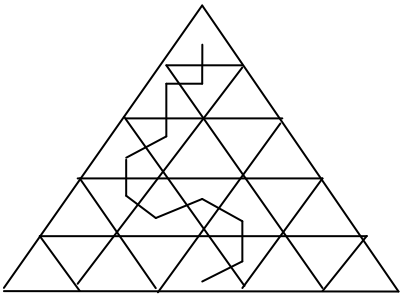
PART-A

01 A circle has 29 points arranged in a clockwise manner numbered from 0 to 28, as shown in the figure below. A bug moves clockwise around the circle according to the following rule. If it is at a point i on the circle, it moves clockwise in 1 second by (1 + r) places, where r is the reminder (possibly 0) when i is divided by 11. Thus if it is at position 5, it moves clockwise in one second by (1 + 5) places to point 11. Similarly if it is at position 28 it moves (1 + 6) or 7 places to point 6 in one second.
If it starts at point 23, at what point will it be after 2012 seconds?
(a) 1 (b) 7 (c) 15 **(d) 20**

02 Consider an equilateral triangle of side length n, which is divided into unit triangles, as shown. Let f(n) be the number of paths from the triangle in the top row to the middle triangle in the bottom row, such that adjacent triangles in our path share a common edge and the path never travels up (from lower row to a higher row) or revisits a triangle. An example of one such path is illustrated below for n = 5. Determine the value of f(2005)



(a) f(2005)=(2001)! (c) f(2005) = (2011)!
(b) f(2005)=(2004)! (d) f(2005) = (2020)!

03 Jake can dig a well in 16 days. Paul can dig the same well in 24 days. Jake, Paul and Hari together dig the well in 8 days. Hari alone can dig the well in
(a) 32days **(b) 48 days** (c) 96 days (d) 24 days

04 $P(x) = (x^{2012} + x^{2011} + x^{2010} + \ldots + x + 1)^2 - x^{2012}$
$Q(x) = x^{2011} + x^{2010} + \ldots + x + 1$
The reminder when P (x) is divided by Q (x) is
(a) x + 1 **(b) 0** (c) 1 (d) x – 1

05 An organization has three committees. Only two persons are members of all three committees, but every pair of committees has three members in common. What is the LEAST possible number of the members on any one committee?
(a) 4 (b) 6 (c) 7 (d) 5

06 Jake is faster than Paul. Jake and Paul each walk 24 km. The sum of their speeds is 7 km/h and the sum of time taken by them is 14 hours. Then Jake's speed is equal to :
(a) 7 kmph (b) 3 kmph (c) 5 kmph **(d) 4 kmph**

07 If a lemon and an apple together cost Rs. 12.00, a tomato and a lemon cost Rs. 4.00 and an apple cost Rs.8.00 more than a tomato or a lemon then which of the following can be

the price of a lemon?
(a) Rs 2 (b)Rs 4 (c) Rs 1 (d) Rs 3

08 3 mangoes and 4 apples costs Rs 85. 5 apples and 6 peaches costs Rs. 122. 6 mangoes and 2 peaches cost Rs.114. what is the combined price of 1 apple, 1peach and 1 mango?
(a) 37 Rs (b) 39 Rs (c) 35 Rs (d) 36 Rs

09 A child was looking for his father. He went 90 metres in the East before turning to his right. He went 20 metres before turning to his right again to look for his father at his uncle's place 30 metres from this point. His father was not there. From here he went 100 metres to the North before meeting his father in a street. How far did the son meet his father from the starting point?
(a) 90 (b) 30 (c) 80 **(d) 100**

10 If YWUSQ is 25 - 23 - 21 - 19 - 17 then MKIGF is
(a) 13 - 11 - 9 - 7 - 6 (c) 9 - 8 - 7 - 6 - 5
(b) 1 - 2 - 3 - 5 - 7 (d) 7 - 8 - 4 - 5 - 3

11 The addition 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**

12 Raj drives slowly along the perimeter of a rectangular park at 24 kmph and completes one full round in 4 minutes. If the ratio of the length to the breadth of the park is 3:2, what are its dimensions?
(a)450m x 300m (b)150m x 100m **(c)480m x 320m** (d) 100m x 100m

13 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

14 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

15 In a G6 summits beings held at London, a French, a German, An Italian, a British, a Spanish and a Polish diplomat represent their respective countries and participate in a round table conference to strengthen co-operation between these countries. There are exactly six chairs evenly spaced around a circular table. The chairs are numbered 1 through 6, with successively numbers chairs next to each other and chair number 1 next to chair 6. Each chair is occupied by one of the diplomats. The following condition apply :
-Polish sits immediately next to the British
-German sits immediately next to Italian, British, or both
-French does not sit immediately next to Italian
-If Spanish sits immediately next to Polish, Spanish does not sit immediately next to

Italian.

Which one of the following sitting arrangements of the six diplomats in chairs 1 through 6 would NOT violate the stated conditions?

(A) French, Polish, British, Italian, Spanish, German
(B) French, German, Italian, Polish, British, Spanish
(C) French, German, Italian, Spanish, Polish, British
(D) French, Spanish, Polish, British, German, Italian
(E) French, British, German, Spanish, Italian, Polish

(a) C (b) D (c) A **(d) B**

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

I. xz < 0
II. z < 0
III. xyz < 0

(a) I and II (b) III only (c) None of the above **(d) I only**

17 At 12.00 hours Jake starts to walk from his house at 6 kms an hour. At 13.30 hours, Paul follows him from Jake's house on his bicycle at 8 kms per hour. When will Jake be 3 kms behind Paul?

(a) 19:00 hrs (b) 18:30 hrs (c) 20:00 hrs **(d) 19:30 hrs**

18 There is a set of 9 numbers that relate to each other in a certain way. Find the way the first set of boxes works. The numbers in the second set work in exactly the same way. Find the number that must go in the empty box in the second set.

20	6	22	12	15	3
5	8	12	6		12
75	42	102	54	81	45

(a) 16 (b) 9 **(c) 12** (d) -21

19 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

20 What is the value of $(44444445*88888885*44444442+44444438)/44444444^2$

(a) 88888883 (b) 88888884 (b) 88888888 (b) 44444443

21 A cow and a horse are bought for Rs.200000. The cow is sold at a profit of 20% and the horse is sold at a loss of 10%. The overall gain is Rs.4000. The cost price of the cow is:

(a) Rs.1,30,000 **(b) Rs.80,000** (c) Rs.70,000 (d) Rs.1,20,000

22 When numbers are written in base b, we have 12 * 25 = 333. The value of b is

(a)8 (b) 6 (c) None of these **(d) 7**

23 If X^Y denotes X raised to the power Y, Find the last two digits of (1941 ^ 3843) + (1961 ^ 4181).

(a)12 (b) 22 (c) 42 **(d)82**

24 George can do some work in 8 hours, Paul can do the same work in 10 hours while Hari can do the same work in 12 hours. All the three of them start working at 9 a.m while George stops work at 11 a.m and remaining two complete the work. Approximately at what time will the work be finished?
(a) 12 noon (b) 11.30 am (c) 12.30 pm **(d) 1 pm**

25 At the end of 1994 Rohit was half as old as his grandmother. The sum of the years in which they were born is 3844. How old Rohit was at the end of 1999?
(a) 48 (b) 55 (c)49 **(d) 53**

26 If M is 30% of Q, Q is 20% of P and N is 50% of P then M/N =
(a) 4/3 **(b) 3/25** (c) 6/5 (d) 3/250

27 There are 5 sweets – Jumun, Kulfi, Peda, Laddu and Jilabi that I wish to eat on 5 consecutive days – Monday through Friday, one sweet a day, based on the following self imposed constraints:
1) Laddu is not eaten on Monday
2) If Jamun is eaten on Monday, then Laddu must be eaten on Friday
3) If Laddu is eaten on Tuesday, Kulfi should be eaten on Monday
4) Peda is eaten the day following the day of eating Jilabi

Based on the above, peda can be eaten on any day except?
(a) Tuesday **(b) Monday** (c) Wednesday (d) Friday

28 In a office, at various times during the day the boss gives the secretary a letter to type, each time putting the letter on the top of the pile in the secretary's inbox. When there is time, the secretary takes the top letter off the pile and type's it. If there are five letter in all , and the boss delivers in the order of 1 2 3 4 5, which of the following could NOT be the order in which secretary types them.
(a) 2 4 3 5 1 **(b) 4 5 2 3 1** (c) 3 2 4 1 5 (d) 1 2 3 4 5

29 For which of the following "n" is the number $2^{74} + 2^{2058} + 2^{2n}$ a perfect square?
(a) 2012 (b) 2100 (c) 2011 **(d) 2020**

30 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

TATCS1 – Detailed Solution

01 Ans (d)

A bug moves clockwise starting from point 23.

Points (N)	Remainder(r) (N/11)	Points to be moved (1 + r)	New point position	Time (sec)
23	1	2	25	1
25	3	4	0	2
0	0	1	1	3
1	1	2	3	4
3	3	4	7	5
7	7	8	15	6
15	4	5	20	7
20	9	10	1	8
1	1	2	3	9
3	3	4	7	10

We can see a pattern emerging in the point positions from the 3rd second onwards…1, 3, 7, 15, 20 and then the cycle keeps repeating. After 5 s, 10 s, 15 s, the bug's position is 7. So after 2010s, the position should be 7. The position after 2011s is 15, and after 2012s it is 20.

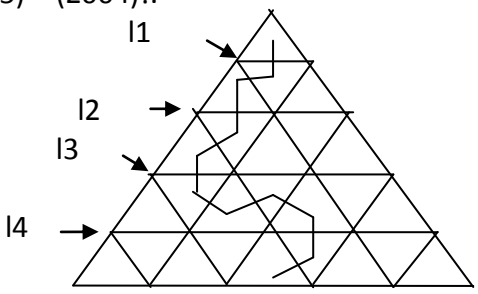
02 Ans (b)

We shall show that f(n) = (n − 1)!.

Label the horizontal line segments in the triangle l1, l2 , . . . as in the diagram below.

Since the path goes from the top triangle to a triangle in the bottom row and never travels up, the path must cross each of l1, l2, . . , ln−1 exactly once. The diagonal lines in the triangle divide lk into k unit line segments and the path must cross exactly one of these k segments for each k. (In the diagram below, these line segments have been highlighted.) The path is completely determined by the set of n − 1 line segments which are crossed. So as the path moves from the kth row to the (k + 1)st row, there are k possible line segments where the path could cross lk. Since there are $1 \cdot 2 \cdot 3 \cdot \cdot \cdot (n-1) = (n-1)!$ ways that the path could cross the n − 1 horizontal lines, and each one corresponds to a unique path, we get f(n) = (n − 1)!.

Therefore f(2005) = (2004)!.



03 Ans (b)

Total number of work to be done= 48 Units (LCM of 16,24,8)

Jake's one day work = 48/16 = 3 Units

Paul's one day work = 48/24 = 2 Units

Jake, Paul and Hari one day work = 48/8 = 6 Units

We know that Jack does 3 units and Paul does 2.

3+2+Hari = 6 Units

Hari = 1 Unit/day = 48/1 = 48 days

Hari does 1 unit per day and can dig a well in 48 days.

04 Ans (b)

Substituting 1 for x, the numerator is $2013^2 - 1^2$

This can be written in the form (2013 + 1) (2013 -1) = (2014)(2012)

The denominator is 2012 and since the numerator is a multiple of 2012, the remainder is exactly 0.

05 Ans (a)

Let there be a total of 5 people (a, b, c, d and e).

I committee	II committee	III committee
a	A	a
b	B	b
c	C	d
d	E	e

These satisfy the conditions given in the question and there should at least be 4 members in the committee.

06 Ans (d)

Given that speed of Jake is greater than Paul.

Distance = 24 km

Sum of their speed is 7 km/h = J+P

So possible speed ratio between J & P is

Go by Option

6:1 Not in option

5:2 = (24/5)+(24/2) ≠ 14 Hours

4:3 = (24/4)+(24/3) = 14 Hours

So Jake's speed is 4km/h.

07 Ans (a)

Let cost of a Lemon is L

Let cost of a Apple is A

Let cost of a Tomato is T

L+A = 12 – (1)

T+L = 4 - (2)

A = 8+L - (3)

A = 8+T - (4)

Sub (3) in (1)

L+8+L = 12

L = 2, A = 10, T = 2.

08 Ans (a)

3M + 4A = 85 - (1)

5A + 6P = 122 – (2)

6M + 2P= 114 – (3)

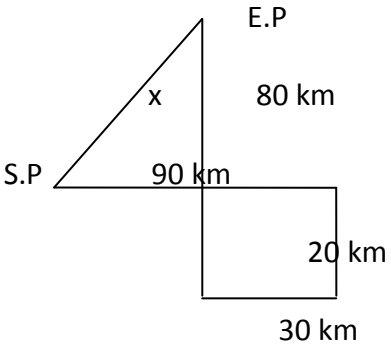
From 2 and 3,

5A + 6P = 122

18M + 6P = 342

From the above we get, 18M – 5A = 220 – 4
Solving 1 and 4, we get A = 10 and M = 15. We get P = 12.
Cost of 1 apple, 1 peach and 1 mango is equal to 37 (10+15+12).

09 Ans (d)



$x=\sqrt{(60^2+80^2)}$
x=100

10 Ans (a)
Each letter represents their position in the alphabetical order.

11 Ans (d)

6	4	1
8	5	2
9	**7**	3
24	**6**	6

So the largest digit that cane be changed is 7 in order to bring the solution as 2456.

12 Ans (c)
S = 24km/h = 24*(5/18) = 20/3 m/sec
T = 4 min = 240 sec
Perimeter = 2(l+b) = (20/3)*240
2(l+b) = 1600 m
l+b = 800 m
l:b = 3:2
l = (3/5)*800 = 480 m
b = (2/5)*800 = 320 m

13 Ans (a)
Ahmed and Babu cannot lie because each of them say two facts (not the largest, not the smallest) and there is no chance for both the facts to be wrong. David says “My number is smallest”. If David lies, one of the remaining four should lie. But exactly one person lies in this problem. So David says the truth. If David’s statement is true, Eesha’s statement is also true. The one who lies is Chitra and Eesha has the largest number.

14 Ans (b)
FG is as large as possible and all the 7 numbers should be different.
Let’s try out a few possibilities..
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.

15 Ans (d)

Going through the options, one can rule out A, C, D and E as they violate the given conditions. Only B obeys.

16 Ans (d)

y^2 is a positive number, so definitely x or z should be negative for the product to be a negative value. This means that xz always results in a negative value.

17 Ans (d)

Jake starts at 12.00 and covers 6 km/h

Paul starts at 1.30 and covers 8 km/h

Relative speed between Jake & paul is 2 kmph, where Paul stating Jake is 9 km ahead of Paul. From 13.30 hours paul takes 4.30 hrs to meet Jake. Again he needs 1.30 hrs to lead Jake by 3 km Relative speed. Totally he takes 6 hrs. so 13.30+6 = 19.30 hrs.

18 In any particular column, the third number is the sum of the first and second multiplied by 3. 81 is 15 plus 12 multiplied by 3.

19 Ans (a)

We can ignore 7 and 6 and we can check with 24 and 23 as the number of roses has decreased. If he plucks 24, the next day 9 new roses bloom. The numbers go on decreasing by 15. If you keep decreasing 15 starting from 189, we find that none of the options match. Let's check this for 23. When he plucks 23, 18 new roses bloom every day and it goes decreasing by 5 each day. If you keep decreasing 5 from 189, you'll get 4 at a point.

20 Ans (a)

Let 44444444 = x

$$\frac{(x+1)*(2x-3)*(x-2)+(x-6)}{x^2}$$

$$\frac{(x^2-x-2)(2x-3)+(x-6)}{x^2}$$

$$\frac{2x^3-2x^2-4x-3x^2+3x+6+x-6}{x^2}$$

$$\frac{2x^3-5x^2}{x^2} = 2x-5$$

= 2(44444444)-5 = 88888883

21 Ans (a)

Let the cost price of cow and horse is C and H Respectively

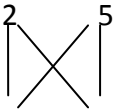
C + H = 200000 - (1)

1.2C + .8H = 204000 - (2)

Solving euation (1) & (2)

C = 80000.

22 2 5



1 2
3 3 3

5 times 2 is 10, but we have 3 in the solution. This means that there is a change in base. In base 7, 13 corresponds to 10 in base 10 system. One can see it works for the remaining numbers too. So the base is 7.

23 Ans (d)
1941^2 ends in 81. 1941^3 ends in 21, 1941^4 ends in 61, 1941^5 ends in 01 and 1941^6 ends in 41 and this cycle keeps repeating. Similarly the cycle for 1961 powers is 61, 21, 81, 41, 01 and the cycle repeats. After adding up the final two digits of these numbers for their respective powers, we find that the sum is 82.

24 Ans (d)
Total number of work to be done= 120 Units (LCM of 8,10,12)
George's one hour work = 120/8 = 14 Units
Paul's one hour work = 120/10 = 12 Units
Hari's one hour work = 120/12 = 10 Units
Units of work finished at 11 AM = (14+12+10)*2 = 74
Remaining work to be done = 120-74 = 46 units
One hour Paul + Hari work = 22 units
Approximately they will take two hours to finish the work
So the work will get finished at 1 PM

25 Ans (d)
End of 1994 Rohit = Grandmother/2
$R_B+G_B = 3844$
1999 Rohit age = ?
[1994-(G/2)]+[1994-G] = 3884
-3G/2 = -144
G = 48
Then Rohit age in 1994 = 48 years
Five years later in 1999, Rohit's age was 53 years.

26 Ans (b)
M is 30% of Q
Q is 20% of P
Nis 50 % of P
Then M/N = ?
Let P= 100
N = 50
Q = 20
M = 6
M/N = 6/ 50 =3/25.

27 Ans (b)

Peda can be had only after having Jilabi. So Peda can never be had on the starting day, which is Monday.

28 Ans (b)

Going by the options and checking logically which order is possible, we can see that all given orders are possible except the order in option (b).

29 Ans (d)

$2^{2*37} + 2^{2058} + 2^{2n}$

$a^2 + 2ab + b^2$

$(2^{37})^2 + (2^n)^2 + 2*2^{37}*2^n$

Here $a = 2^{37}$, $b = 2^n$,$2ab = 2^1*2^{37}*2^n$

$2^{38+n} = 2^{2058}$

$38+n = 2058$

$n = 2020$

30 Ans (a)

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

PART-B

01 Hanuman can complete a bridge in 10 days and Ravanan can complete the same bridge in 20 days. Now they are working together and they are completing the bridge in 20 days. What is the contribution of Ravanan in constructing the bridge?

(a) Half the work
(b) One-third of the work
(c) Two-fourth of the bridge
(d) Destructing the bridge

02 (a% of a) + (b% of b) = 2% of ab, then what percentage of a is b?

(a) 50% (b) 75% **(c) 100%** (d) Cannot be determined.

03 When numbers are written in base b, we have 15*22 = 414, the value of b is

(a) 8 (b) 7 **(c) 6** (d) None of these

04 5 coffee and 4 tea costs Rs.96, 5 badam milk and 6 coffee costs Rs. 32 and 7 tea and 6 badam milk costs Rs.37. What is the combined price of 1tea, 1 coffee and 1 badam milk?

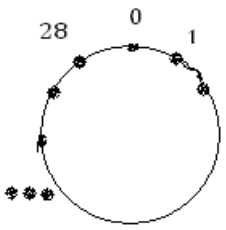
(a) 12 **(b) 15** (c) 20 (d) 16

05 There is a set of numbers that relate to each other in a certain way. Find the way the first set of boxes works. The numbers in the second set work in exactly the same way. Find the number that must go in the empty box in the first set.

30	11	128	67		219
6	3	6	3	6	3
144	19	634	131	1724	435

(a) 343 **(b) 346** (c) 349 (d) 643

06 A circle has 29 points arranged in a clockwise manner numbered from 0 to 28, as shown in the figure below. A bug moves clockwise around the circle according to the following rule. If it is at a point i on the circle, it moves clockwise in 1 second by (1 + r) places, where r is the reminder (possibly 0) when i is divided by 11. Thus if it is at position 5, it moves clockwise in one second by (1 + 5) places to point 11. Similarly if it is at position 28 it moves (1 + 6) or 7 places to point 6 in one second.
If it starts at point 28, at what point will it be after 9994 seconds?



(a) 1 (b) 5 (c) 7 **(d) 3**

07 Jake is faster than Paul. Jake and Paul each walk 40 km. The sum of their speeds is 13 km/h and the sum of time taken by them is 13 hours. Then Jake's speed is equal to :

(a) 7Kmph **(b) 8Kmph** (c) 13Kmph (d) 9Kmph

08 $P(x) = (x^{999} + x^{998} + x^{997} + \ldots + x + 1)^2 - x^{999}$

$Q(x) = x^{998} + x^{997} + \ldots + x + 1$

The reminder when P (x) is divided by Q (x) is

(a) x + 1 **(b) 0** (c) 1 (d) x – 1

09 A Samsung duo and a Galaxy are bought for Rs.40000. The Duo is sold at a profit of 33.33% and the Galaxy is sold at a loss of 20%. There was no loss or gain. Find the cost price of the Samsung duo ?

(a) Rs.15,000 (b) Rs.25,000 (c) Rs.20,000 (d) Rs.18,000

10 If a Strawberry and a Butterscotch together cost Rs. 18.00, a Vanilla and a Strawberry cost Rs. 9.00 and a Butterscotch cost Rs.9.00 more than a Vanilla or a Strawberry then which of the following can be the price of a Butterscotch?

(a) Rs. 13.5 (b) Rs.10 (c) Rs. 12 (d) Rs. 13

11 If KMNOQ is 7- 5 - 4 - 3 - 1 and DEFIJ is 4-5-6-9-8 and RSWYZ is 2-3-7-9-8 then AGVXH is

(a) 1 - 7 - 6- 8 - 8 (b) 1 - 7 - 3 - 5 - 7 (c) 9 - 3 - 7 - 6 - 5 (d) 7 - 8 - 4 - 5 - 3

12 My next door neighbour lies a lot. In fact, he only tells the truth on one day a week! One day he told me, "I lie on Mondays and on Tuesdays."The next day he said, "Today is either Thursday, Saturday or Sunday."The next day he said, "I lie on Wednesdays and Fridays."
On which day of the week does my neighbour tell the truth?

(a) Monday (b) Tuesday **(c) Wednesday** (d) None of these

13 The addition 457 + 982 + 896 = 2345 is incorrect. What is the least digit that can be changed to make the addition correct?

(a) 5 (b) 7 (c) 6 (d) 3

14 A child was looking for his father. He went 42 metres in the East before turning to his right. He went 20 metres before turning to his right again to look for his father at his uncle's place 30 metres from this point. His father was not there. From here he went 25 metres to the North before meeting his father in a street. How far did the son meet his father from the starting point?

(a) 7 (b) 25 **(c) 13** (d) 11

15 At the end of 1994 Rohit was $1/4^{th}$ as old as his grandmother. The sum of the years in which they were born is 3843. How old Rohit was at the end of 2001?

(a) 48 **(b) 36** (c) 29 (a) 34

16 Raj writes a number. He sees that the number of two digits is 9 less than 3 times the number. If the number is increased by 45, the result is the same as the number formed by reversing the digit. Find the number.

(a) 35 **(b) 27** (c) 36 (d) 49

17 Find the value of "n" where $3^{48} + 3^{1996} + 3^{3943} + 3^{3n}$.

(a) 1963 (b) 1964 (c) 1960 (d) 1991

18 There are 5 sweets – Milk peda, Ice cream, Rasagulla Paper sweet and Rasamalai that I wish to eat on 5 consecutive days – Monday through Friday, one sweet a day, based on the following self imposed constraints:

1) Paper sweet is not eaten on Monday
2) If Milk peda is eaten on Monday, then Paper sweet must be eaten on Friday
3) If Paper sweet is eaten on Tuesday, Ice cream should be eaten on Monday
4) Rasagulla should be eaten on the day preceding to the day of eating Milk peda.

Based on the above, Rasagulla can be eaten on any day except?

(a) Tuesday (b) Monday (c) Wednesday **(d) Friday**

19 Raj drives slowly along the perimeter of a rectangular park at 24 kmph and completes one full round in 4 minutes 30 seconds. If the ratio of the length to the breadth of the park is 5 : 7, what are its dimensions?

(a)1500m x 700m **(b) 375m x 525m** (c) 35m x 49m (d) 100m x 100m

20 In a office, at various times during the day the boss gives the secretary a letter to type, each time putting the letter on the top of the pile in the secretary's inbox. When there is time, the secretary takes the top letter off the pile and type's it. If there are five letter in all , and the boss delivers in the order of 5 4 3 2 1, which of the following could be the order in which secretary types them.

(a) 2 4 3 5 1 **(b) 4 5 2 3 1** (c) 1 2 3 5 4 (d) 3 1 2 5 4

21 Daniel can do some work in 12 hours, Roy can do the same work in 10 hours while Hillari can do the same work in 15 hours. All the three of them start working at 9 a.m while Daniel stops works at 11 a.m and remaining two complete the work. Approximately at what time will the work be finished?

(a) 1.30 pm (b) 12.30 am **(c) 2.00 pm** (d) 1.00 pm

22 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 small as possible. What is the value of G?

(a) 4 (b) 2 **(c) 0** (d) 3

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

I. yz < 0
II. z < 0
III. x < 0

(a) I only (b) III only (c) I & II only (d) None of the above

24 At 12.00 hours Ravi starts to walk from his house at 8 kms an hour. At 13.30 hours, Shankar follows him from Ravi's house on his bicycle at 12 kms per hour. When will Ravi be 6 kms behind Paul?

(a) 18:00hrs (b)18:30hrs (c) 20:00hrs (d) 19:30hrs

25 What is the value of (222224*444445*222221+666668)/222222^2

(a) 444444 **(b) 444447** (c) 222224 (d) 444222

26 Seven varsity basket ball players (A, B, C, D, E, F and G) are to be honoured at a special luncheon. The players will be seated on the dias in a row. A and G have to leave the luncheon early and so must be seated at the extreme right .B will receive the most valuable player's trophy and so must be in the centre to facilitate presentation .C and D are bitter rivals and, therefore must be seated as far apart as possible.

Which of the following pair cannot occupy the seats on either side of B?

(a) F and D (b) D and E **(c) E and G** (d) C and F

27 An organization has 4 committees. Only 3 persons are members of all four committees, but every pair of committees has 4 members in common. What is the LEAST possible number of the members on any one committee?

(a) 4 **(b) 6** (c) 7 (d) 5

28 Aravind can do a work in 24 days. Mani can dig the same well in 36 days. Aravind, Mani and Hari can do a work together in 8 days. Hari alone can do the work in

(a) 12days **(b) 18 days** (c) 16 days (d) 24 days

29 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) 26 **(b) 249** (c) 232 (d) 27

30 What is the unit's digit of $21^3 * 21^2 * 34^7 * 46^8 * 77^8$?

(a) 4 (b) 8 (c) 6 (d) 2

TATCS2 – Detailed Solution

01 Ans(d)

If they are both doing a positive work then they would have completed the work in less than 10 days, but still they are consuming 20 days together. This is possible only when one of them is doing a negative work. If Hanuman is doing the negative work then the bridge won't get completed. So the only other person to do the negative work should be Ravanan. Thus Ravanan's contribution in constructing the bridge is Destructing it.

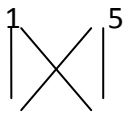
02 Ans(c)

$(a/100)* a +(b/100) * b = (2/100) ab$

$a^2+b^2 =2ab$ and $(a-b)^2 = 0$

a=b

03 Ans(c)



2 2

4 1 4

5 times 2 is 10, but we have 4 in the solution. This means that there is a change in base. In base 6, 14 corresponds to 10 in base 10 system. One can see it works for the remaining numbers too. So the base is 6.

04 Ans(b)

5C+4T=96; 5B+6C=32; 7T+6B=37;

Therefore 5C+4T+5B+6C+7T+6B =96+32+37

i.e., 11C+11T+11B=165

then 1C+1T+1B=15.Rs

05 Ans(b)

First Row follows the pattern x^3+3…

Second row follows y^2+2

Third row follows the (product of first set and second set) – (Sum of first set and second set)

06 Ans (d)

A bug moves clockwise starting from point 23.

Points (N)	Remainder(r) (N/11)	Points to be moved (1 + r)	New point position	Time (sec)
23	1	2	25	1
25	3	4	0	2
0	0	1	1	3
1	1	2	3	4
3	3	4	7	5
7	7	8	15	6
15	4	5	20	7
20	9	10	1	8
1	1	2	3	9

We can see a pattern emerging in the point positions from the 3rd second onwards…1, 3, 7, 15, 20 and then the cycle keeps repeating. After 5 s, 10 s, 15 s, the bug's position is 7. So after 2010s, the position should be 7. The position after 2011 s is 15, and after 2012 s it is 20.

07 Ans (b)

Given that speed of Jake is greater than Paul.

Distance = 40 km

Sum of their speed is 13 km/h = J+P

So possible speed ratio between J & P is

Go by Option
12:1, 11:2, 10:3, Not in option
8:5= (40/8)+(40/5) = 13 Hours
So Jake's speed is 8km/h.

08 Ans(b)
Substituting 1 for x, the numerator is $1000^2 - 1^2$
This can be written in the form (1000 + 1) (1000 -1) = (1001)(999)
The denominator is 999 and since the numerator is a multiple of 999,the remainder is exactly 0

09 Ans (a)
x+y= 40000
1.33x+ 0.8y= 40000
By solving these two equations:
The price of Samsung Duo, ie, x=15094 ~15000

10 Ans (a)
Butterscotch costs 9 more than a strawberry or Vanilla means Strwberry= Vanilla.
Since Vanilla +Strawberry=9
Vanilla= 4.5 and Strawberry = 4.5
Then we know that Butterscotch + Strawberry= 18
So Butterscotch= 18-4.5=13.5.

11 Ans(a)
A-1 B-2 C-3 D-4 E-5 F-6 G-7 H-8 I-9 J-8 K-7 L-6 M-5 N-4 O-3 P-2 Q-1 R-2 S-3 T-4 U-5 V-6 W-7 X-8 Y-9 Z-1
then AGVXH is 17688

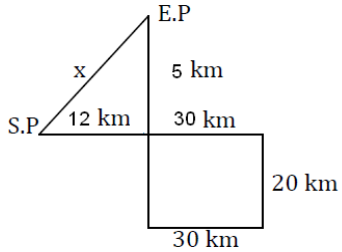
12 Ans(c)
The first statement is made on Thurs, he lies.
Second on Friday, Again he lies saying its Thurs, Sat or Sun.
On sat again he has to lie , he says wed and Fri he lies, on fri he lies is true , So the false statement is that he lies on Wednesdays.

13 Ans (a)

4	**5**	7
9	8	2
8	9	6
23	**4**	5

So the smallest digit that cane be changed is 5 in order to bring the solution as 2345.

14 Ans(c)



Therefore $X=\sqrt{(12^2+5^2)}$
$X= \sqrt{169}$
X=13 Km

15 Ans (b)
End of 1994 Rohit = Grandmother/4
R_B+G_B = 3843
1999 Rohit age = ?

[1994-(G/4)]+[1994-G] = 3843
5G/4 = 145
G = 29*4
Then Rohit age in 1994 = 29 years
Seven years later in 2001, Rohit's age was 36 years.

16 Ans(b)
Going by the options, 27 = 3(27) – 9
27+45=72(number reversed).

17 Ans(a)
It is in the format as
$a^3+3a^2b+3ab^2+b^3$
i.e., $(3^{16})^3+ 3.3^{32}.3^n+ 3.3^{16}.3^{2n}+3^{3n}=3^{48} + 3^{1996} + 3^{3943}+3^{3n}$
From this we can say that $3^{33+n}=3^{1996}$
33+n=1996
n=1963.

18 Ans(d)
Rasagulla should be eaten on the day preceding to the day on which uh eat milk peda. Friday is the last day and hence cannot be preceded by any other day.

19 Ans(b)
He travels at 24km/hr for 4min 30 sec.
Converting into m/s his speed is 20/3m/s.
He travels so for 4*60+30sec=270sec.
So he travels (20/3)*270 m = 1800m = 2(l+b) = l+b = 900
We know that the length and breadth are in the ratio 5:7
So 5x+ 7x= 900
X=75
Hence 5x=375 and 7x= 525.

20 Ans(b)
Only the Second option is feasible as
5 → 1st
4 → 2nd
3 → 4th
2 → 3rd
1 →
Here the only one in the stack left out is 1, which is taken out in the last place.

21 Ans(c)
Let the total work be 60 .
That means Daniel will do 5 parts , Hillary 4 parts and oy 6 parts.
Total work they do together in an hour is 15 parts. So from 9am to 11am in two hours they complete 30 parts.
Next Daniel leaves Hillary+Roy do 4+6=10 parts/hour.
Hence next 30 parts will be completed in 3 hours.
Hence the work will be over by 2pm.

22 Ans(c)
The minimum values substituted here are 4+5+6+7=8=30 ,
Hence G=0.

23 Ans(a)
We know that x^2*y*z<0
X^2 will always be positive, hence it is obvious that y*z has to be negative to make the

equation correct.
Thus y*z<0 is correct.

24 Ans(a)
The distances travelled by Shankar and Ravi.

Time	Ravi	Shankar
1.00	8	0
2.00	16	6
3.00	24	18
4.00	32	30
5.00	40	42
6.00	48	54

So at 6pm the distance between them is 6km.

25 Ans(b)
The tens and units place of the dividend are 2 and 8
The units place of divisor is 4.
28/4=7
The number should end with 7.

26 Ans (c)
The pair E and G cant occupy it as G will have to be at the end since he is leaving early.

27 Ans (b)
The least number will be 6.
If it is 5 then The arrangements would be
ABCDE
ABCDF
ABCEF,but in the last arrangement it cant be possible to have 4 people common as it has to be ABC D/E/F asnd some other person X.
So with 6 the arrangement would do better.

28 Ans (b)
Let the total work be 72 parts.
So A does 3 parts.
M does 2parts and (A+M+H) do 9 parts Hence H alone does 4 parts.
If he did the work alone he could have completed it in 72/4=18 days.

29 Ans(b)
IF he plucks 7, increase is of 30 flowers.
If he plucks 6. Increase is of 30 flowers.
If again he plucks 24, decrease of 15 flowers.
And in case of 23, decrease of 5 flowers.
And option B definitely satisfies the criteria.

30 Ans(a)
For 21^5 unit digit will be 1
For 34^7 it will be 4,
For 46^8, it will be 6
And for 77^8, it will be 1
So the total unit digit will be what 1*4*6*1 has, ie 4.

PART-C

01 If 28a + 30b+ 31c=365, find the value of a+b+c, if a, b, and c are natural numbers.
(a) 4 **(b) 12** (c) 10 (d) Cannot be determined

02 P is thirty percentage of Q, Q is twenty percentage of N. M is fifty percentage of N, Find the value of P/N.
(a) 0.03 (b) 33.33 (c) 16.67 **(d) None of these P/N = .06**

03 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?
(a) 100 **(b) 350** (c) 200 (d) 700

04 A takes 2 hours to make a publication. B takes 10 hours to make a publication. Find the time taken by them to make two publications, working independently.
(a) 12 hours (b) 11 hours (c) 22 hours **(d) None of these**

05 There are 60 slots around a circle, numbered 1 to 60. A man starts from the first slot and jumps to the 5^{th} slot. From there he jumps to the 9^{th} slot and so on. In which slot will he land in his 2200^{th} jump?
(a) 45 **(b) 41** (c) 1 (d) 5

06 If all the numbers between 11 and 100 are written on a piece of paper. How many times will the number 4 be used?
(a) 20 **(b) 19** (c) 9 (d) None of these

07 In a school , sixty percent of the students are girls and thirty five percent of the girls are poor. If a student is randomly selected, what is the probability of selecting a poor girl student?
(a) 60% (b) 35% **(c) 21%** (d) None of these

08 Two beakers are on the table. The capacity of the first beaker is x litres and that of the second beaker is 2x litres. Two thirds of the first beaker and one fourth of the second beaker is filled with wine. The remaining space is filled with water. If the content in both the beakers are mixed in a large beaker of volume 3x litres, what is the proportion of wine in the beaker?
(a) 11/12 (b) 11/36 **(c) 7/6** (d) 7/18

09 Three non negative numbers, X, Y and Z are such that the mean is M and the median is 5. If M is 10 more than the smallest number and 15 less than the biggest number, find the value of X+Y+Z.
(a) 15 (b) 5 (c) 20 **(d) 30**

10 From 5 men and 11 women, in how many ways can a panel of 11 be formed such that the number of men is not more than 3?
(a) 1650 (b) 2255 (c) 5522 **(d)None of these**

2266

11 After 6 years Raju's father will be twice that of his age and two years ago, his mothers age was twice of that of Raju's age. What is the sum of Raju's parent's age?
(a) 4 less than four times Raju's age **(c) 4 more than four times Raju's age**
(b) 2 more than four times Raju's age (d) 2 less than four times Raju's age

12 John told Mark that if Mark gives $1/3^{rd}$ of his money to him, he will have Rs 75. Mark told John

that if john gives ½ his money to him, he will have Rs 75. How much money did they have totally?

(a) 105 (b)125 (c) 150 (d) 75

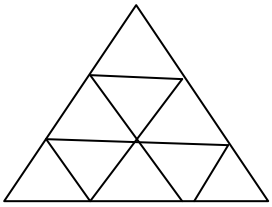
13 The cost price of a cow and a horse is Rs 3 lakhs. The cow is sold at 20% profit and the horse is sold at 10% loss. Overall gain is Rs 4200. What is the cost price of the cow?

(a) 1,86,000 **(b) 1,14,000** (c) 86,000 (d) None of these

14 A starts riding his bike at 10am with a speed of 20kmph and B also starts at 10am with a speed of 40kmph from the same point in the same direction. A turns south at 12 o'clock and B turns north at 11 am. What will be the distance between A and B at 2 pm?

(a) 250km (b) 120km **(c) 160km** (d)145.6km

15 Find the number of triangles in the given figure.



(a) 10 (b) 9 (c) 27 **(d) 13**

16 Initial price of the scooter is 40000 and it reduces to $3/4^{th}$ of the previous price every year. What will be the price after 3 years?

(a) 22500 (b) 30000 **(c) 16875** (d) 12656

17 There is a pool of radius X and there is a pathway around the pool with a width of 4 feet. Find the radius of the pool if the path area/ pool area=11/25.

(a) 12 (b) 5 (c) 25 **(d) Data Insufficient**

18 A workman starts his work on Monday works for 8 days and takes every 9^{th} day as his holiday. His 12^{th} holiday will fall on?

(a) Monday **(b) Wednesday** (c) Thursday (d) Tuesday

19 When all possible six-letter arrangements of the letters of the word "MASTER" are sorted in alphabetical order, what will be the 49^{th} word?

(a)AREMST (b) ARMEST (c) AMERST (d) ARMSET

20 The price of a book in four different shops and the successive discounts offered for the books is given below. Select the option in which the price of the book is the least.

(a) 10%, 5%, and 5% discount on Rs.195 (b)25%, discount on Rs.200

(c) 12.5% and 12.5% discounts on Rs.205 **(d) 10%, and 15% discounts on a marked price of Rs.190**

21 There are 3 trucks A,B and C. A loads at the rate of 10kg/min and B loads at the rate of 13 1/3 kg/min. C unloads at the rate of 5kg/min. If all the 3 trucks are acting simultaneously, find the time taken to load 2.4 tonnes.

(a) 120.81min **(b) 130.91min** (c) 240 min (d) 100min

22 30L + 3Q = 1167
30L + 6Q = 1284 Find L ?
(a) 30 **(b) 35** (c) 40 (d) 45

23 There are 6 people from different countries namely Germany, Italy, Britain, Spain, Poland and France. They are sitting around a table. Polish sits next to British. German sits next to Italian, or British or both. Italian does not sit next to the Frenchman. Spanish sits immediately after British. Who sits on the either side of the German?
(a) British and Italian (c) British and French
(b) Polish and British **(d) Italian and French**

24 Three dice are rolled. What is the probability that you will get the sum of the numbers as 10?
(a) 27/216 (b) 25/216 (c) 10/216 (d) 1/11

25 A number is divided by 5,2 and 3 successively in order to get remainders of 0,1, and 2 respectively. What will be the remainders when the same number is divided by 2,3 and 5 respectively?
(a) 1,0,4 (b) 1,2,3 (c) 1,2,0 (d) 1,0,2

26 If the given sheet is folded to form a cube, which side will be opposite to X?

		D	E
	B	C	
X	A		

(a) B **(b) C** (c) D (d) E

27 In the given figure, if the sum of the values along each side is equal, find the possible values of a,b,c,d,e and f.

32	a	b	10
e			F
15	c	d	8

(a) 9,7,20,16,6,38 (b) 4,9,10,13,16,38 (c) 4,7,20,13,6,38 **(d) None of these**

28 What is the value of $((x^{2012} + x^{2011} + \ldots + x+1)^2 - x^{2012})/(x^{2011} + x^{2010} \ldots\ldots + x + 1)$
(a) $x^{2011} + x^{2010} \ldots + x + 1$ **(c) $x^{2013} + x^{2012} \ldots\ldots + x + 1$**
(b) $x^{2012} + x^{2011} \ldots + x + 1$ (d) $x^{2010} + x^{2009} \ldots\ldots + x + 1$

29 A can complete a piece of work in 8 hours, B can complete in 10 hours and C in 12 hours. If A,B, C start the work together but A laves after 2 hours. Find the time taken by B and C to complete the remaining work.
(a) 2 (1/11) hours (b) 4 (1/11) hours (c) 2 (6/11) hours (d) 2 hours

30 A, B, C and D are seated in four adjacent seats. They make the following statements.
A : I am not in the third position.
B : I am in the second or third position.
C : I am in the first position.
D : I am in the fourth position.

If three of them are speaking the truth and one of them is lying, who is in the fourth position?
(a) B (b) C **(c) D** (d) A

TATCS3 – Detailed Solution

01 Ans (b)

Assuming value of a as ”1”, 28*1=8 in the unit place.
Next 30 * any number will give 0 at the unit place.
The resultant value has 5 at its unit place .
So, we know that 8 + 0 + x =5 at units place. The only possible digit is 7
So 31*7 will give you 7 at the unit place .
Thus the numbers are 1,4,7, a+b+c=12.

02 Ans (d)

P = .3Q
Q = .2N
M = .5N
P = (.3*.2)N
P/N = .06

03 Ans (b)

Since the wages paid are equal, total work done by both the groups should also be equal.
Equating the total work done in terms of men days and women days.
24m+16w=12m+37w - (1)
$\Rightarrow$ 12m=21w (or) 4m=7w
$\therefore$ Substituting w=4m/7 in eqn 1 we get
24m + 16w = 24w + 16(4m/7)
= (168m+64m)/7
= The total amount paid for 232m/7 = 11600
$\therefore$ For each men = (11600*7)/232=350.

04 Ans (d)

A can complete a publication in 2 hours and B in 10 hours and so the maximum time taken by both working independently to complete 2 publications will be 10 hours.
So option (d) none of these is the answer.

05 Ans (b)

Following each jump from the 1st slot, we obtain the following series
1,5,9,13,17,21,25,29,33,37,41,45,49,53,57
For every 15 jumps the same series is followed hence R(2200/15)=10
Hence after 10 jumps from the 1st slot he will land at 41.

06 Ans(b)

14,24,34,44,54,64,74,84,94,40,41,42,43,44,45,46,47,48,49
Therefor there are 19 times the number 4 can be used between 11-100.

07 Ans (c)

Let the number of the students be X.
Therefore poor girl students = .35*.65*X
The probability of selecting poor girl is given by

$$= \frac{(.35*.65)*X}{(100/100)*X}$$

=21%

08 Ans (c)

I		II	
X Litres		2X Litres	
Wine	Water	Wine	Water
(2/3)*X	(1/3)*X	(1/4)*2X	(3/4)*2X

Therefore wine in both the beaker = (2/3)*X+ (2/4)*X = (7/6)*X

09 Ans (d)

(X+Y+Z)3 = M (or) X +Y +Z +3M
Let Y be the middle value, then Y=5
X+Z=3M-5
X=M-10;
Z=M+15;
$\therefore$ M-10+M+15=3M-5
M=10
$\Rightarrow$X=0; Y=5; Z=25

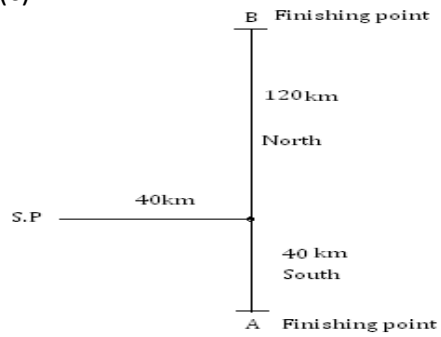
10 Ans(d)
= $(5C_3*11C_8)+(5C_2*11C_9)+(5C_1*11C_{10})+(11C_{11})$ = 2266

11 Ans (c)
F+6=2(R+6)
$\Rightarrow$F= 2R+6
M-2=2(R-2)
$\Rightarrow$M= 2R-2
Therefore the sum of Raju's Parent's age is
F+M=2R+6+2R-2
F+M=4R+4
I.e., 4 more than four rimes Raju's age

12 Ans (a)
J + (1/3)M = 75 $\rightarrow$eqn 1
M + (1/2)J = 75 $\rightarrow$eqn 2
On equating 1 and 2 we get
M=45 and J=60

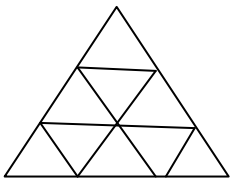
13 Ans (d)
C+H=300000 $\rightarrow$eqn 1
1.20C+.90H=304200 $\rightarrow$eqn 2
On equating 1 and 2 we get
C= Rs. 240000 and H= Rs.6000

14 Ans (c)



Therefore the distance between A and B is 160 Km

15 Ans (d)



We have totally 13 triangles.

16 Ans (c)

Therefore price of scooter in 3 years = 40000*(3/4)*(3/4)*(3/4)
=16875

17 Ans (d)
The radius X is a not given with any unit and also the shape of the pool is also not mentioned. So here the data is insufficient.

18 Ans (c)
1st holiday is Tuesday
2nd holiday is Thursday
3rd holiday is Saturday
4th holiday is Monday
5th holiday is Wednesday
6th holiday is Friday
7th holiday is Sunday
8th holiday is Tuesday
9th holiday is Thursday

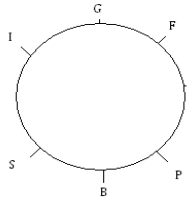
19 Ans (a)
First by arranging the given word in alphabetical order we get
A,E,M,R,S,T
There are 24 words starts with AE
There are 24 words starts with AM
So the 49th word will be AREMST
So the answer is option(a).

20 Ans (d)
On going through the options
Option (a) gives 18.775% discount on Rs. 195
i.e.,Price =158.388
Option (b) gives 25% discount on 200
i.e., Price= 150
Option (c) gives 23.4375% discount on Rs. 205
i.e.,Price =156.953125
Option (d) gives 23.5% discount on 190
i.e., Price= 145.35
Therefore only in Option (d) the Price of the book is low.

21 Ans (b)
Going by the options and checking logically which order is possible, we can see that all given orders are possible except the order in option (b).

22 Ans (b)
On equating the given 2 equations
We get L=35

23 Ans (a)



So this is the possible arrangement so the answer is option (d)

24 Ans (a)

Three dice that shows the sum as 10 are as follows
(1,3,6), (1,4,5), (1,5,4), (1,6,3)
(2,2,6), (2,3,5), (2,4,4), (2,5,3), (2,6,2)
(3,1,6), (3,2,5), (3,3,4), (3,4,3), (3,5,2), (3,6,1)
(4,1,5), (4,2,4), (4,3,3), (4,4,2), (4,5,1)
(5,1,4), (5,2,3), (5,3,2), (5,4,1)
(6,1,3), (6,2,2), (6,3,1)
Therefore the probability of getting the sum of the numbers as 10 is given by 27/216

25 Ans (a)
Let the number be X and the quotient when X is divided by 5 is Q1 and leaves the remainder '0'
And quotient when Q1 is divided by 2 is Q2 and leaves the remainder '1'
And quotient when Q2 is divided by 3 is Q3 and leaves the remainder '2'
Assuming any value of Q3 and solving in reverse order we will get the solution.
Let us assume here the value of Q3 as '0'
Therefore Q2= 2 since the remainder is 2
And Q1= 5 since the remainder is 1
Then the value of X is 25.
When 25 is successively divided by 2,3,5 leaves the remainders 1,0,4 with the quotients 12,4,0.

26 Ans (b)
When we fold the sheet to form a cube we can form only a 2 cube and so the alphabet opposite to X will be C.

27 Ans (d)
Option a,b,c doesn't satisfy the condition given in the question and hence none of these is the answer.

28 Ans(c)
Substituting 1 for x, the numerator is $2013^2 - 1^2$
This can be written in the form (2013 + 1) (2013 -1) = (2014)(2012)
Therefore (2014)(2012)/(2012)=2014
i.e., $x^{2013} + x^{2012}$ …..+ x +1

29 Ans (a)
Total unit of the work is 120units
In 1 hour A can complete 15units
In 1 hour B can complete 12units
In 1 hour C can complete 10units
In 1 hour A+B+C can complete 37units
Therefore in 2 hours A+B+C would have completed 74units
Remaining work to be completed is 12-74=46
In 1 hour B+C can complete 22units
Therefore time taken to complete the remaining job =46/22=23/11=2(1/11)

30 Ans (c)
So on going through the options D is the only person who occupies the fourth position.

PART-D

01 Sum of the CP's of two cars is Rs.150,000. 1st car is sold at a profit o f 20% and the second car at the loss of 20%. However, their S.P's are same. What is the cost price of the 1st car?

(a) 60,000 (b) 64,000 (c) 72,000 (d) 75,000

02 Four friends namely Rahul, Ravi, Rajesh and Rohan contested for a dairy milk chocolate. To decide which friend will get the chocolate they decided to throw two dice. Every friend was asked to choose a number and if the sum of the numbers on two dice equals that number, the concerned person will get the chocolate. Rahul's choice was 7, Ravi's choice was 9, Rajesh's choice was 10 and Rohan's choice was 11. Who has the maximum probability of winning the amount?

(a) Rahul (b) Ravi (c) Rajesh (d) Rohan

03 J, K, L, M and N collected stamps. They collected a total of 100 stamps. None of them collected less than 10.
No two among them collected the same number.
(i) 3 collected the same number as K and M together.
(ii) L collected 3 more than the cube of an integer
(iii) The no.collected by J was the cube of an integer.
(iv) Total no.collected by K was either the square or cube of an integer.
The number of stamps collected by N was:

(a) 10 (b) 11 **(c) 12** (d) 13

04 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?

(a) 30 (b) 40 **(c) 50** (d) 60

05 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?

(a) 10 (b) 11 **(c) 12** (d) 15

06 A closed cylindrical tank contains 36 pie cubic feet of water and it's 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?

(a) 2 (b) 2.5 **(c) 3** (d) 4.5

07 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?

(a) 10 **(b) 15** (c) 20 (d) 25

08 What is the remainder when $6^{17} + 117^6$ is divided by 7?

(a) 1 (b) 6 **(c) 0** (d) 3

09 Tim and Elan are 90 km from each other. They start to move towards each other simultaneously tim at

speed 10kmph and elan 5kmph. 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

10 10) 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

11 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) 0 **(b) 48** (c) 5 (d) None of these

12 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%

13 $x^2 < 1/100$, 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) $-1/10 < x$

14 A father purchases dress for his three daughters. 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) 1/9 (d) none of these

15 Messrs. Siva Constructions, leading agents in Chennai prepared models of their lands in the shape of a rectangle and triangle. They made models having same area. The length and width of rectangle model are 24 inches and 8 inches respectively. The base of the triangle model is 16 inches. What is the altitude of triangle model from the base to the top?

(a) 24 inches (b) 8 inches (c) 20 inches (d) 32 inches

16 From a deck of 52 cards, 3 cards drawn randomly. What is the probability of getting 1 spade, 1 red queen and 1 black king?

(a) 0.235 (b) 0.0235 **(c) 0.00235** (d) 0.0346

17 In a stream running at 2 kmph, a motorboat goes 6 km upstream and back again to the starting point in 33 minutes. Find the speed of the motorboat in still water?

(a) 20 km/h (**b) 22 km/h** (c) 24 km/h (d) 27 km/h

18 The milk and water in two vessels A and B are in the ratio 4 : 3 and 2: 3 respectively. In what ratio, the

liquids in both the vessels are mixed to obtain a new mixture in vessel C containing half milk and half water?

(a) 5:7 **(b) 7:5** (c) 1:1 (d) none of these

19 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 may 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

20 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**

21 Mr and Mrs smith had invited 9 of their friend and their spouses for party at wiki beachresort.the stand for group photograph if Mr smith never stand next to Mrs smith then how many way group arrange in row

(a) 20! (b) 19! +18! **(c) 18*19!** (d) 2*19!

22 How many vehicle registration plate numbers can be formed with digits 1,2,3,4,5 (no digits being repeated)if it is given that registration number can have 1 to 5 digits ?

(a) 205 (b) 100 **(c) 325** (d) 105

23 A merchant buys 20kg of wheat at Rs.30.00 per kg and 40kg wheat at Rs.25.00 per kg. He mixes them and sell one third of the mixture at Rs.26.00 per kg. The price at which the merchant should sell the remaining mixture so that he may earn a profit of 25% on his whole outlay is

(a) 37 (b) 38 (c) 39 (d) 40

24 A completes a piece of work in 3/4 of the time in B does, B takes 4/5 of the time in C does. They got a profit of Rs. 40000 how much B gets?

(a) Rs.12765 (b) Rs.12000 (c) Rs.13400 (d) None of these

25 The diagonal of a square is twice the side of equilateral triangle the ratio of Area of the Triangle to the Area of Square is?

(a) √3:8 (b) √2:5 (c) √3:6 (d) √2:4

26 My name is PREET. But my son accidentally types the by interchanging a pair of letters in my name. What is the probability that despite this interchange, the name remains unchanged?

(a) 10% (b) 12.5% (c) 20% (d) 25%

27 In month of 31 days, there are exactly 4 Thursdays and 4 Sundays. What is the day of the week on the first of that month?

(a) Wednesday (b) Friday (c) Saturday **(d) Monday**

28 The length and breadth of a field is 300x400ft, if there are 3 ants on average per square inch of field, find the number of ants in field.

(a) 31840000 (b) 41840000 **(c) 51840000** (d) 61840000

29 1!+2!+3!...+50! when divided by 5!, the remainder is?

(a) 0 (b) 11 (c) 22 **(d) 33**

30 If there are six periods in each working day of a school. In how many ways can one set up the time table for a day such that each subject is allowed at least one period?

(a) 240 (b) 360 (c) 1200 **(d) 3600**

TATCS5 – Detailed Solutions

01 Ans:[a]

Let the C.P of the 1st

car be x and 2nd

be y.

x + y = 150,000

1.2 x = 0.8 y, or y = 1.5x. Substituting,

2.5x = 150,000, or x = 60,000

02 Ans:[a]

Number 7 occurs more often – (1, 6), (2, 5), (3, 4), (4, 2) (5, 2), (6, 1)…6 times. Whereas number 9 occurs 4 times (3, 6) (4, 5) (5, 4), (6, 3), number 10 occurs 3 times (4, 6), (5, 5), (6, 4) and number 11 occurs 2 times (5, 6), (6, 5). So the most probable friend to win the chocolate is Rahul

03 Ans:[c]

J+L+N=K+M

L can take only one value which is 11 (2^3+3) (30 is not possible because only there is only 20 for the remaining two and one of them will have less than 10 and that is not possible)

J also can take only one value which is 27.

J + L + N = 50.

Therefore, N = 50 – L – J = 50 – 11 – 27 = 12.

04 Ans:[c]

n(a b) =n(a)+n(b)-n(a b)

= 0.75+0.55-0.8

= 0.5 = 50%

Alternatively, this problem can be solved using the Venn diagram method.

05 Ans:[c]

Let the net price excluding the gratuity of service = x pounds

Then, total price including 15% gratuity of service = x + 0.15 x = 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

06 Ans:[c]

When the tank is placed on its side, it would still be half filled and the height of the water would equal half the diameter, which is radius.

* r2 * 4 = 36 , therefore r = 3.

07 Ans:[b]

30/1 = s/t Current student to teacher ratio

s+50/t+5 = 25/1 Future student to teacher ratio

Solving the first equation first equation for s gives s = 30t.

Substitute this value of s into the second equation, and solve for t.

s+50/t+5 = 25/1

30t + 50 = 25t + 125

5t = 75, t = 15

08 Ans:[c]

Applying Fermat's little theorem,

617

/7 rem of 66

/7 * rem of 66

/7 * rem of 62

/7 * rem of 62

/7 * rem of 6/7

= 1 * 1 * 1 * 1 * 6 = remainder is 6.

1176

/7 remainder is 1 (again same Fermat's theorem)

Adding both remainders and dividing by 7, leads to a remainder of zero.

09 Ans:[b]

Tim's speed is always going to be twice that of Elan. So the distances traveled will be ratio 2:1. Therefore,

distance covered by Tim is 60 km.

10 Ans:[b]

v = 2 m/min

Initially, x = v * t

When the speed increases by 1 km/hr,

x = (2+1) * (t – 2/3)

The information in both statements together is sufficient to find the total distance passed by turtle.

11 Ans:[b]

If P(0) is 48, then P(5) too has to be 48, as x has roots at 1, 2, 3 and 4.

12 Ans:[c]

If the increase is 10% and the decrease is 10%, then the final price will go down by 1%. One can apply the

formula for successive increase/decrease here.

13 Ans:[a]

The first thing is x is a negative number. And to satisfy the condition x

2

< 1/100, x should lie in the range

–1/10 < x < 0.

14 Ans:[b]

At least one of them to choose correct dresses: A B C, A C B, C B A, B A C

For none of them to choose correct dresses: B C A, C A B

Probability is 2/6 = 1/3

15 Ans:[a]

If h is the height of triangle model, then 24*8 = 16*h/2 h= 24 inches

16 Ans:[c]

13C1*2C1*2C1/52C3 = 0.00235

17

Ans:[b]

Let the speed of the motorboat in still water be v, then

Solving for v, we get v = 22 km/h.

18 Ans:[b]

Problems like this can be solved using the allegation method,

4/7 2/5

1/2

1/10 1/14

14 : 10

7 : 5

19

Ans:[c]

20 Ans:[d]

Out of 4 boxes 2 can be picked in

4

C2 ways, i.e, 6 ways. Out of these 6 ways, only one will have yellow-

blue combination. All other remaining combinations will have green or red or both. The answer is 5.

21 Ans:[c]

There are 20 people in total and they can be arranged in 20! Ways. Now we have to subtract out the number of ways where Mr and Mrs Smith are together.

They can arrange themselves together in 19 places (1,2) (2,3) (3,4)….(19,20). Since the husband and wife can interchange their places, there are 38 different ways they can be together.

In these 38 different ways, the remaining 18 people can arrange in 18! Ways. So there are 38(18!) ways the Mr and Mrs Smith can be together. We need to subtract out this from 20!

20! – 38(18!) = 20! – 2(19!) = 18*19! ways.

22 Ans:[c]

You can have registration plates of 5,4,3,2 or 1 digits

So, it's 5*4*3*2*1 + 5*4*3*2 + 5*4*3 +5*4 + 5

=120 + 120 + 60 + 20 +5

=> 325

23 Ans:[a]

Total CP = 20 * 30 + 40*25= 1600

SP = 125/100 * 1600= 2000

SP for 20 kg mix = 26*20 =520

Rem SP = 2000-520 = 1480

The SP for 40 kg = 1480/40 = Rs37

TATCS5 – Detailed Solutions

24 Ans:[a]

Assume C takes 20 Days. Now B takes 4/5 (20) = 16 days. A takes 3/4(16) = 12

Now their efficiencies ratio = 1/20 : 1/16 : 1/12 = 12 : 15 : 20

B's share in the profit of Rs.40000 = 15/47 (40000) = Rs.12765

25 Ans:[a]

Ratio = sqrt3*a^2/8a^2....i.e., 3/8.

26 Ans:[a]

Using 5 letters one can form 10 combinations and the only way that the name remains unchanged is when both E’s are getting interchanged. That is one of 10, which is 10%.

27 Ans:[d]

If Thursdays and Sundays occur 4 times, then the days between them – Friday and Saturday – also will occur 4 times. The remaining days Mon, Tue and Wed will occur 5 times. Hence the month starts on Monday.

28 Ans:[c]

1 ft = 12 inch. Therefore, the dimensions are 3600 * 4800 = 17280000 sq. inches.

3 ants per inch means, 17280000*3 = 51840000.

Alternative way: Since we multiply by 3, 51840000 is the only option divisible by 3.

29 Ans:[d]

5! is 120 and all numbers from 5! to 50! are divisible by 5!. We have to check for the first 4 numbers i.e, from 1! to 4!. The addition is 1+2+6+24 = 33. Therefore, the remainder is 33.

30 Ans:[d]

The five subjects can be done in 5! ways. The remaining 1 period can be any of the 5 subjects and it can come in at any of the 6 different periods. So 5 * 6 = 30 ways.

The total ways is 5! * 30 = 3600 ways.

PART-E

01 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**

02 If 3y + x > 2 and x + 2y$\leq$ 3, What can be said about the value of y?

(a) y = -1 **(b) y >-1** (c) y <-1 (d) y = 1

03 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

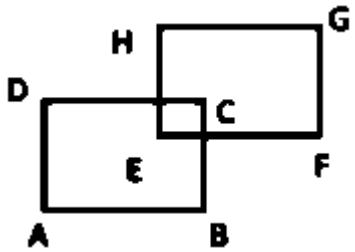
04 All faces of a cube with an eight - meter edge are painted red. If the cube is cut into smaller cubes with a two - meter edge, how many of the two meter cubes have paint on exactly one face?

(a) 24 (b) 36 (c) 60 **(d) 48**

05 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 in the 15th lap,at the same spot where they began to cycle?

(a) 12 **(b) 165** (c) 180 (d) 24

06 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) $1\frac{}{2}$ **(b) $1\frac{7}{8}$** (c) Data Insufficient (d) None of these

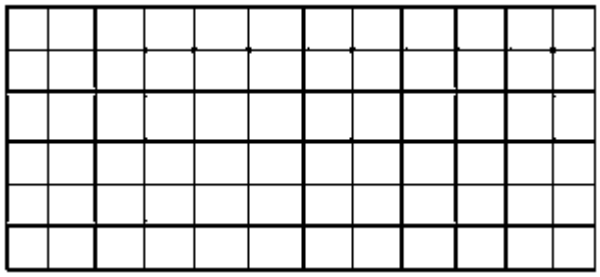
07 There are 10 stepping stones numbered 1 to 10 . A fly jumps from the first stone as follows; Every minute it jumps to the 4th stone from where it started - that is from 1st it would go to 5th and from 5th it would go to 9th and from 9th it would go to 3rd etc. Where would the fly be at the 60th minute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

(a) 1 (b) 5 (c) 4 (d) 9

08 In base 7, a number is written only using the digits 0, 1, 2, ...6. The number 135 in base 7 is 1 x 7^2 + 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

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



(a) 864 (b) 3276 **(c) 1638** (d) None

10 The sequence $\{A_n\}$ is defined by A_1 = 2 and $A_{n+1} = A_n + 2n$ what is the value of A_{100}.

(a) 9902 (b) 9900 (c) 10100 (d) 9904

11 Arun, Akash, Amir and Aswanth go for a picnic. When Arun stands on a weighing machine, Akash also climbs on, and the weight shown was 132 kg. When Akash stands, Amir also climbs on, and the machine shows 130 kg. Similarly the weight of Amir and Aswanth is found as 102 kg and that of Akash and Aswanth is 116 kg. What is Aswanth's weight?

(a) 58kg (b) 78 kg **(c) 44 kg** (d) None

12 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

13 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) Y - Z must be odd (b) Z must be odd **(c) W must be odd** (d) None of these

14 The telephone company wants to add an area code composed of 2 letters to every phone number. In order to do so, the company chose a special sign language containing 124 different signs. If the company used 122 of the signs fully and two remained unused, how many additional area codes can be created if the company uses all 124 signs?

(a) 246 (b) 248 **(c) 492** (d) 15128

15 Q is a prime number bigger than 10. What is the smallest positive number (except 1) that 3Q can be divided by equally?

(a) 3Q (b) Q **(c) Q-3** (d) Q+3

16 The "Racing magic" takes 120 seconds to circle the racing track once. The "Charging bull" makes 40 rounds of the track in an hour. If they left the starting point together, how many minutes will it take for them to meet at the starting point for the second time?

(a) 3 (b) 6 (c) 16 **(d) 12**

17 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) 3/4 (d) 3/8

18 Given the following information, who is youngest?
C is younger than A; A is taller 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

19 In a class there are 60% of girls of which 25% poor. What is the probability that a poor girl is selected is leader?
(a) 15/40 but 15% (b) 1/15 (c) 0 (d) 1/100

20 A completes a work in 20 days B in 60 days C in 45 days. All three persons working together on a project got a profit of Rs.26000 what is the profit of B?
(a) Rs.6000 or 4875 (b) Rs.6400 (c) Rs.3000 (d) Rs. 3600

21 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?
(a) 40 (b) 16 **(c) 4** (d) 20

22 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:
(a) 5 (b) 30 **(c) 68** (d) 70

23 A snail, climbing a 20 feet high wall, climbs up 4 feet on the first day but slides down 2 feet on the second. It climbs 4 feet on the third day and slides down again 2 feet on the fourth day. If this pattern continues, how many days will it take the snail to reach the top of the wall?
(a) 12 (b) 16 **(c) 17** (d) 20

24 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.
(a) B (b) A (c) C (d) None of these

25 The volume of water inside a swimming pool doubles every hour. If the pool is filled to its full capacity with in 8 hrs ,in how many hours was it filled to one quarter of its capacity?
(a) 2 (b) 4 (c) 5 **(d) 6**

26 Find the value of x?

3	7	14
23	36	49
X	83	104

(a) 33 **(b) 66** (c) 18 (d) 54

27 The ratio between the number of sheep and the number of horses at the Stewarfarm is 4 to 7, If each horse is fed 230 ounces of horse food per day and the farm needs a total 12,880 ounces of horse food per day.What is the number of sheep in the farm ?
(a) 18 (b) 28 **(c) 32** (d) 56

28 John traveled 80% of the way from Yellow-town to Green-fields by train at an average speed of 80 miles per hour.The rest of theway John travelled by car at an average speed of v miles per hour.If the average speed for the entire trip was 60 miles per hour ,What is v in miles per hour?

(a) 30 (b) 40 (c) 50 (d) 55

29 In a psychology school the grade of the students is determined by the following method: At the end of the first year the grade equals to twice the age of the student. From then on, the grade is determined by twice the age of the student plus half of his grade from the previous year. If Joey's grade at the end of the first year is 40, what will be his grade at the end of the third year?

(a) 44 (b) 56 (c) 62 **(d) 75**

30 15 Java programmers, working in a constant pace, finish a web page in 3 days. If after one day, 9 programmers how many more days are needed to finish the remaining job ?

(a) 2 (b) 4 **(c) 5** (d) 6

01 Ans (d)

You just remember the following odd $\pm$ odd = even; even $\pm$ even = even; even $\pm$ odd = odd
Also odd x odd = odd; even x even = even; even x odd = even.

02 Ans (b)

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

03 Ans (c)

Given R + B + G = 20; G = 7; and R + G < 13. Substituting G = 7 in the last equation, We get R < 6. So maximum value of R = 5.

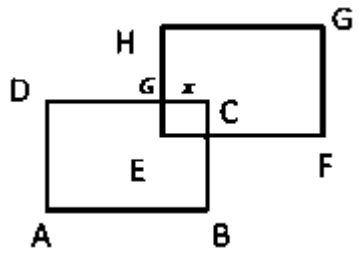
04 Ans (a)

If there are n cubes lie on an edge, then total number of cubes with one side painting is given by $6\times(n-2)^2$. 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

05 Ans (b)

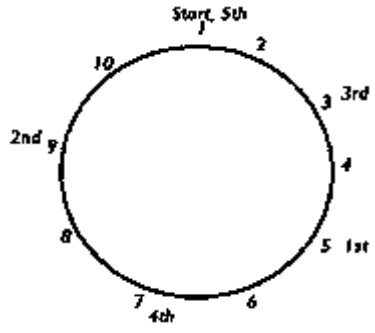
L.C.M for 4 & 6 is 12 so first meet is 12.and 15 th lap is 15 * 12 =165

06 Ans(b)



Let CG = x then using pythogerous theorem $CG^2+GE^2=CE^2$
$\Rightarrow \quad x^2+x^2=(1/2)^2 \Rightarrow 2x^2=1/4 \Rightarrow x^2=1/8$
Total area covered by two bigger squares = ABCD + EFGE - Area of small square = 2 - 1/8 = 15/8

07 Ans (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.

08 Ans (b)

a	b	c	d
1	1	1	
1	2	3	4
6	5	4	3
11	1	1	0

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..

09 Ans (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 $13C_2$ and the number of ways of selecting 2 lines from 7 horizontals is $7C_2$. So total rectangles = $7C_2 \, x \, 13C_2$

10 Ans(a)
We know that $A_1 = 2$ so $A_2 = A_{1+1} = A_1 + 2(1) = 4$
$A_3 = A_{2+1} = A_2 + 2(2) = 8$
$A_4 = A_{3+1} = A_3 + 2(3) = 14$
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 $A_n = an^2 + bn + c$
Now $A_1 = a + b + c = 2$
$A_2 = 4a + 2b + c = 4$
$A_3 = 9a + 3b + c = 8$
Solving above equations we get a = 1, b = - 1 and C = 2
So substituting in $A_n = n^2 + bn + c = n^2 - n + 2$
Substitute 100 in the above equation we get 9902.

11 Ans (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.

12 Ans (b)
R =4+ E
R =2 + I
R+2 = 2(E+2)
Solving all the above equations we get
R= 6,E= 2,I =4 so after 2 yrs it is R=8 and I =6,which is 48.

13 Ans (c)
The first expression is even and the second is odd, the only difference between the expressions is that the first expression has X and the second has W. So, if X is even W must be odd and the correct answer is C.

14 Ans (c)

The phone company already created 122*122 area codes, now it can create 124*124. 124^2 - 122^2 =(124+122)(124-122) = 246*2 = 492 additional codes. The correct answer is C.

15 Ans ()

This is a dummy question which has no Relevant answer options.

3Q is a prime number so it can be divide equally by 3Q, by 1 and by the components 3 and Q. The smallest number therefore is 3. The correct answer is C.

16 Ans (d)

The "Racing magic" takes 120 seconds to circle the racing track once.
The "Charging bull" makes 40 rounds of the track in an hour i.e it takes 90 seconds for one round.
They will meet together once in 360 seconds or 6 mins.So if they leave from the starting point together , their second meet would be at 12 mins.

17 Ans (b)

The probability of selecting three red hats from four red hats with replacement is ${}^4C_3$.

The probability of selecting three blue hats from four blue hats with replacement is ${}^4C_3$.

So the total probability is ${}^4C_3 + {}^4C_3 = 8$

So the probability of selecting the final hat after replacement is 1/8.

18 Ans (b)

Consider the data only about younger and older.
By arrangement ,we get B as the youngest.

19 Ans ()

This is a dummy question which has no Relevant answer options.

Assume total students in the class = 100
Then Girls = 60% (100) = 60
Poor girls = 25% (60) = 15
So probability that a poor girls is selected leader = Poor girls / Total students = 15/100 = 15%

20 Ans (a)

We know that profits must be shared as the ratio of their efficiencies. But efficiencies are inversely proportional to the days. So efficiencies of A : B : C = 1/20 : 1/60 : 1/45 = 9 : 3 : 4
So B share in the total profit = 3 / 13 X 26000 = Rs.6000

21 Ans (c)

4 rolls were not sold.Because half of them were sold by noon.So 20 rolls remain....and then 20% were not sold. so 20% of the 20 rolls is 4 then it is the answer.

22 Ans (c)

R G W B Y is the bead pattern and it repeats.

Bead want to end with White.

So, the 3rd, 8th, 13th, 18th... beads will be W.

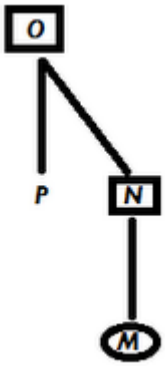
this can be expressed as 5n+3,where n is an integer.(counting no of white bead)

Test each of the answer choices to determine which is multiple of 5 plus a value of 3.Of the options ,only 68=5(13)+3 can be written in the form 5n+3.

So,the answer is 68.

23 Ans (c)
The snail climbs 2 feet in 2 days .i.e 1 feet per day.
So for 16 days snail climbs 16 fts and by 17 th day it climbs 4ft so 17 ft +4 ft =21 ft where it reaches the top of the wall.

24 Ans (a)



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.

25 Ans (d)
Solve this question backwards. If the pool was full on the 8^{th} hour, it was half filled on the 7^{th} and one quarter filled on the 6^{th}. The correct answer is D.

26 Ans (b)
$3=1^2+2$
$7=2^2+3$
Similarly,$7^2+17=66$
Addition of consecutive square numbers with the prime numbers.

27 Ans (c)
The number of horses can be calculated using the total weight of daily horse food divided by the weight each horse is fed daily: 12,880/230 =56. There are 56 horses at the farm. Since the ratio is 4 to7, between the sheep and horses, the number of sheep is: 56/7 =8 ,so 8*4 =32 sheep

28 Ans(a)
Take 100 miles as the total mileage traveled, then calculate the total distance divided by the total time to receive the average speed for the whole trip: $100/\frac{80}{80}+\frac{20}{v}$ = 60. And V = 30 miles per hour.

29 Ans (d)
From the grade 40 at the end of the first year we learn that his age is 20.
At the end of the second year, he will be 21 and his grade will be
(21 x 2 + ½ x 40 = 62).
At the end of the third year, he will be 22 and his grade will be (22 x 2 + ½ x 62 = 75).
The correct answer is D.

30 Ans (c)

The total working days for finishing a web page are (15 x 3) 45. If after one day 9 programmers quit, only 15 working days are done and the rest of the programmers (6) Need to finish (45 – 15) 30 days of work. It will take them 5 more days. The correct answer is C.