert and square key 16 times each, then the final number displayed (assuming no roundoff or overflow errors) will be
Evern number of inverse key has no effect on the number.
By pressing the square key, the value got increased like 2, 4, 8, .... Which are in the format of 2*n*.  So after the 16 pressings the power becomes 216
So the final number will be 6216=665536

4. How many two digit numbers are there which when substracted from the number formed by reversing it's digits as well as when added to the number formed by reversing its digits, result in a perfect square.
Let the number xy = 10x + y
Given that, 10x+y - (10y - x) = 9(x-y) is a perfect square
So x-y can be 1, 4, 9.  -------- (1)
So given that 10x+y +(10y +x) = 11(x+y) is a perfect square.
So x+y be 11. Possible options are (9,2), (8,3),(7,4),(6,5) ---------(2)
From the above two conditions only (6,5) satisfies the condition
Only 1 number 56 satisfies.

5. Find the 55th word of SHUVANK in dictionary
Sol: Arranging the letters in alphabetical order we get : A H K N S U V
Now Total words start with A are 6!
Total words start with AH are 5! = 120
Now
Total words start with AHK are 4! = 24
Total words start with AHN are 4! = 24
Total words start with AHSK are 3! = 6
Now AHSNKUV will be the last word required.

6. Car A leaves city C at 5pm and is driven at a speed of 40kmph.  2 hours later another car B leaves city C and is driven in the same direction as car A. In how much time will car B be 9 kms ahead of car A if the speed of car is 60kmph
Relative speed = 60 - 40 = 20 kmph
Initial gap as car B leaves after 2 hours = 40 x 2 = 80 kms
Car B should be 9 km ahead of the A at a required time so it must be 89 km away
Time = 89 / 20 = 4.45 hrs or 267 mins

7. Find the average of the terms in the series 1-2+3-4+5....+199-200
Sol:(1-2) +(3-4) + (5-6) +........(199-200) = -100
Average = 100 / 200 = -0.5

8. n is a natural number and n^3 has 16 factors.  Then how many factors can n^4 have?
Total factors of a number N=*ap*.*bq*.*cr*... is (p+1)(q+1)(r+1)...
As *n*3 has 16 factors *n*3 can be one of the two formats given below
*n*3 =*a*15
*n*3 = *a*3.*b*3
If *n*3 =*a*15 then n = *a*5 and number of factors of *n*4 = 21
*n*3 = *a*3.*b*3 then n = ab and number of factors *n*4 = 25

9. Two cars start from the same point at the same time towards the same destination which is 420 km away.  The first and second car travel at respective speeds of 60 kmph and 90 kmph.  After travelling for sometime the speeds of the two cars get interchanged.  Finally the second car reaches the destination one hour earlier than the first.  Find the time after which the speeds get interchanged?
Let the total time taken by the cars be a and b
Let the time after which the speed is interchanged be t
For car A, 60t+90(a-t) = 420, 90a  - 30t = 420 .......(1)
For car B, 90t + 60(b-t) = 420, 60b + 30t = 420 ....(2)
Using both (1) and (2), we get 90a + 60b = 840
But as a - b =1, 90a + 60(a-1) = 840.
Solving a = 6.
Substituting in equation 1, we get t = 4

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1. A and B run a 1 km race. If A gives B a start of 50m, A wins by 14 seconds and if A gives B a start of 22 seconds, B wins by 20 meters.  Find the time taken by A to run 1 km.
To solve these type of questions, always keep in your mind that, the ratio of the speeds of two contestents never change.
A gives B a start of 50 m means, A runs 1000 m and B runs only 950. By the time A reaches the target, B has to take 22 seconds to reach the target.
*ab*=1000950−14*b*=9801000−22*b*
50,000 -1100b = 46550 -686b
Solving we get b = 25/3
Now Assume A's speed = x
1000950−14(25/3)=*x*25/3
x = 10
So x takes 1000/10 = 100 seconds.

2. A owes B Rs.50. He agrees to pay B over a number of consecutive days on a Monday, paying single note or Rs.10 or Rs.20 on each day.  In how many different ways can A repay B.
He can pay by all 10 rupee notes = 1 way
3 Ten rupee + 1 twenty rupee = 4!3!×1! = 4 ways
1 Ten rupee + 2 twenty rupee notes = 3!2!×1! = 3 ways
Total ways = 1 + 4 + 3 = 8

3. W, X, Y, Z are integers.  The expression X - Y - Z is even and the expression Y - Z - W is odd.  If X is even what must be true?
a) W must be odd
b) Y - Z must be odd
c) Z must be even
d) Z must be odd
Sol: X is even so Y, Z both are even or both are odd.
Now Y - Z in both cases even.  So (Y - Z ) - W = odd happens only when w is odd
Ans: W is odd

4. Raj writes a number.  He sees that the number of two digits exceeds four times the sum of its digits by 3.  If the number is increased by 18, the results is the same as the number formed by reversing the digits.  Find the next immediate prime greater than the number.
Let the number be xy = 10x + y
10x + y = 4(x+y) + 3 ⇒ 2x - y -1 -------(1)
Also 10x + y +18 = 10y +x , 9(y-x) = 18, y-x = 2 -------(2)
Solving we get x = 3, y = 5
The number is 35. So next immediate prime is 37

5. Kate wanted to buy 2kgs of apples. The vendor kept the 2kg weight on the right side and weighed 4 apples for that.  She doubted on the correctness of the balance and placed 2 kg weight on the left side and she could weight 14 apples for 2 kgs. If the balance was correct how many apples she would have got?
As she got less apples when the weight put on the right side, the left pan has more weight say w kgs.
Now w + 4a = 2
and w+ 2 = 14a
Solving we get a = 2/9 Kgs.
So she gets, 2/(2/9) = 9 apples

6. Find the remainder when 32^33^34 is divided by 11
We know that when the divisor is a prime number, Fermat little theorem says, *ap*−1 when divided by p, remainder is 1
So 3210 gives remainder 1.
Now we have to write 32^33^34 in this format. So we have to find the remainder 33^34 when divided by 10. The remainder is nothig but unit digit of the number.  [Click here](http://www.campusgate.co.in/2011/10/finding-unit-and-last-two-digits-of.html) to learn this concept
33^34 gives unit digit of 9.
So 33^34 = 10 K + 9
323334=32(10*K*+9)=(3210)*K*.329
Now this expression when divided by 11 leaves a remainder of 329 which inturn is equal to (−1)9= −1=10

7. Find the option to replace the question mark in the series below
5 ? 15 75 525 4725
Sol: 5 x 1 = 5
5 x 3 = 15
15 x 5 = 75
75 x 7 = 525
525 x 9 = 4725
So ? = 5

8. There are several bags of same weight.  A bag is 6 kgs plus three fourth of the weight of an other bag.  What is the weight of a bag?
Let the bags weight is x
Then 6 + 34 x = x,
Solving we get x = 24

9. Find the remainder when 6^50 is divided by 215
Ans: 650=(63)16.62=21616.62
So this expression gives a remainder of 36

10. Find last two digits of the following expression (201\*202\*203\*204\*246\*247\*248\*249)^2
To find the last two digits of a product take the last two digits in each number and multiply.  01\*02\*03......48\*49 (use onscreen calculator)
this gives 24. So 242 = 576 So last two digits are 76

TCS Latest Placement Paper Questions - 2014 (10)

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1.  Ahmed, Babu, Chitra, David  and Eesha each choose a large different number. Ahmed says, “ My number is not the largest and not the smallest”. Babu says, “My number is not the largest and not the smallest”. Chitra says, “My number is the largest”. David says, “ My number is the smallest”. Eesha says, “ My number is not the smallest”.  Exactly  one of the five children is lying. The others are telling the truth. Who has the largest number?

a) Eesha

b) David

c) Chitra

d) Babu

Ans: A

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Largest -> | A | B | C | D | E |
| A | F | T/F | T/F | T/F | T/F |
| B | T/F | F | T/F | T/F | T/F |
| C | F | F | T | F | F |
| D | T/F | T/F | T/F | F | T/F |
| E | T/F | T/F | T/F | T/F | T |

From the above table, If we assume that A has the largest then A and C both are lying. Similarly if we find the truthfullness of the remaining people,  it is clear that E has the largest and C lied. (Only one F in the last column)

2.  In the equation A + B + C + D + E = FG where FG is the two digit number whose value is 10F + G and letters A, B , C , D , E, F and G each represent different digits. If FG is as large as possible. What is the value of G?

a) 4

b) 2

c) 1

d) 3

Ans: B

FG is as large as possible and all the 7 numbers should be different.

By trial and Error method,

9 + 8 + 7 + 6 + 5 = 35…5 is getting repeated twice.

9 + 8 + 7 + 6 + 4 = 34…4 is getting repeated

9 + 8 + 7 + 5 + 4 = 33…3 repeats

9 + 8 + 6 + 5 + 4 = 32

None of the numbers repeat in the above case and 32 is the maximum number FG can have. The value of G is 2.

3. A farmer has a rose garden. Every day he either plucks 7 or 6 or 24 or 23 roses. The rose plants are intelligent and when the farmer plucks these numbers of roses, the next day 37 or 36 or 9 or 18 new roses bloom in the garden respectively. On Monday, he counts 189 roses in the garden. He plucks the roses as per his plan on consecutive days and the new roses bloom as per intelligence of the plants mentioned above. After some days which of the following can be the number of roses in the garden?

a) 4

b) 7

c) 30

d) 37

Ans: A

If he plucks 23, then only 18 grows the next day.  This means total roses get decreases by 5. So after n days assume the number of roses got decreased 185 where n = 37, then 4 roses left.

4. What is the value of (44444445\*88888885\*44444442+44444438)/44444444^2

a) 88888883

b) 88888884

c) 88888888

d) 44444443

Ans: A

Let x = 44444444

(*x*+1)×(2*x*−3)×(*x*−2)+(*x*−6)*x*2

(*x*2−*x*−2)×(2*x*−3)+(*x*−6)*x*2

2*x*3−2*x*2−4*x*−3*x*2+3*x*+6+*x*−6*x*2

2*x*3−5*x*2*x*2=2*x*−5

Substituting the value of x in 2x - 5, we get  88888883

4. For which of the following “n” is the number 2^74 +2^2058+2^2n is a perfect square?

a) 2012

b) 2100

c) 2011

d) 2020

Ans: D

2^74 +2^2058+2^2n = *K*2

2^74 +2^2058+2^2n = (237)2+22058+(2*n*)2

We try to write this expression as (*a*+*b*)2=*a*2+2*ab*+*b*2

Now a = 237, 2ab = 22058 and b = 2*n*

Substituting the value of a in 2ab, we get b = 2020

5.  Raj writes a number. He sees that the number of two digits exceeds four times the sum of its digit by 3. If the number is increased by 18, the result is the same as the number formed by reversing the digit. Find the number

a) 35

b) 57

c) 42

d) 49

Ans: A

Going by the options, 35 = 8(4) + 3.

6. Weight of M, D and I is 74.  Sum of D and I is 46 greater than M.  I is 60% less than D. What is D's weight.

Ans: 10

M + D + I = 74 ⇒ M = 74 -D - I

M = D + I + 46

I = 410 D

74 - D - I = D + I + 46

74 - D - 410 D = D + 410 D + 46

⇒ D = 10

7. Father is 5 times faster than son.  Father completes a work in 40 days before son.  If both of them work together, when will the work get complete?

a. 8 days

b. 8 1/3 days

c. 10 days

d. 20 days

Ans: B

As efficiency is inversely proportional to days, If Father : son's efficiency is 5 : 1, then Days taken by them should be 1 : 5. Assume, the days taken by them are k, 5k.

Given that father takes 40 days less. So 5k - k = 40 ⇒ k = 10

Father takes 10 days to complete the work. Total work is 10 x 5 = 50 units.

If both of them work together, they complete 5 + 1 units a day. 6/day. To complete 50 units, they take 50/6 = 8 1/3 days.

8. A beaker contains 180 liters of alcohol. On 1st day, 60 l of alcohol is taken out and replaced by water.  2nd day, 60 l of mixture iss taken out and replaced by water and the process continues day after day. What will be the quantity of alcohol in beaker after 3 days

Ans: 53.3

Use the formula,

FinalAlcohol=InitialAlcohol(1−ReplacementquantityFinalVolume)n

FinalAlcohol=180(1−60180)3=180×(23)3=53.3

9. If f(f(n)) + f(n) = 2n+3, f(0) = 1 then f(2012) = ?

Ans: 2013

f (f(0)) + f(0) = 2(0) + 3 ⇒ f(1) = 3-1 = 2, f(1) = 2

f(f(1)) + f(1) = 2(1) + 3 ⇒ f(2) = 5-2 = 3, f(2) = 3

f(f(2)) + f(2) = 2(2) + 3 ⇒ f(3) = 7-3 = 4, f(3) = 4

..............

f(2012) = 2013

10. What will be in the next series

1, 7, 8, 49, 56, 57, 343, ...

Ans: 344

1 = 1

7 = 1 x 7

8 = 1 x 7 + 1

49 = 7 x 7 + 1

50 = 7 x 7 + 1

56 = 8 x 7

57 = 8 x 7 + 1

343 = 49 x 7

Next term should be 49 x 7 + 1 = 344

11. In a 3 x 3 grid, comprising 9 tiles can be painted in red or blue. When tile is rotated by 180 degrees, there is no difference which can be spotted.  How many such possibilities are there?

a. 16

b. 32

c. 64

d. 256

Ans: B



This grid even rotated 180 degrees the relative positions of the tiles do not change. So we paint tile number 1's with red or blue (only one color should be used) , 2's with red or blue.....tile 5 red or blue.  Then total possibilities are 25 = 32

TCS Latest Placement Paper Questions - 2014 (11)

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1. In a staircase, there ar 10 steps. A child is attempting to climb the staircase. Each time she can either make 1 step or 2 steps.  In how many different ways can she climb the staricase?
a) 10
b) 21
c) 36
d) None of these
Ans: d
Use fibonnacci series, with starting two terms as 1, 2. So next terms are 3, 5, 8, 13, 21, 34, 55, 89

2. A boy buys 18 sharpners, (Brown/white) for Rs.100.  For every white sharpener, he pays one rupee more than the brown sharpener. What is the cost of white sharpener and how much did he buy?
a) 5, 13
b) 5, 10
c) 6, 10
d) None of these
Ans: C
Assume that he bought b, brown sharpeners and w, white sharpeners and the cost of brown sharpener is x and white sharpener is x + 1
So w(x+1) + bx  = 100
w + b = 18
b = 18 - w
Substituting in equation 1, we get w(x+1) + (18 -w)x = 100 so w + 18 x = 100
Take option 1: If white sharpners are 13, x = (100 - 13) /18  = 4.833
Option 2, If white sharpeners are 10, x = (100 - 10)/18 = 5 So white sharpeners cost is 6.
Option 3 Satisfies this condition.

3. Letters of alphabets no from 1 to 26 are consecutively with 1 assigned to A and 26 to Z.  By 27th letter we mean A, 28th B. In general 26m+n, m and n negative intezers is same as the letters numbered n.
Let P = 6, strange country military general sends this secret message according ot the following codification scheme.  In codifying a sentence, the 1st time a letter occurs it is replaced by the pth letter from it.   2nd time if occurred it is replaced by P^2 letter from it. 3rd time it occurred  it is replaced by p^3 letter from it.   What is the code word for ABBATIAL
a) GHNNZOOR
b) GHKJZOHR
c) GHHGZOGR
d) GHLKZOIR
Ans: D
A should be coded as 1+6 = G (it occurred for first time)
B should be coded as 2+6 = H (it occurred for first time)
B Should be coded as 2 + 36 = 38 - 26 = 12 = L (it occurred for second time)
Option D is correct

4. Of a set of 30 numbers, average of 1st 10 numbers is equal to average of last 20 numbers.  The sum of last 20 numbers is?
a) 2 x sum of last 10 numbers
b) 2 x sum of 1st 10 numbers
c) sum of 1st 10 numbers
d) Cannot be determined
Ans: B
Let average of first 10 numbers is a. Then sum = 10a
Average of last 10 nmbers also a. Then their sum = 20a
From the options B correct

5. In how many ways a team of 11 must be selected a team 5 men and 11 women such that the team must comprise of not more than 3 men.
a) 1565
b) 2256
c) 2456
d) 1243
Ans: B
Maximum 3 men can be played which means there can be 0, 1, 2, 3 men in the team.
(5*C*0×11*C*11)+(5*C*1×11*C*10)+(5*C*2×11*C*9)+(5*C*3×11*C*8)=2256

6. The wages of 24 men and 16 women amount to 11600 per day. Half the number of men and 37 women has same money.   The daily wages paid to each man is
a) 375
b) 400
c) 350
d) 325
Ans: C
24m + 16w = 11600
12m + 37 w  = 11600
Solving we get 12 m = 21w
Substituting in the first equation we get, 42w + 16 w = 11600 ⇒ w = 200
M = 350

7. A number when successively divided by 5, 3, 2 gives remainder 0, 2, 1 respectively in that order.  What will be the remainder when the same number is divided successively by 2, 3, 5 in that order
a) 4, 3, 2
b) 1, 0,4
c) 2, 1, 3
d) 4, 1, 2
Ans: B



use this simple technique.[ (1 x 3) + 2] = 5
[(5 x 5) + 0] = 25

Procedure:

Let the number = N
Now N = 5K
K = 3L + 2
L = 2M + 1
K = 3(2M + 1) + 2 = 6M + 5
N = 5(6M + 5) = 30 M + 25
For M = 0 we get the least number as 25.  Now when 25 is divided by 2, we get 12 as quotient and 1 as remainder. When 12 is divided by 3 we get 4 as quotient, and 0 as remainder. When 4 is divided by 5 we gt 4 as remainder.

8. a,b,c,d,e are distinct numbers. if (75-a)(75-b)(75-c)(75-d)(75-e)=2299 then a+b+c+d= ?
Hint:2299 is divisible by 11.
2299 = 11×11×19×1×1=11× −11×19× −1×1=
Two of the terms in the given expression should equal to 1. As all the digits are distinct, two of the terms should be negative.
One possible solution = (75 - 64)(75 - 56)(75 - 86)(75 - 74)(75 - 76)
Then a + b + c + d + e = 64 + 56 + 86 + 74 + 76 = 356
But as the sum of only 4 terms was asked, we have to subtract one term.
So given answer can be one of 292, 306, 270, 282, 280

9. If A ^B means A raised to the power of B, in which of the following choices must P be greater than Q
a) 0.9^P=0.9^Q
b) 0.9^P=0.92^Q
c) 0.9^P>0.9^q
Option A is wrong as P = Q
Option B is wrong as *PQ*=Log0.92Log0.9=0.79139
Option C is also wrong as *aP*>*aQ* then P>Q if a > 1

10. 2 gears one with 12 teeth and other one with 14 teeth are engaged with each other. One teeth in smaller and one tooth in bigger are marked and initially those 2 marked teeth are in contact with each other. After how many rotations of the smaller gear with the marked teeth in the other gear will again come into contact for the first time?
a)7
b) 12
c) Data insufficient
d) 84
Correct Option : A
Assume the distance between the teeth is 1 cm. Then the circumference of first gear is 12 cm and the second is 14 cm.
Now LCM (12, 14) = 84. So to cover 84 cm, the first gear has to rotate 8412 = 7 rounds (the second gear rotates 84 / 14 = 6 rounds as it is bigger)

### TCS Latest Placement Paper Questions with solutions -2014 (12)

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1. One day Eesha started 30 min late from home and reached her office 50 min late while driving 25% slower than her usual speed. How much time in min does eesha usually take to reach her office from home?
Ans: We know that Speed is inversely proportional to time
While she drives 25% slower means she drove at 34(S)
We know that D = S x T
When speed became  34(S) then Time taken should be  43(T)
i.e, She has taken   43(T) - T extra to cover the distance.
Extra Time = *T*3 = 20 min (as 20 min late due to slow driving)
Actual time T = 60 Minutes

##### **2. In 2003 there are 28 days in February and 365 days in a year in 2004 there are 29 days in February and 366 days in the year. If the date march 11 2003 is Tuesday, then which one of the following would the date march 11 2004 would be?**

Ans: If 11-3-2003 is Tuesday, Then 11-3 - 2004 is Thursday

The number of odd days between the two dates are [3667]Re*m*= 2.

##### **3) How many positive integers less than 500 can be formed using the numbers 1,2,3,and 5 for digits, each digit being used only once.**

Ans: Single digit numbers = 4

Double digit numbers = 4 x 3 = 12

Three digit numbers = 3 x 3 x 2 x 1 = 18

Total = 34

##### **4) A circular swimming pool is surrounded by a concrete wall 4 feet wide.if the area of the wall is 11/25 of the area of the pool, then the radius of the pool in feet is?**

Let the radius of the pool be r. Then area of the wall and pool = *π*(*r*+4)2

Area of the pool = *π*(*r*)2

Area of the wall = *π*(*r*+4)2−*π*(*r*)2

Given *π*(*r*+4)2−*π*(*r*)2 = 1125(*πr*2)

*r*2+8*r*+16−*r*2=1125*r*2

11*r*2−200*r*−400=0

Solving r = 20

##### **5) A survey of n people in the town of badaville found that 50% of them prefer brand A. Another survey of 100 people in the town of chottaville found that 60% prefer brand A.In total 55% of all the people surveyed together prefer Brand A.What is the total number of people surveyed?**

Sol: 50% (n) + 60% (100 ) = 55% (n + 100)

Solving we get n = 200

##### **6) In the simple subtraction problem below some single digits are replaced by letters .Fined the value of 7A+5D+6CD?  A5C5-1B87  674D**

Sol: 15 - 7 = 8 So D = 8

10 + (C -1) - 8 = 4 So C = 3

10 + (5-1) - B = 7 So B = 7

(A-1) - 1 = 6 So A = 8

7A + 5D + 6CD = 56 + 40 + 144 = 240

##### **7) Two full tanks one shaped like the cylinder and the other like a cone contain liquid fuel the cylindrical tank held 500 lts more then the conolical tank After 200 lts of fuel is pumped out from each tank the cylindrical tank now contains twice the amount of fuel in the canonical tank How many lts of fuel did the cylindrical tank have when it was full?**

Ans: Let the cylindrical tank capacity x + 500 then the conical tank capacity = x

After 200 lts pumped out, then remaining fuel with the tanks = x +300, x - 200

Given that first term is doubt the second.

*x*+300*x*−200=21

Solving we get x = 700

Cylindrical tank capacity = 1200 lts

##### **8. A shop sells chocolates It is used to sell chocolates for Rs.2 each but there were no sales at that price.When it reduced the price all the chocolates sold out enabling the shopkeeper to realize Rs 164.90 from the chocolates alone If the new price was not less than half the original price quoted How many chocolates were sold?**

Sol: 16490  = 2 × 5 × 17 × 97

Now now chocolate price should be greater than 1 and less than 2. So 2 x 5 x 17 = 170

So Total chocolates sold = 97 and  New chocolate price = Rs.1.7

##### **9) Eesha bought two varities of rice costing 50Rs per kg and 60 Rs per kg and mixed them in some ratio.Then she sold that mixture at 70 Rs per kg making a profit of 20 % What was the ratio of the micxture?**

Sol: Selling price of the mixture = 70 and profit = 20%

Cost price of the mixture = 70×100120=70×56

By applying alligation rule:



So ratio = 60−1753:1753−50 = 1 : 5

##### **10. Star question: If f(1)=4 and f(x+y)=f(x)+f(y)+7xy+4,then f(2)+f(5)=?**

Sol: Let x =1 and y = 1

f(1 + 1) = f(1) + f(1) + 7 x 1 x 1 + 4 ⇒ f(2) = 19

Let x =2 and y = 2

f(2 + 2) = 19 + 19 + 7 x 2 x 2 + 4 ⇒ f(4) = 70

Let x = 1 and y = 4

f( 1 + 4) = 4 + 70 + 28 + 4 = 106
f(2) + f(5) = 125

TCS Latest Placement Paper Questions with solutions -2014 (13)

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1. If f(f(n))+f(n)=2n+3 and f(0)=1, what is the value of f(2012)?
a) 2011
b) 2012
c) 2013
d) 4095
**Ans: Option C**
Put n = 0
Then f(f(0))+f(0) = 2(0) + 3 ⇒ f(1) + 1 = 3 ⇒ f(1) = 2
Put n = 1
f(f(1)) + f(1) = 2(1) + 3 ⇒ f(2) + 2 = 5 ⇒f(2) = 3
Put n = 2
f(f(2)) + f(2) = 2(2) + 3 ⇒ f(3) + 3 = 7 ⇒ f(3) = 4
......
f(2012) = 2013

2. If 5+3+2=151022, 9+2+4=183652, then 7+2+5=?
**Ans: 143547**
 If the given number is a + b + c then a.b | a.c | a.b + a.c - b
⇒ 5+3+2 = 5.3 | 5.2| 5.3 + 5.2 - 3 = 151022
⇒ 9+2+4 = 9.2 | 9.4 | 9.2 + 9.4 - 2 = 183652
7+2+5= 7.2 | 7.5 | 7.2 + 7.5 - 2 = 143547

3. The savings of employee equals income minus expenditure.If the income of A,B,C are in the ratio 1:2:3 and their expense ratio 3:2:1 then what is the order of the employees in increasing order of their size of their savings?
**Ans: A < B < C**
As the the ratio of their incomes are in ascending order, and their expenses are in descending order, their savings also in their incomes order.
So savings order = A < B < C

4. Entry fee is Re.1.there are 3 rides each is of Re.1. total boys entering are 3000.total income is Rs.7200. 800 students do all 3 rides. 1400 go for atleast 2 rides.none go the same ride twice. then no of students who do not go any ride is?
**Ans: 1000**
 Total entries are 3000 So fee collected through entry fee = 3000 x 1 = Rs.3000
Income generated through rides = 7200 - 3000 = 4200
Now 800 went for 3 rides so total fee paid by these 800 = 800 x 3 = 2400
(1400 - 800) went for 2 rides so fee paid by these 600 = 600 x 2 = 1200
Assume K went for exactly 1 ride
Then K x 1 + 1200 + 2400 = 4200 ⇒ K = 600
So number of boys who did not go for any ride = 3000 - (600 + 600 + 800 ) = 1000

5. The average mark obtained by 22 candidates in an examination is 45. The average of the first ten is 55 while the last eleven is 40 .The marks obtained by the 11th candidate is ?
**Ans: 0**
It is clear that 22 x 45 = 10 x 55 + K + 11 x 40 $ \Rightarrow  K = 0

6. What is the largest positive integer n for which 3^n divides 44^44?
**Ans: n = 0**
The digit sum of 4444 is when remainder obtained 4444 divided by 9
4444 = (45−1)44
Each term is a multiple of 9 but the last term which is (−1)44 = 1
So the digit sum of  4444 is 1.

Now the divisibility rule for 3, 9, 27... is the sum of the digits should be divisible by 3, 9, 27 respectively.  In each case the digit sum is either multiple of 3 or 9.
So for any value of n > 1, the given expression is not divisible by 3*n*

7. 1(1!)+2(2!)+3(3!)....2012(2012!) = ?
**Ans: 2013!-1**
1(1!)=1  ⇒ 2!-1
1(1!)+2(2!)=1+4=5 ⇒ 3!-1
1(1!)+2(2!)+3(3!)=1+4+18=23 ⇒ 4!-1
........................
.......................
1(1!)+2(2!)+3(3!)+........+2012(2012!)=2013!-1

TCS Latest Placement Paper Questions with solutions -2014 (14)

[**<< Previous**](http://www.campusgate.co.in/2013/09/tcs-latest-placement-paper-questions_18.html) [**Next>>**](http://www.campusgate.co.in/2013/09/previous-1.html)

1. A two digit number is 18 less than the **square of the sum of its digits**. How many such numbers are there?
(1)1
(2)2
(3)3
(4)4
Ans: Option 1
Take N = 10a+b.
Given that, 10a+b+18 = (*a*+*b*)2
for a = 1 to 9, the L.H.S. will be, 28+b, 38+b, 48+b,.....,108+b.
As LHS is perfect square for the values of b = 1 to 9, only  28+b, 48+b, 58+b, 78+b can be equal to 36, 49, 64, 81 for b = 8, 1, 6, 3 respectively.   But only 78+b = 81 for b = 3 So only one such number is possible. I.e, 63

2. A two digit number is 18 less than the**sum of the squares of its digits.** How many such numbers are there?
(1)1
(2)2
(3)3
(4)4
Ans: Option 2
Only 47 and 67 satisfy the condition

3. For real number x, int(x) denotes integer part of x.int(x) is the largest integer less than or equal to x.int(1,2)=1,int(-2,4)=-3.  Find the value of int(1/2)+int(1/2+ 100)+int(1/2+2/100)+....+int(1/2+99/100)
Sol: int (1/2) = 0
int (1/2 + 100 ) = 100
into (1/2 + 2/100) = 0
......
int ( 1/2 + 50/100 ) = 1
int (1/2 + 51 /100) = 1
.......
int (1/2 + 99/100) = 1
So 100 +  1 + 1 + .....50 times = 150

4. Given a square of length 2m. Its corners are cut such that to represent a regular octagon.   Find the length of side of octagon
Sol:



Let x is the side of the octagon and x + 2y is the side of the square.

In the given octagon, *y*2+*y*2=*x*2⇒2*y*2=*x*2⇒*y*=*x*2√
But *x*2√+*x*+*x*2√=2
⇒2√*x*+*x*=2
⇒*x*=22√ +1=22√ +1×2√ −12√ −1=2(2√ −1)

5. Find the number of ways a batsman can score a double century only in terms of 4's & 6's?
Assume the batsman scored x 4's and y 6's.
4x + 6y = 200 ⇒2*x*+3*y*=100 ⇒*x*=100−3*y*2=50−32*y*
As x is an integer, y should be a multiple of 2.
If
y = 0, x = 50
y = 2, x = 47
y = 4, x = 44
...
y = 32, x = 2

So total ways are (32-0)/2 + 1 = 17 ( if 0 6's are possible) otherwise 16

6. 5000 voted in an election between two candidates.14% of the votes were invalid.The winner won by a margin approximately closer to 15%.Find the number of votes secured by the person
Invalid Votes = 14 % (5000) = 700
Valid Votes = 5000 - 700 = 4300
Assume the looser got x votes.  Then the winner must have got x + 15% (x)
But x + x + 15% (x) = 4300
Solving x = 2000
So Looser got 2000 and winner got 2300

7. There are 100 wine glasses.  I offered my servant to 3 paise for every broken glass to be delivered safely and forfeit 9 paisa for every glass broken at the end of day. He recieved Rs.2.40 .how many glass did he break.
a. 20  b. 73  c. 5  d. 8
If a glass has been broken, he has to loose 3 paisa + 9 paise = 12 paise
Assume K  glasses got broken
100 x 3 - 12 x K = 240 ⇒*K*=5

8. A is 20 percent more efficient than B.  If the two person can complete a piece of work in 60 days.in how many days.  A working alone can complete the work
a. 80   b. 90    c. 100     d. 110
As A is 20% more efficient than B, If B's per day work is 100 units then A's 120.
Both persons together completes (100 + 120) units = 220 units a day.
They took 60 days to complete the work. So total work = 60 x 220
If A alone set to complete the work, he takes = 60×220120=110 days

9. A property was originally on a 99 years lease and two thirds of the time passed is equal to the four fifth of the time to come.how many years are there to go.
a. 45   b. 50    c. 60     d. 55
Assume x years have passed and y years to go
Given 23*x*=45*y* ⇒*x*=32×45*y*=65*y*
But x + y = 99
So 65*y*+*y*=99
Solving we get y = 45 years

10. In how many different ways can the letters of the word "LEADING" be arranged in such a way that the vowels always come together.
a. 360
b. 720
c. 480
d. 5040
Given letters are A, E, I, D, L, N, G
Of which AEI are vowels. Let us combine them into a single letter x.  Now total letters are x, D, L, N, G
These letter are arranged in 5! ways.  But 3 vowels can arrange themselves in 3! ways.  So total ways 5! x 3! = 720

11. There is a plane contains 32 points.all the 32 points have equal distance from point x. which of the following is true .
a. all 32 points lie in circle
b. the distance from x to all 32 points is less than the distance between each other
c. both a and b
d. none of these
Sol: Option 3
X must be the center of the circle and 32 points are  on the circumference. So Option A is correct
Number of diagnols of a regular polygon = *n*(*n*−3)2
So for a polygon of 32 sides, Number of diagnols = 464. Now the minimum distance between any two points = 2*πr*32=1156*r*
Now total lengh of all the distances from 32 points = 2*πr* + Sum of the lengths of all the 464 diagnols.
Sum of the lengths of x to all the 32 points = 32 radius = 32r
But the 464 diagnols have 16 diameters connecting 2 oposite points connecting via center. So Sum of the lengths of distances from point to point is clearly greater than sum of the length from x to all 32 ponts. Option B is correct
Correct Option 3

12. When asked what the time is,a person answered that the amount of time left is 1/5 of the time already completed.what is the time.
1. 8 pm
2. 8 am
3. 12 pm
4. 12 am
Sol: A day has 24 hrs. Assume x hours have passed. Remaining time is (24 - x)
24−*x*=15*x*⇒*x*=20
Time is 8 PM

13. Perimeter of the backwheel =9 feet,front wheel=7 feet on a certain distance ,the front wheel gets 10 revolution more than the back wheel.what is the distance
Let the backwheel made x revolutions then front wheel makes x + 10
x x 9 = (x + 10) x 7
x = 35
So distance traveled = 35 x 9 = 315

14. There are 2 groups named brown and red. They can n't marry in the same group. If the husband or wife dies then the person will revert to their own group.  If a person is married then the husband will have to change his group to his wife's group. Children will own the mother's group. If man is red then his mother's brother belong to which group if he is married
a. red
b. brown
c. red and brown
d. none
Option: b
If a man is Red, his mother must be red, his mothers brother also red but after marriage, he gets converted to Brown.

15. A rectangular park 60 m long and 40 m wide has concrete crossroads running in the middle of the park and rest of the park has been used as a lawn.if the area of the lawn is 2109 sq.m,then what is the width of the road.
a. 2.91 m
b. 3m
c. 5.82 m
d. none
**Option : B**



Let us shift the path to the left hand side and top. This does not change the area of the lawn.

Now lawn area = (60 - x) (40 - x)

for x = 3, we get lawn area = 2109.

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1. A man is known to speak truth 3 out of 4 times. He throws die and reports that it is a 6. The probability that it is actually a 6 is
Sol: If 6 actually appeared, he can report it with the probability of 3/4.  If 6 has not appeared, still he can report it wrongly with the probability of 1/4
So the probability that it is actually a 6 = (Probability to appear 6 x His truthfulness to report + Probability to appear any other number x His lieing probability ) = 16×34+56×14=13
The probability that it is actually 6 = Probability that he reports 6Total probability to appear 6=34×1634×16+14×56=38

2. In how many ways can we distribute 10 pencils to 4 children so each child gets atleast one pencil?
Number of ways of distributing r identical objects to n distinct objects so that each get atleast one = (*n*−1)*C*(*r*−1) = (10−1)*C*(4−1)=9*C*3

3. A drawer holds 4 red hats and 4 blue hats. what is probability of getting exactly 3 red hats or 3 blue hats when taking out 4 hats randomly out of drawer and immediately returning every hat to drawer before taking out next??
As the objects are replaced, the probability of drawing red or blue is equal.
Probability to draw 3 red hats consecutively = 12×12×12=18
Similarly probability to draw 3 blue hats consecutively = 12×12×12=18
Total probability = 12×12×12=18+12×12×12=18 = 14

4. A father purchased dress for his 3 daughters. The dresses are of same color but diff size and they are kept in dark room. what is probability that all the 3 will not choose their own dress?
This is a case of de-arrangements = *Dn*=*n*!(12!−13!+14!−....)
So number of ways that none of them chooses their own dress = *D*3=3!(12!−13!)=2
So probability = 23!=13

5. 60% of male in a town and 70% of female in a town are eligible to vote. out of which 70% of male and 60% of female who are eligible to vote voted for candidate A. what is the value of votes in % did A get?
Let the ratio of men and women are 100 : k
Male eligible votes = 60 and female eligible votes = 70% (k)
Number of males who voted for A = 70% (60) = 42
Number of females who voted for A = 60%(70% (K) = 42% (k)
Percentage of votes got by A = 42+42100(*K*)60+70100(*K*)×100=4200+42*K*6000+70*K*×100
So this value cannot be determined as the value of K is not known

6. George and Mark can paint 720 boxes in 20 days. Mark and Harry in 24 days and Harry and George in 15 days. George works for 4 days, Mark for 8 days and Harry for 8 days. The total number of boxes painted by them is
Capacity of G + M = 720 / 20 = 36
M + H = 720 / 24 = 30
H + G = 720 / 15 = 48
Combined capacity = 2 (G + H + M) = 114
G + H + M = 114 / 2 = 57
Now capacity of G = (G+H+M) - (H + M) = 57 - 30 = 27
M = (G+H+M) - (H + G) = 57 - 48 = 9
H = (G+H+M) - (G + M) = 57 - 36 = 21

Given that G worked for 4 days, and mark for 8 and harry for 8 days
So total work by them = 4 x 27 + 8 x 9 + 8 x 21 = 348

7. Two equilateral triangle of side 12cm are placed one on top another, such a 6 pionted star is formed if the six vertices lie on a circle what is the area of the circle not enclosed by the Star?
a)61
b)57
c)68
d)83
Sol: Given that two equilateral triangles of length 12 has inscribed in a circle.



Altitude of the triangle = 3√2*a* = 3√2(12) = 63√
We know that centroid divides the altitude in the ratio 2 : 1 and 23(Altitude) = Circum radius
Circum radius = 23(63√)=43√
Area of the circle = *πr*2=3.14×(43√)2
Now the two triangles in the circle forms 12 small equilateral triangles with side 4. So their total area = 12×3√4*a*2 =  12×3√442
Area which is not covered by the equilateral triangles = 3.14×(43√)2 - 12×3√442 = 67.65 ≃68

8. There are 4 different letters and 4 addressed envelopes.In how many ways can the letters be put in the envelopes so that atleast one letter goes to the correct address ?
a)15          b)16            c)18                d)12
Total ways of putting r letters to r covers = r! = 4! =  24
Number of ways that none of them goes into the right envolope = *D*4=4!(12!−13!+14!) = 9
So atleast one envolope goes into the right one = 24 - 9 = 15

9.There are 250men and 150 women in a committee, if all will work they will complete 12 units per day, if all men work they will complete 15 units per day, how many units will women complete per day?
I think there is a mistake in this question. If all men and women together complete 12 units, how only men can do 15 Units of work a day?
Forgetting about the reality, Women can do -3 units a day.

10. How many odd and even numbers are there between 42 and 400??  Find the sum of odd numbers and the sum of even numbers!
Sol: Odd numbers are from 43 to 399. Number of odd numbers = *l*−*ad*+1=399−432+1=179
Their sum = *n*2(*l*+*a*) = 39559

Even numbers are from 44 to 398.  Number of even numbers = *l*−*ad*+1=398−442+1=178
Their sum = 1782(398+44)=39338

11. The famous church in the city of Kumbakonnam has a big clock tower and is said to be over 300 years old. Every Monday 10.00 A M the clock is set by Antony, doing service in the church. The Clock loses 6 mins every hour. What will be the actual time when the faulty clock shows 3 P.M on Friday?
a. 4 AM
b.3.16 PM
c. 4.54 AM
d. 3 AM
Total time passed in the faulty clock = Monday 10 am to Friday 3 pm = 24 x 4 + 5 hours = 96 and 5 hours = 101 hrs
54 min in the faulty clock = 60 minutes of the correct clock
101 hrs in the faulcty clock = ?
10154×60 = 112.2 Hrs.
96 Hrs + 16.2 Hrs
Friday 10 am + 16 hrs = Saturday 2am
0.2 x 60 min = 12 min
So Saturday 2.12 min AM

12. Suresh Raina and Gautam Gambhir after a scintillating IPL match decide to travel by cycle to their respective villages. Both of them start their journey travelling in opposite directions. Each of their speeds is 6 miles per hour. When they are at a distance of 50 miles, a housefly starts flying from Suresh Raina's cycle towards Gautam Gambhir at a relative speed of 17 miles per hour with respect to Raina's speed. What will be the time taken by housefly to reach Gambhir?
a. 10 hrs
b. 15 hrs
c. 20 hrs
d. 25 hrs
Sol:



Fly speed is 17 kmph w.r.t to suresh as fly is moving in opposite direction to suresh, its actual speed is 17 - 6 = 11.
Now relative speed of fly and gambhir = 11 - 6 = 5 kmph
So fly takes = 5011−6 = 10 Hrs

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1. The value of diamond varies directly as the square of its weight. If a diamond falls and breaks into two pieces with weights in the ratio 2:3. what is the loss percentage in the value?
Sol: Let weight be “x”
the cost of diamond in the original state is proportional to *x*2

when it is fallen it breaks into two pieces 2y and the 3y
x = 5y
Original value of diamond = (5*y*)2 = 25*y*2
Value of diamond after breakage = (2*y*)2 +(3*y*)2 =13*y*2

so the percentage loss will be = 25*y*2 −13*y*225*y*2×100=48%

2. Five college students met at a party and exchanged gossips. Uma said, “Only one of us is lying”. David said, “Exactly two of us are lying”. Thara said, “Exactly 3 of us are lying”. Querishi said, “Exactly 4 of us are lying”. Chitra said “All of us are lying”. Which one was telling the truth?
a)David
b)Querishi
c)Chitra
d)Thara
Sol:  As all are contradictory statements, it is clear that ONLY one of them is telling the truth. So remaining 4 of them are lying. Querishi mentioned that exactly 4 are lying. So, he is telling the truth.
Explanation: Let us 1st assume that Uma is telling the truth. Then according to her only one is lying. But if only one is lying then all the others’ statements are contradicting the possibility. In the same way all the other statements should be checked. If we assume the Querishi is telling the truth, according to him exactly 4 members are lying. So all the others are telling lies and he is the one who is telling the truth. This case fits perfectly.

3. Cara, a blue whale participated in a weight loss program at the biggest office. At the end of every month, the decrease in weight from original weight was measured and noted as 1, 2, 6, 21, 86, 445, 2676. While Cara made a steadfast effort, the weighing machine showed an erroneous weight once. What was that.
a) 2676
b) 2
c) 445
d) 86
SOL: This is a number series problem nothing to do with the data given.
1x 1+1=2
2 x 2+2=6
6 x 3+3=21
21 x 4+4=88 and not 86
88 x 5+5 = 445
445\*6+6 = 2676

4. The letters in the word ADOPTS are permuted in all possible ways and arranged in alphabetical order then find the word at position 42 in the permuted alphabetical order?
a) AOTDSP
b) AOTPDS
c) AOTDPS
d) AOSTPD
SOL:
In alphabetical order : A D O P S T
A \_ \_ \_ \_ \_ : the places filled in 5! ways = 120, But we need a rank less than 120.  So the word starts with A.
A D \_ \_ \_ \_ : empty places can be filled in 4!=24
A O \_ \_ \_ \_ : the places filled with 4! ways = 24.  If we add 24 + 24 this total crosses 42. So We should not consider all the words starting with AO.
A O D \_ \_ \_ : 3!= 6
A O P \_ \_ \_ : 3!=6
Till this 36 words are obtained, we need the 42nd word.
AOS \_ \_ \_ : 3!= 6
 Exactly we are getting the sum 42. So last 3 letters in the descending order are TPD.
So given word is AOSTPD

4. A man who goes to work long before sunrise every morning gets dressed in the dark. In his sock drawer he has 6 black and 8 blue socks. What is the probability that his first pick was a black sock, but his second pick was a blue sock?
SOL:  This is a case of without replacement.  We have to multiply two probabilities.  1. Probability of picking up a black sock, and probability of picking a blue sock, given that first sock is black.
6*C*114*C*1×8*C*113*C*1=2491

5. There are 6 red balls,8 blue balls and 7 green balls in a bag. If 5 are drawn with replacement, what is the probability at least three are red?
Sol: At least 3 reds means we get either : 3 red  or  4 red or 5 red. And this is a case of replacement.
case 1 : 3 red balls : 6/21 x 6/21 x 6/21 x 15/21 x 15/21
case 2 : 4 red balls : 6/21 x 6/21 x 6/21 x 6/21 x 15/21
case 3 : 5 red balls : 6/21 x 6/21 x 6/21 x 6/21 x 6/21

Total probability =  = (6/21 x 6/21 x 6/21 x 15/21 x 15/21)+(6/21 x 6/21 x 6/21 x 6/21 x (15 )/21)+ (6/21 x 6/21 x 6/21 x 6/21 x 6/21)
 = 312/16807

6. Total number of 4 digit number do not having the digit 3 or 6.
Sol:
consider 4 digits  \_ \_ \_ \_
1st blank can be filled in 7*C*1 ways (0,3,6 are neglected as the first digit should not be 0)
2st blank can be filled in 8*C*1 ways (0 considered along with 1,2,4,5,7,8,9)
3st blank can be filled in 8*C*1 ways
4st blank can be filled in 8*C*1  ways
Therefore total 4 digit number without 3 and 6 is 7 x 8 x 8 x 8=3584

7. Find the missing in the series:  70, 54, 45, 41,\_\_\_\_.
Sol: 40
70-54 = 16 = 42
54-45 = 9 = 32
45-41 = 4 = 22
41-40 = 1 = 12

8. A school has 120, 192 and 144 students enrolled for its science, arts and commerce courses. All students have to be seated in rooms for an exam such that each room has students of only the same course and also all rooms have equal number of students. What is the least number of rooms needed?
Sol:  We have to find the maximum number which divides all the given numbers so that number of roots get minimized.  HCF of 120,192 & 144 is 24.  Each room have 24 students of the same course.
Then rooms needed 12024+19224+14424  = 5 +8 + 6 = 19

9. A farmer has a rose garden. Every day he picks either 7,6,24 or 23 roses. When he plucks these number of flowers the next day 37,36,9 or 18 new flowers bloom. On Monday he counts 189 roses. If he continues on his plan each day, after some days what can be the number of roses left behind? (Hint : Consider number of roses remaining every day)
a)7
b)4
c)30
d)37
SOL:
let us consider the case of 23. when he picks up 23 roses the next day there will be 18 new, so in this case., 5 flowers will be less every day. So when he counts 189, the next day 184, 179,174,169,................
finally the no. of roses left behind will be 4.

10. What is the 32nd word of "WAITING" in a dictionary?
Sol: Arranging the words of waiting in Alphabetical Order : A,G,I,I,N,T,W

Start with A\_ \_ \_ \_ \_ \_ This can be arranged in 6!/2! ways=720/2=360 ways
so can't be arranged starting with A alone as it is asking for 32nd word so it is out of range

AG\_ \_ \_ \_ \_then the remaining letters can be arranged in 5!/2! ways so,120/2=60 ways.  Out of range as it has to be within 32 words.
AGI\_ \_ \_ \_ Now the remaining letters can be arranged in 4! ways =24
AGN \_ \_ \_ \_ can be arranged in 4!/2! ways or 12 ways
so,24+12 =36th word so out of range. So we should not consider all the words start with AGN
now AGNI\_ \_ \_can be arranged in 3! ways =6 ways
so 24+6=30 within range
Now only two word left so, arrange in alphabetical order.
AGNTIIW  - 31st word
AGNTIWI  - 32nd word

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1. A manufacturer of chocolates makes 6 different flavors of chocolates. The chocolates are sold in boxes of 10. How many “different” boxes of chocolates can be made?
Sol:
If n similar articles are to be distributed to r persons, *x*1+*x*2+*x*3......*xr*=*n* each person is eligible to take any number of articles then the total ways are *n*+*r*−1*Cr*−1
In this case *x*1+*x*2+*x*3......*x*6=10
in such a case the formula for non negative integral solutions is *n*+*r*−1*Cr*−1
Here n =6 and r=10. So total ways are 10+6−1*C*6−1 = 3003

2. In a single throw with two dice, find the probability that their sum is a multiple either of 3 or 4.
a. 1/3
b. 1/2
c. 5/9
d. 17/36
Sol: Their sum can be 3,4,6,8,9,12
For two dice, any number from 2 to 7 can be get in (n-1) ways and any number from 8 to 12 can be get in (13 - n) ways.
Then possible ways are 2 + 3 + 5 + 5 + 4 + 1 = 20 possible cases.
So probability is (20/36)=(5/9)

3. B alone can do piece of work in 10 days. A alone can do it in 15 days. If the total wages for the work is Rs 5000, how much should B be paid if they work together for the entire duration of the work?
a. 2000
b. 4000
c. 5000
d. 3000
Sol:
Time taken by A and B is in the ratio of =  3:2
Ratio of  the Work = 2 : 3 (since, time and work are inversely proportional)
Total money is divided in the ratio of 2 : 3 and B gets Rs.3000

4. On a 26 question test, 5 points were deducted for each wrong answer and 8 points were added for right answers. If all the questions were answered how many were correct if the score was zero.
a. 10
b. 11
c. 13
d. 12
Sol:
Let x ques were correct. Therefore, (26- x) were wrong
8*x*−5(26−*x*)=0
Solving we get x=10

5. Arun makes a popular brand of ice cream in a rectangular shaped bar 6cm long, 5cm wide and 2cm thick. To cut costs, the company had decided to reduce the volume of the bar by 19%. The thickness will remain same, but the length and width will be decreased by some percentage. The new width will be,
a. 5.5
b. 4.5
c. 7.5
d. 6.5
Sol:
Volume =*l*×*b*×*h* = 6×5×2  = 60 *cm*3
Now volume is reduced by 19%.
Therefore, new volume = (100−19)100×60=48.6
Now, thickness remains same and let length and breadth be reduced to x%
so, new volume: (*x*100×6)(*x*100×5)2=48.6
Solving we get x =90
thus length and width is reduced by 10%
New width = 5-(10% of 5)=4.5

6. If all the numbers between 11 and 100 are written on a piece of paper. How many times will the number 4 be used?
Sol: We have to consider the number of 4's in two digit numbers. \_ \_
If we fix 4 in the 10th place, unit place be filled with 10 ways.  If we fix 4 in units place, 10th place be filled with 9 ways (0 is not allowed)
So total 19 ways.
**Alternatively:**
There are total 9 4's in 14, 24, 34...,94
& total 10 4's in 40,41,42....49
thus, 9+10=19.

7. If twenty four men and sixteen women work on a day, the total wages to be paid is 11,600. If twelve men and thirty seven women work on a day, the total wages to be paid remains the same. What is the wages paid to a man for a day’s work?
Sol: Let man daily wages and woman daily wages be M and W respectively
24M+16W=11600
12M+37W=11600
solving the above equations gives M=350 and W=200

8. The cost price of a cow and a horse is Rs 3 lakhs. The cow is sold at 20% profit and the horse is sold at 10% loss. Overall gain is Rs 4200. What is the cost price of the cow?
Sol:
Profit = 4200
Profit =SP - CP
4200=SP - 300000 therefore SP=304200
x+y = 300000
1.2x + 0.9y = 304200
Solving for x = 114000 = CP of cow.

9. 1, 2, 2, 3, 3, 3, 4, 4, 4, 4, 1, 1, 2, 2, 2, 2, 3, 3, 3, 3, 3, 3, 4, 4, 4, 4, 4, 4, 4, 4, 1, 1, 1, 2, 2, 2, 2, 2, 2, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 4......
In the above sequence what is the number of the position 2888 of the sequence.
a) 1
b) 4
c) 3
d) 2
Sol: First if we count 1223334444. they are 10
In the next term they are 20
Next they are 30 and so on
So Using *n*(*n*+1)2×10≤2888

For n = 23 we get LHS as 2760.  Remaining terms 128.

Now in the 24th term, we have 24 1's, and next 48 terms are 2's.  So next 72 terms are 3's.

The 2888 term will be “3”.

10. How many 4-digit numbers contain no.2?
Sol: Total number of four digit numbers =9000 (i.e 1000 to 9999 )
We try to find  the number of numbers not having digit 2 in them.
Now consider the units place it can be selected in 9 ways (i.e 0,1,3,4,5,6,7,8,9)
Tens place it can be selected in 9 ways (i.e 0,1,3,4,5,6,7,8,9)
Hundreds place it can be selected in 9 ways (i.e 0,1,3,4,5,6,7,8,9)
Thousands place can be selected in 8 ways (i.e 1,3,4,5,6,7,8,9) here '0' cannot be taken
Total number of numbers not having digit 2 in it =9 x 9  x 9 x 8 =5832
Total number of numbers having digit 2 in it = 9000-5832 =3168

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1. 2ab5 is a four digit number divisible by 25. If a number formed from the two digits ab is a multiple of 13, then ab is
a. 52
b. 45
c.10
d.25
Sol: For a number to be divisible by 25, last two digits of that number should be divisible by 25. So b must be either 2 or 7
it is given that ab must be divisible by 13 and in the options only 52 is divisible by 13.

2. The average temperature of Tuesday Wednesday and Thursday was 37 C. The average temperature of Wednesday and Thursday and Friday was 38 C. if the temperature on Friday was 39 C.
Find the temperature on Tuesday.
a. 37.33
b. 38.33
c. 36
d. None of the above
Sol:
(tues + wed + thurs)/3=37
tues + wed + thurs=111...(1)
(wed + thurs + fri)/3=38
(wed + thurs + fri) =114...(2)
Given friday is 39.
then, (2) - (1) Fri - Tues = 3
So 39 - Tues = 3
Tuesday =36

3. There are 5 boxes in a cargo. The weight of the 1st box is 200 KG, the weight of the 2nd box is 20% higher than the third box, whose weight is 25% higher than the 1st box weight. The 4th box which weighs 350 KG is 30% lighter than the 5th box. Find the difference in average weight of the 4 heaviest boxes and the four lightest boxes.
Sol: weight of 1st box=200
weight of 3rd box=(125/100)\*200=250
weight of 2nd box=(120/100)\*250=300
weight of 4th box =350
weight of 5th box=(10/7)\*350=500
average of 4 highest weighted boxes=(500+350+300+250)/4=350
average of 4 lightest boxes=(350+300+250+200)/4=275
therefore difference=350-275=75

4. The length, breadth and height of a room are in the ratio 3:2:1. If the breadth and height are halved, while the length is doubled. Then the total area of the 4 walls of the room will be decreased by
a. 30%
b. 18.75%
c. 15%
d. 13.6%
Sol: Given l:b:h=3:2:1
let h=10, b = 20, and l = 30
area = 2(*l*+*b*)*h*
area= 2\*(3x+2x)\*x = 2(30+20)10=1000
Now after those adjustments in the measurements,
l=60, b=10, h=5
area= 2(*l*+*b*)*h* = 2(60+10)5=700
Percentage decrease= 1000−7001000×1000=30%

5. A circle circumscribes three unit circles that touch each other. What is the area of the larger circle? Note that p is the ratio of the circumference to the diameter of a circle ( 3.14159265).
Sol:



By joining centres of 3 unit circles we will get an equilateral triangle of length 2 unit. We have to find the length of the orange line.
And center of the equilateral triangle will be the center of the big circle.
So radius of the big circle will be = (1 + Circum radius of the equilateral triagle)
Circum radius of equilateral triangle = 23×3√2×2=23√
Area of big circle will be = *πr*2=3.14×(1+23√)

6. Rajesh calculated his average over the last 24 tests and found it to be 76. He finds out that the marks for three tests have been inverted by mistake. The correct marks for these tests are 87, 79 and 98. What is the approximate percentage difference between his actual average and his incorrect average?
Sol: No Change
Incorrect value is: 78, 97, 89
correct values are: 87, 79, 98
difference between correct and incorrect value is= 9 + 9 -18=0

7. Joke is faster than Paul, Joke and Paul each walk 24 KM. The sum of their speed is 7 Km per hour. And the sum of times taken by them is 14 hours. Then, Joke speed is
a. 3 KM/Hr
b. 4 KM/Hr
c. 5 KM/Hr
d.7 KM/Hr
Sol:
*Speed*=*Time*distance
let the speed of joke x then speed of paul will be 7-x
24*x*+247−*x*=14
Try to plugin the values from the options. If Joke speed is 4 the paul is 3.

8. The crew of a rowing team of 8 members is to be chosen from 12 men (M1, M2, …., M12) and 8 women (W1, W2,…., W8), such that there are two rows, each row occupying one the two sides of the boat and that each side must have 4 members including at least one women. Further it is also known W1 and M7 must be selected for one of its sides while M2, M3 and M10 must be selected for other side. What is the number of ways in which rowing team can be arranged.
SoL:
We need two person for one side and 1 women for the another side.  We select that women in 7 ways. Now that second side people can sit in 7x4! ways.
Now for the first side we need two people from the remaining 14. So this can be done in 14*C*2 ways and this side people can sit in 4*C*2×4! ways.
Again the first group may take any of the two sides.  So total ways are 2×7×4!×14*C*2×4!

9. In a certain city, 60% of the registered voters are congress supporters and the rest are BJP supporters. In an assembly election, if 75% of the registered congress supporters and 20% of the registered BJP supporters are expected to vote for candidate A, what percent of the registered voters are expected to vote for candidate A?
Sol: let the people in the city be 100
Congress supporters = 60% of 100 = 60
40% are BJP=40% of 100 = 40
out of 60,75% voted for congress=75%(60)=45
out of 40%,20% voted for congress=20%(40)=8
Total=45 + 8 = 53
Total percent= 53%

10. Anusha, Banu and Esha run a running race of 100 meters. Anusha is the fastest followed by Banu and then Esha. Anusha, Banu and Esha maintain constant speeds during the entire race. When Anusha reached the goal post, Banu was 10m behind. When Banu reached the goal post Esha was 10m behind. How far was behind Anusha when the latter reached the goal post.
option
a) 70
b) 81
c) 90
d) 80
Sol:
By that time Anusha covered 100m, Bhanu covered 90m. So ratio of their speeds = 10 : 9
By that time Bhanu reached 100m, Esha covered 90m. So ratio of their speeds = 10 : 9
Ratio of the speed of all the three = 100 :  90 : 81
By that time Anusha covered 100m, Esha Covers only 81.

11. Seven different objects must be divided among three persons. In how many ways this can be done if at least one of them gets exactly one object.
Sol: Division of m+n+p objects into three groups is given by (*m*+*n*+*p*)!*m*!×*n*!×*p*!
But 7 = 1 + 3 + 3 or 1 + 2 + 4 or 1 + 1 + 5
So The number of ways are (7)!1!×3!×3!×12!+(7)!1!×2!×4!+(7)!1!×1!×5!×12! = 70 + 105 + 21 = 196

12. George while driving along the highway saw road markers which are at equal distances from each other. He crosses the markers every 20 seconds. If he increases his speed by x meters per second, he crosses the markers at every 15 seconds. But if he increases his speed by y meters per second, he crosses the marker at every 10th second. If y-x = 40 meters per second, then what is the distance between two markers.
Sol: Let speed be =z m/s then Distance= 20z m
(z+x)15=20z; (z+y)10=20z
Also given that y - x = 40
solving we get 20z=1200

13. How many different 9 digit numbers can be formed from the number 223355888 by re-arranging its digits so that the odd digits occupy even position?
Sol: Odd places are 4 and these are occupied by 3355. So this can be done in 4!/ (2! 2!) = 6
There are 5 even numbers which have to be placed at 5 odd places. So 5!/(2!3!) = 10 ways
so total number of ways of arranging all these numbers are 10 \* 6 = 60 ways

14. In a vessel, there are 10 litres of alcohol. An operation is defined as taking out five litres of what is present in the vessel and adding 10 litres of pure water to it. What is the ratio of alcohol to water after two operations?
a) 1 : 5
b) 2 : 3
c) 1 : 6
d) 3 : 2
Sol: Final concentration  =  Initial concentration(1−replacement quantityFinal volume)
Final concentration  =  1×(1−1015)=13
Final concentration  = 13×(1−1020)=16
So ratio of alcohol : water = 1 : 5