3i InfoTech Placement Paper Questions

1.What is the sum(in base 7) having 1234 and 6534 in base 7
A. 11011
B. 11101
C. 111101
D. 11111

Explanation :

(1234)7 = 73x1 + 72x2 + 7x3 + 4 = 343 + 98 + 21 + 4 = (466)10
(6534)7 = 73x6 + 72x5 + 7x3 + 4 = 2058 + 245 + 21 + 4 = (2328)10
Therefore : (466)10 + (2328)10 = (2794)10
2794 = 74 + 73 + 72 + 71x0 + 70
therefore; (2794)10 = (11101)7

2.A bag contains 6 balls of one or more colors. A ball is picked and is found to be red. What is the probability that the bag initially had exactly 6 red balls?
A. 2/7
B. 1/5
C. 3/5
D. ⅘

Explanation :

Use Baye's theorem :

Required formula : Expected probability/Total possible probability.
Here expected probability is 1 which is 6/6 i.e. all balls are red.

Possible possibility would be,
1. Picked one red ball from a bag with 1 red and 5 different color, probability : 1/6
2. Picked one red ball from a bag with 2 red and 4 different color, probability : 2/6
3. Picked one red ball from a bag with 3 red and 3 different color, probability : 3/6
4. Picked one red ball from a bag with 4 red and 2 different color, probability : 4/6
5. Picked one red ball from a bag with 5 red and 1 different color, probability : 5/6
6. Picked one red ball from a bag with 6 red and 0 different color, probability : 6/6

So required probability : 1 /(1/6+2/6+3/6+4/6+5/6+6/6) = 1/(21/6) = 2/7

3.
What will be the reminder when (12345678901234567890)^24 is divided by 6561
A. 0

B. 1
C. 2
D. 3
Explanation :
The divisor 6561 can be represented as 94
Sum of digits of dividend : (1+2+3+4+.....+9) = 90 is divisible by 9
So (12345678901234567 89)24 will be divisible by 924 and hence complete divisible by 94 therefore will produce 0 remainder when divided by 6571.

4. 2 oranges, 3 bananas and 4 apples cost rs.15. 3 oranges,2 bananas and 1 apples cost rs.10. what is the cost of 3 oranges, 3 bananas and 3 apples?
A. 5
B. 10
C. 15
D. 20
Explanation :
2'O' + 3'B' + 4'A' = 15 .....(i)
3'O' + 2'B' + 1'A' = 10 .....(ii)
Adding eqn (i) & (ii)
5'O' + 5'B' + 5'A' = 25
or, 1'O' + 1'B' + 1'A' = 5
or, 3'O' + 3'B' + 3'A' = 15

5. 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. 1,2,0
B. 4,0,1
C. 2,1,0
D. 1,0,4
Explanation :
Start solving it from the end.

Let the quotient when the nos divided by 2 gives remainder 1 be x
Therefore the nos is: (2x+1)
This is the quotient of the nos which was divided by 3 and gives remainder 2.
So the nos which was divided by 3 is: 3(2x+1) + 2 = (6x+5)
Above is the quotient of the nos which was divided by 5 and gives remaonder 0.
So the orignal nos is: 5(6x+5) = (30x+25)

Now, when (30x+25) is divided by 2 , the quotient will be (15x+12) with a remainder 1
The above quotient (15x+12) when divided by 3 will gives (5x+4) as quotient and 0 remainder.
Again (5x+4) divided by 5 will give 4 as remainder.

So the remainders are: 1,0,4

6. What is the sum(in base 7) having 1234 and 6534 in base 7
A. 11011
B. 11101
C. 111101
D. 11111
Explanation :
(1234)7 = 73x1 + 72x2 + 7x3 + 4 = 343 + 98 + 21 + 4 = (466)10
(6534)7 = 73x6 + 72x5 + 7x3 + 4 = 2058 + 245 + 21 + 4 = (2328)10
Therefore : (466)10 + (2328)10 = (2794)10
2794 = 74 + 73 + 72 + 71x0 + 70
therefore; (2794)10 = (11101)7

7. Two trains for mumbai leave Delhi at 6 a.m. and 6:45 am and travel at 100 kmph and 136 kmph respectively.How many kilometers from Delhi will the two trains be together?
A. 83.33
B. 183.33
C. 283.33
D. 383.33
Explanation :
Let the distance be : D km
Time taken by Train 1(started at 6 Am) : D/100 Hr
Time taken by Train 2(started at 6:45 Am) : D/136 Hr
The difference in time taken by trains: 45min = 0.75 Hr
Therefore : D/100 - D/136 = 0.75
or D = 0.75x136x100/36 = 283.33 Hr

8. Sehwag and Ganguly were sharing an apartment and cooked the food by themselves. One day Sehwag made 5 pizzas for himself and Ganguly made 3 for himself. At the time of lunch Tendulkar came in. So all three of them sat together and ate all the pizzas equally. After eating them Tendulkar gave them 8 expensive cricket bats and left. As Ganguly was running out of form he started quarrelling and asked for 4 bats which Sehwag refused to give. Finally David shepherd was called to give the right decision which he did. How many bats Sehwag and Ganguly were given finally?
A. 5,3
B. 7,1
C. 4,4
D. 3,5
Explanation :
Total nos of Pizza's = 5+3 = 8

Pizza's eaten by each of them : 8/3

So Sachin ate :(5 - 8/3) = 7/3 pizza which was cooked by Sehwag
and (3 - 8/3) = 1/3 pizza which was cooked by Ganguly

So the nos of bat should be proportional to the ratio of pizza eaten.
Hence 7 bat to Sehwag and 1 bat to ganguly.

9. Veena wants to make a cuboidal box with length 8cm, width 7 cm and height 6 cm, using 1 cubic cm cubes. What is the number of cubes she would require to make the box?
A. 49
B. 136
C. 236
D. 336
Explanation :
Total volume = 8cm x 7cm x 6cm = 336cm3
Required nos of cubes (1cm x 1cm x 1cm) = 336cm3/1cm3 = 336.

10. 5 printers can print 5 sheets in 5 seconds. If I need to print 20 sheets in 20 seconds, how many additional printers should I install in my office?
A. 0
B. 10
C. 15
D. 20
Explanation :
As 5 printers can print 5 sheets in 5 seconds
1 printer will print 1 sheets in 5 seconds.
Therefore in 20 sec (5x4) , 1 printer will print 4 sheets.
So for 20 sheets . nos of printers required = 20/4 = 5 printers.
As the office is already having 5 printers, no additional printers is required.

11. A three digit number was divided successively in order by 4, 5 and 6 leaving out the remainders. The
remainders were respectively 2, 3 and 4. How many such three digit numbers are possible?
A. 3
B. 5
C. 7
D. 9
Explanation :
Start from the last division,

As 4 is the remainder when the nos was divided by 6 , the nos can be represented in the form of : 6x + 4

this (6x+2) is the quotient when the nos was divided by 5 (and leaving 3 as remainder), so the nos can be : 5(6x + 4) + 3 = (30x + 23)

The above nos (30x + 23) is the quotient when the nos was divided by 4 (and leaves remainder 2), so original the nos is : 4(30x + 23) + 2 = 120x + 94

The number is represented in the form of : (120x + 94) and is a 3 digit nos.
so the values of x will lies from 1 to 7 (7 values)

12. Jack, twenty one years old, is three times as old as his brother. How old will Jack be when he is twice as old as his brother?
A. 24
B. 28
C. 32
D. 36
Explanation :
Jack's age : 21 yrs
Thereofore his brothers age = 21/3 = 7 yrs.

Let after'x' yrs, Jacks will be twice as old as his brother.
thereofre ; A/c : (21 +x) = 2*(7+x)
or, x = 21-14 = 7 yrs.

Therefore Jack's age after 7 yrs = 28 years.

13. If x and y are the two digits of the number 653xy such that this number is divisible by 80, then what is x + y = ?
A. 2 or 6
B. 4 or 6
C. 4
D. 8
Explanation :
Given Number : 653xy

For the nos to be divisble by 80
Y should be equal to "0".

And '3x0' should be divisble by 8
Therefore x can be either 2 or 6.

14. Three dice are rolled. What is the probability of sum of the numbers on the faces being 10?
A. 15/216
B. 10/216
C. 9/25
D. 1/8
Explanation :
Total nos of possible outcome : 6x6x6 = 216

For the sum to be 10 : x + y + z = 10

The following combinations are possible:

(6,3,1) : 3! ways = 6
(6,2,2) : 3!/2 ways = 3
(5,4,1) : 3! ways = 6
(5,3,2) : 3! ways = 6
(4,4,2) : 3!/2 ways = 3
(4,3,3) : 3!/2 ways = 3
So toatl ways: 27
Required probability: 27/216 = 1/8.

15. A man has three grandchildren. The age of the eldest grand child is four times the age of youngest grandchild. The second grand child's age is half of the eldest grand child. The sum of the ages of all three grandchildren is 63. What is the age of eldest grand child?
A. 18
B. 24
C. 30
D. 36
Explanation:
Let the age of youngest be: x years
Therefore, the age og oldest = 4x
and hence the age of the third one = 2x.

therefore, A/c: (x + 2x + 4x) = 63
or 7x = 63 or x = 9

Therefore, age of eldest grandchild = 4x = 36.

16. The cost price of a cow and a horse is 3 lakhs. The cow is sold at 20% profit and horse at 10% loss. Overall gain is Rs.4200. What is the cost price of the cow?
A. 114000
B. 140000
C. 141000
D. 144000
Explanation:
Let the CP of cow = Rs X
therefore, CP of horse = Rs (300000 - X)
Selling price of cow = Rs 1.2X
Selling price of horse = Rs 0.9(300000 - X)
As overall gain is: Rs 4200
Therefore: 1.2X + 0.9(300000 - X) = 300000 + 4200
or, 0.3X = 300000 - 270000 + 4200 = 34200
or, X = 34200/0.3 = Rs. 114000.

17. Vinod ordered for 6 blue toys and some green toys. The price of a blue toy is 2.5 times that of a green toy. While preparing the bill, the clerk interchanged the number of blue and green toys which increased the bill by 145%. Find the number of green toys.

A. 9
B. 12
C. 15
D. 18

Explanation:
Let price of green toy be Rs, x
Price of blue toy = Rs. 2.5x
Let the num of green toys purchased be n.
Actual price = 6*2.5x + nx = 15x + nx
Increased bill = 2.5nx + 6x
2.5nx + 6x = 145/100 * (15x + xn)
Cancelling x,
2.5n + 6 = 1.45*15 + 1.45n, Solving n= 15.

18. Mahesh spends 30% of his income on petrol. 1/4th of the remaining on house rent and the balance on food. If he spends Rs.300 on petrol then what is the expenditure on food?

A. 525
B. 450
C. 325
D. 175

Explanation:
Let total income be: Rs X
Expense on Petrol = 305 = 0.3x
A/c : 0.3x = rs 300 or x = Rs. 1000
House rent = 1/4 *(1000-300) = Rs. 175
Therefore, Balance (expense on food) = Rs. (700 - 175) = Rs. 525.

19. 60 men can complete a work in 40 days. 60 men start the work but after every 5 days, 5 men leave. In how many days the work will be completed?

A. 50
B. 60
C. 75
D. None of these

Explanation :
60 men can complete a work in 40 days
so total time required for the work : 60*40 = 2400 man-Days

So, work done in 1st 5 days (by 60 men) = 60*5 = 300 man-days
work done in (6th-10th) days (by 55 men) = 55*5 = 275 man-days
work done in (11th-15th) days (by 50 men) = 50*5 = 250 man-days
work done by 10 men (in 5 days) = 10*5 = 50 man-days
work done by by last 5 men (in 5 days) = 5*5 = 25 man-days

and then all the men men left.

So, total work done : 300 + 275 + 250 + ... + 50 + 25
= 12*(300+25)/2 = 1950 man-days

rset (2400-1950) = 550 man-days work is yet to be completed.
Hence: None of these.

20. Divide 50 into two parts so that sum of the reciprocal is 1/12 ?
A. 10,40
B. 15,35
C. 30,20
D. 22,28
Explanation :
Let numbers be x and (50-x).
solve:
1/x + 1/50-x = 1/12
12 (50-x + x) = (50x - x2)
x2 -50x + 600 = 0, solving x=20 or x=30.
Hence the numbers are 20,30.

21. What is the maximum value of n such that 146! is perfect divisible by 5n ?
A. 34
B. 35
C. 36
D. 37
Explanation :
For 146! to be divisible by 5n, the max value of n will be equal to nos of multiples of 5 in 146!
Therefore exponent of 5 in 146! = [146/5] + [146/25] + [146/125] = 29 + 5 + 1 = 35.

22. 3 persons A, B and C are standing in a queue. There are 5 persons between A and B and 8 persons between B and C. If there are 3 persons ahead of C and 21 persons behind A, what could be the minimum number of persons in the queue ?
A. 41
B. 40
C. 27
D. 28
Explanation :
As there are 3 persons ahead of C, C will be in 4th position
As there are 8 person between B&C, B's positon will be 4+8+1 = 13th
Now nos pf person between A & B : 5
CAse I: A is ahead of B, then A's position : 13 -5 -1 = 7th
CAse II: A is behind B, then A's position : 13 +5 +1 = 19th

Nos of person behind A: 21

So total possible nos of person's: Case I = 7 + 21 = 28
Case II = 19 + 21 = 40

As we have to find minimum number of persons, answer is 28

23. In a hotel where rooms are numbered from 101 to 130, each room gives an earning of Rs. 3000 for the first fifteen days of a month and for the latter half, Rs. 2000 per room. Find the average earning per room per day over the month. (Assume 30 day month)
A. 2500
B. 2250
C. 2750
D. 3000
Explanation :
Earning from 1st 15 days = Rs 15*3000
earning from last 15 days =Rs 15*2000
earning for the month = (15*3000 + 15*2000) = 75000
Therefore Average earning = 75000/30 = Rs 2500
Alternative solution:
As the nos of days (1st fifteen and last fifteen) are same, take the average of the two earning: Rs. (3000+2000)/2 = Rs 2500.

24. Lion tells lie on Monday, Tuesday, and Wednesday. Rat tells lie on Thursday, Friday and Saturday. Both of them speak truth on other days. Lion tells, “Yesterday was one of the days which I tell lying”. Rat also tells, “Yesterday was one of the days which I tell lying”. What day was yesterday?
A. Monday
B. Tuesday
C. Wednesday
D. Thursday
Explanation :
Day Lion Rat
——— ——— ———
Sun Truth Truth
Mon Lie Truth
Tue Lie Truth
Wed Lie Truth
Thr Truth Lie
Fri Truth Lie
Sat Truth Lie
Sun Truth Truth

From Lion Statement :"Yesterday was one of the days which I tell lying"

If the Lion's statement is true : Today is Thrusday
IF the Lion's statement is false: Today is Monday

From Rat statement: "Yesterday was one of the days which I tell lying"

If the Rat's statement is true : Today is Sunday
If the Rat's statement is false: Today is Thursday

From both the statement's it is concluded that Today is Thursday and hence yesterday was Wednesday.

25. After allowing a discount of 11.11%, a trader still makes a gain of 14.28%. At how many per cent above the cost price does he mark on his goods?
A. 28.56%
B. 35%
C. 22%
D. None
Explanation :
Let the Cost price of goods be : Rs 100
Gain = 14.28% = Rs 14.28
therefore,Selling price = Rs.114.28

Let Marked price be : Rs X
Discount on Marked Price = 11.11% = Rs. 0.1111
Thus selling price = Rs (X - 0.1111x) =Rs 0.8889X

Therefore : 0.8899X = 114.28
or, X = 114.28/0.8889 = Rs 128.58

Therefore Marked price is 28.56% above Cost price.

26. If ‘n‘ integers taken at random and multiplied together, then what is the probability that the last digit of the product is 1, 3, 7 or 9 ?
A. (2/5)n
B. (4/5)n
C. (2/10)n
D. None
Explanation :
The product of n integer to be odd, all the n integers must be odd number.
If any one of the "n" odd integers ends with 5, the product will end with 5.
So, if the last digit of the product are : 1,3,5,7 , all the n numbers must end with either 1,3,7 or 9.
So, for 1 number the probability is : 4/10
For n numbers, probability = (4/10)n = (2/5)n

27. Number of prime factors in (216)3/5 x (2500) 2/5 x (300) 1/5 is :
A. 3
B. 4
C. 6

D. 7
Explanation :
(216)3/5 x (2500) 2/5 x (300) 1/5
= (23X33)3/5 x (22x54) 2/5 x (22x3x52) 1/5
= (29X39)1/5 x (24x58) 1/5 x (22x3x52) 1/5
= (215 X 310 X 510)1/5 = (23 X 32 X 52)
So there are 3 factors: (2,3 & 5)
Hint: No need to simplify the problem
Prime factors of 216 are : 2 & 3
Prime factors of 2500 are : 2 & 5
Prime factors of 300 are : 2 , 3 & 5
so, these 3 will be the prime factors.

28. In June, a baseball team that played 60 games had won 30% of its game played. After a phenomenal winning streak, this team raised its average to 50%. How many games must the team have won in a row to attain this average?
A. 12
B. 20
C. 24
D. 30
Explanation :
In 60 Games the team won 30% i.e 18 Games and lose rest 42 Games
In order to raise the winning avg to 50%, the nos of win should be equal to the nos of loss.
So the nos of games he need to win (successive) = (42-18) = 24

29. A grocer bought 24 kg coffee beans at price x per kg.after a while one third of stock got spoiled so he sold the rest for $200 per kg and made a total profit of twice the cost what must be the price of x
A. 44.44
B. 55.55
C. 66.66
D. 77.77
Explanation :
Cost price of 24kg Coffee : 24x $
The stock of fresh coffee : 2/3 of 24 kg i.e 16Kg
So the selling price of 16Kg Coffee : 16*200 = 3200 $
Therefore, Profit = 3200 - 24x
A/c to question , Profit is twice of C.P
Therefore, 3200 - 24x = 48x
or, 72x = 3200
or, x = 3200/72 = 44.44 $