$\Rightarrow$ Total work(W) = (r+p+a) (1) units.....(2)

Also given that, if Prakash works for an hour, and then Ashok works for four hours, the job will be completed.

$\Rightarrow$ Total work(W) = p(1) + a(4) units.....(3)

Equating (2) and (3), we get

(r+p+a) (1) = p(1) + a(4)

$\Rightarrow$ r = 3a.....(4)

Substituting this value in equation (1), we get

t = $\frac{3a}{3a-p}$.....(5)

As the Total work is always constant, p $\times$ t = p(1) + a(4)

$\Rightarrow$ t = 1 + 4$\frac{a}{p}$.....(6)

Equating (5) and (6), we get

$$\frac{3a}{3a-p} = 1 + 4\frac{a}{p}$$

Let $\frac{a}{p}$ = 'k'

$$\Rightarrow \frac{3k}{3k-1} = 1 + 4k$$

$$\Rightarrow 3k = 12k^2 + 3k - 4k - 1$$

$$\Rightarrow 12k^2 - 4k - 1 = 0$$

Solving for k, we get k = $\frac{1}{2} or -\frac{1}{6}$ [which is not possible]

Hence k = $\frac{1}{2}$

$\Rightarrow$ p =2a.....(7)

Substituting (4) and (7) in equation (2) we get,

Total work(W) = 6a units.

Time taken by Ashok alone to do the job = Total work/ Efficiency of Ashok

= 6a/a

=6 hours.

Reasoning

Instructions

For the following questions answer them individually

Question 26

Looking at Sweety, Raj says to his friend, "Sweety is the grand-daughter of the elder brother of my father". How is Sweety related to Raj?

A Niece

B Sister

C Aunt

D Sister-in-law

Answer: A

Explanation:

Elder brother of Raj's father = Raj's uncle

Now, Sweety is grand-daughter of Raj's uncle.

=> Sweety is Raj's **niece**.

=> Ans - (A)

Question 27

Seven experts N ,G, M, W, J, K and L give expert advice sessions to the XII class students. These sessions can take place either before the school, during lunch period or after the school. In scheduling these sessions the following conditions are followed.

At least two experts must hold the sessions before school.
At least three experts must hold their sessions after school.
M is not available after school and J is available only after school.
W always takes extra session during lunch.
G will take session before school only if N is also scheduled before school.

All the following statements could be true except:

A The same number of experts take sessions before school as after school

B The same number of experts take sessions before school as during lunch

C Twice as many experts take sessions after the school as before the school

D The same number of experts take sessions after school as during lunch

Answer: D

Explanation:
The minimum number of people taking classes after school is 3.

The minimum number of people taking classes before school is 2.

Hence the maximum number of people taking classes during lunch must be 2.

Hence the number of people taking classes during lunch and after school cannot be equal.

Option D is the correct answer.

Question 28

Six male friends A, B, C, D, E and F are married to R, S, U, V, T and W, not necessarily is same order.
Following facts are known about them:-
• R and S are A's sisters.
• Neither R nor T are wiv es of C.
• W is wife of E and V is wife of B .
• D is not married to R, S or T.
Who is A's wife?

A R

B U

C T

D Cannot be determined

Answer: C

Explanation:
To find : A's wife = ?

It is given that R and S are A's sisters.

Also, W is wife of E and V is wife of B.

Thus, we have : (A,) (B,V) (C,) (D,) (EW)

Also, T is married neither to C nor to D, => T is wife of A.

=> Ans - (C)

Question 29

If southeast becomes east and northwest becomes west and all the other directions are changed in the same direction. Then what will be the direction for north?

A Northwest

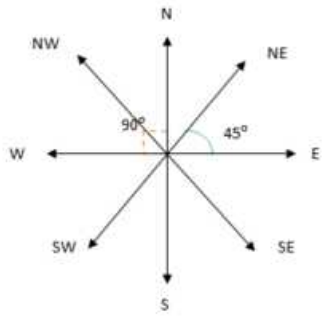
B Southeast

C Southwest

D Northeast

Answer: D

Explanation:



If southeast becomes east and northwest becomes west, thus we have to tilt the direction 45° clockwise. (to the right)

Thus, direction of north will be **northeast.**

=> Ans - (D)

Question 30

Inspector arrested three persons- Kalia, Raza, Shera - on suspicion, in a theft case. It was found the one among these three was the thief. During the interrogation their replies were as follows.

Kalia: I am not the thief. Raza is the thief.
Raza: I am not the thief. Either Kalia or Sh era is the thief.
Shera: I am not the thief. Raza is not the thief.

If exactly one person among them always speaks the truth, another always speaks lies and the third alternates between the truth and lies, then who is the thief?

A Kalia

B Shera

C Raza

D Cannot be determined

Answer: C

Explanation:

Case 1 : If Kalia speaks truth

=> Raza is the thief, which means Raza's first statement is a lie.

Case 1(a) : Raza speaks lie and truth alternatively.

=> Second statement cannot be true.

Case 1(b) : Raza always lies.

=> Raza is a thief, and the other ones are not.

This can only mean Shera speaks truth and lie alternatively, which positively concludes above statements.

∴ **Raza** is the thief.

=> Ans - (C)

Question 31

A, B, C and D are four medical representatives of a company. Each of them must visit exactly two of the eight cities- Delhi, Chennai , Kolkata, Hyderabad, Bangalore, Mumbai, Lucknow and Patna - and each city is visited by only one person. C does not visit Mumbai and Delhi, While D does not visit Kolkata and Hyderabad. B does not visit Lucknow and Patna. Whereas A does not visit Bangalore and Chennai. Patna and Bangalore are visited neither by B nor by C.
If Delhi and Lucknow were visited by A, then which one of the following cities could B visit?

A Delhi

B Bangalore

C Lucknow

D Mumbai

Answer: D

Explanation:
According to the statements,

	Delhi	Chennai	Kolkata	Hyderabad	Bangalore	Mumbai	Lucknow	Patna
A	√	X			X		√	
B					X		X	X
C	X				X	X		X
D			X	X				

If A visited Delhi and Lucknow, then B can only visit two of Chennai, Kolkata, Hyderabad or **Mumbai**.

=> Ans - (D)

Question 32

Among the five numbers W, Y, C, D, M. W is greater than C but less than M, whereas, Y is greater than D but not less than M. Which of the following can be the greatest of the five?

A D

B W

C C

D Y or M

Answer: D

Explanation:
W is greater than C but less than M, : M > W > C

Y is greater than D but not less than M, : Y > D and Y $\geq$ M

Combining above statements, we get : Y $\geq$ M > W > C and Y > D

Thus, either **Y or M** is the greatest.

=> Ans - (D)

Question 33

A tutor has 10 students - A, B, C, D, E, F, G, H, I and J- to form four groups for tutorials. No group can have more than four students. No two groups can have the same number of students. C and G must be in the same group. A and F must be in the same group. I should be alone and is in one group. B and E cannot be in the same roup. F and E must be in different groups.
If A, D, F and J form a group, then the other two groups can be:-

A C, G and B, E, H

B C, H, and B, E, G

C E, H and B, C, G

D None of these

Answer: C

Explanation:
No group can have more than four students. No two groups can have the same number of students.

=> The four groups will have 1,2,3,4 students respectively.

I should be alone and is in one group, => $G_1 = I$

Given : A, D, F and J form a group, => $G_4 = A, D, F, J$

Also, C and G must be in the same group. B and E cannot be in the same group.

=> B belongs with C and G, => $G_3 = B, C, G$

and $G_2 = E, H$

=> Ans - (C)

Question 34

A bookie has to inspect five horses A, B, C, D and E. If he inspects B, he cannot inspect C immediately. If he inspects A, he cannot go to E after that. Which of the following can be the correct order of his inspection?

A A, B, C, D, E

B D, B, C, E, A

C D, C, B, A, E

D D, C, B, E, A

Answer: D

Explanation:
If he inspects B, he cannot inspect C immediately, => C cannot be to the immediate right of B, and thus first two options are eliminated.

If he inspects A, he cannot go to E after that, similarly third option is also not possible.

Thus, proper order : **D,C,B,E,A**

=> Ans - (D)

Question 35

Below given question contains six statements labelled A, B, C, D, E and F followed by four combinations of three statements. Choose the set in which the statements are logically related i.e the third statement can be deduced from the first two statements together.

Read the information carefully and answer the question.

A) All honest persons are good natured.
B) Some good natured persons are not honest.
C) Some honest persons are good natured.
D) All honest person are obese.
E) All obese person are good natured.
F) Some good natured person are hon est.

A ACD

B FAC

C BCF

D DEA

Answer: D

Explanation:
(A) : The two statements (A & C) are contradictory, hence it is invalid.

(B) : This also contain A and C, hence it is also invalid.

(C) : The statements are B and F are again contradictory, hence it is also invalid.

(D) : All honest person are obese, and all obese are good natured, hence all honest persons are good natured.

=> Ans - (D)

Question 36

R1, R2, R3, R4, R5, R6, R7 are seven places on a map. The following places are connected by two-way roads: R1 and R2; R1 and R6; R3 and R6; R3 and R4; R6 and R7; R4 and R5; R2 and R3; R5 and R7. No other road exists. The shortest route (the route with the least number of intermediate places) from R1 to R7 is:-

A R1- R3- R7

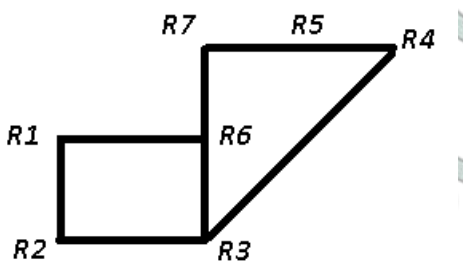
B R1- R5- R7

C R1- R2-R3- R6- R7

D R1- R6- R7

Answer: D

Explanation:
The road map when we connect all the 1-way roads is :



Thus, the shortest route to go from R1 to R7 : **R1-R6-R7**

=> Ans - (D)

Question 37

A, B, C, D and E are five rods. E is longer than A which is longer than C and lighter than C, which is lighter than D. B is shorter than D, and heavier than it. E is longer than D, and heavier than it.
If B is the heaviest of all, then which of the following can be the lightest of all the five rods?

A E only

B A only

C E or A

D D or E

Answer: B

Explanation:
Comparing the rods on the basis of weight

A is lighter than C, which is lighter than D, : D > C > A

B is heavier than D, : B > D

E is heavier than D, : E > D

It is given that B is the heaviest, and combining above statements, we get : **B > E > D > C > A**

Thus, A is the shortest.

=> Ans - (B)

Question 38

A, B and C are three films that are screened by three theatres PVR, DT and Regal in three consecutive slots. No film should be screened in the same slot by any two theaters. If DT screens film B in the first slot and PVR exhibits film C in the third slot, then which of these must be TRUE?

A PVR screens A in the second slot.

B DT exhibits C in the third slot.

C Regal exhibits A in the second slot.

D Regal exhibits C in third slot.

Answer: C

Explanation:
DT screens film B in the first slot and PVR exhibits film C in the third slot

This means only Regal can exhibit the remaining film A in the remaining slot, i.e. second slot.

=> Ans - (C)

Question 39

Five capitals A, B, C, D and E are connected by different modes of transport as follows.
A and B are connected by boat as well as by rail.
D and C are connected by bus and by boat.
B and E are connected only by air.
A and C are connected only by boa t.
E and C are connected by rail and by bus.
Which of the following pair of capitals are connected by any of the routes directly (without going through any other capital)?

A A and E

B E and D

C B and C

D None of the pairs in the choices are directly connected

Answer: D

Question 40

Insert the missing character.

EJO	80	TYE
DHL	84	PTX
CFI	?	LOR

A 63

B 82

C 88

D 45

Answer: A

Explanation:
The middle number is the sum of numbers assigned to their adjacent alphabets as, A=1, B=2, C=3,.....,Z=26

EJO + TYE $\equiv 5 + 10 + 15 + 20 + 25 + 5 = 80$

DHL + PTX $\equiv 4 + 8 + 12 + 16 + 20 + 24 = 84$

Similarly, CFI + LOR $\equiv 3 + 6 + 9 + 12 + 15 + 18 = 63$

=> Ans - (A)

Question 41

P, Q, R, S and T are the five corners of a table with five sides. Chairs A, B, C, D and E are placed along the sides joining the angular corners. Neither P, Q, R, S, T nor A, B, C, D and E are necessarily in that order. Chair A is along the side joining the corner P and R. S is to the immediate right of P, and R is between P and T. Chair B is along the side of Q and T. Chairs D and E are next to B on either side. The corners that join the side where the chair C is placed are:-

A P and R

B S and Q

C S and T

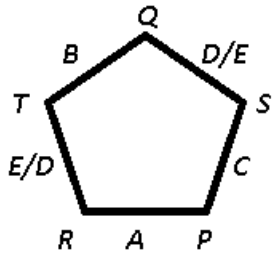
D P and S

Answer: D

Explanation:
Chair A is along the side joining the corner P and R. S is to the immediate right of P, => R is to the left of P.

R is between P and T, => Q is to the immediate right of S.

Chair B is along the side of Q and T. Chairs D and E are next to B on either side. => C is to the immediate right of A.



Thus, the corners that join the side where the chair C is placed are : **P and S.**

=> Ans - (D)

Question 42

Eight persons Jai, Kabir, Lakshaya, Mannu, Neetu, Om, Punita and Surbhi sit in two parallel rows with four seats in each row facing each other. Jai and Kabir are not in the same row. Neetu sits to the immediate left of Lakshaya in the same row but opposite to Om. Punita and Kabir have only two persons between them. Jai and Neetu have only one person between them.
Which of these pairs of persons can sit diagonally opposite each other?

A a) Surbhi and Mannu or Om and Punita

B b) Neetu and Jai or Jai and Lakshaya

C c) Jai and Kabir or Punita and Lakshaya

D d) Either (a) or (b)

Answer: C

Question 43

A, B, C, D, E, F, G, H and I are nine employees in a company, who go to meet two managers Ram and Deepak to talk to them about their Paris project. Each manager has time for only three employees. D has a priority and must be given preference by Ram or Deepak. F and B do not wish to go to the same manager. G goes to Ram only and H goes to Deepak only. C comes back saying that neither of the two managers has time to see him. A does not go with F and I does not go with E. B and I do not go together. If E, F and G go together and are seen by one of the managers, then which manager sees whom, assuming that C has opted out of the talks?

A Deepak - D, I, H or D, B, H

B Deepak - D, E, H or D, B, H

C Ram - A, I, H or N, I, H

D Ram - D, I, H or A, I, H

Answer: A

Question 44

There are three boxes of three different colours- Green, Blue and Red, and 6 toys of which 2 are of Green colour, 2 are of Blue colour and 2 are of Red colour. The toys are packed in the three boxes such that each box has 2 toys of different colours in it and also the colour of the box is different from the colour of the toys packed in it. Now, 10 chocolates are kept in these boxes in such a way that the Green box has the maximum possible chocolates in it whereas, the Red box has the least possible chocolates in it. Each box should have at least one chocolate and no two boxes have the same number of chocolates.
Which of the following is true?

A The Green box, the Blue box and Red box have 6, 3 and 1 chocolate /s in them respectively

B The box which has the toys of Red and Blue colors has 8 chocolates in it.

C The box which has the toys of Blue and Green colors has 3 chocolates in it.

D The box which has the toys of Green and Red colors has 2 chocolates in it.

Answer: D

Explanation:
Given that there are 3 boxes of green blue red colours

According to the given condition,that the box color toy is not present in respective box,

green box has blue and red toys

Blue box has Green and red toys

Red box has Green and blue toy

There are 10 chocolates The least number of chocolates are in red box. Given that atleast one chocolate in red box

and maximum possible number of chocolates in Green box

that is 7 is the maximum number of chocolates because 2 chocolates are kept in blue box.

Therefore, option D is correct that is the box which has green and red toys has 2 chocolates. such box is Blue box which has 2 chocolates in it.

Question 45

A, B, C are three girls who go to buy six items- P, Q, R, S, T and U. Each one of them buys two different items in such a way that if A buys R, then B buys neither P nor S. If B buys Q, then C buys neither U nor T. If A buys R and T, then B buys:-

A P and S

B Q and U

C P and Q

D S and U

Answer: B

Explanation:
Given : If A buys R, then B does not but *P or S.*

Now A buys R and T, then B cannot buy P and S, thus the only two items left for him to buy are **Q and U.**

=> Ans - (B)

Question 46

Below given question has a main statement followed by four statements labeled A, B, C and D. Choose the ordered pair of statements, where the first statement implies the second and the two statements are logically consistent with the main statement.
You cannot catch the bus unless it is morning.
(A) This is morning.
(B) You can catch the bus.
(C) This is not morning.
(D) You cannot catch the bus.

A BD

B AC

C CB

D CD

Answer: D

Explanation:
(A) : The statements are clearly contradictory, hence it is invalid.

(B) : Again the statements, this is morning and this is not morning are invalid.

(C) : The order CB is not logically consistent with the given statement.

(D) : This order is valid, and states this is not morning, hence you cannot catch the bus.

=> Ans - (D)

Question 47

If m + n means m is sister of n,
m - n means m is brother of n,
m x n means m is daughter of n,
m ÷ n means m is mother of n,
How many females can be shown by the given relationship?

$a + b - c + d - e \times f$

A 2

B 3

C 4

D Cannot be determined

Answer: D

Explanation:
a+b: a is the sister of b
b-c: b is the brother of c
c+d: c is the sister of d
d-e : d is the brother of e
e*f: e is the daughter of f.
We can state that a(female), b(male),c(female), d(male), e (female), f(male or female).
Hence D is the correct answer.

Question 48

Three coins are tossed in the air and two of the coins land with tails face upwards. What are the chances on the next toss of the coins that at least two of the coins will land with the tails facing upwards?

A 50%

B 25%

C 75%

D 100%

Answer: A

Explanation:
Three coins are tossed in the air and two of the coins land with tails face upwards.

Assuming that the coins are fair and the first part does not try to indicate that they are not fair. The outcomes that make at least two coins heads are :

HHT, HHH, HTH, THH

Thus, outcome is 4 out of 8 = 50%

=> Ans - (A)

Question 49

A family of three generation comprises of seven members - A, B, C, D, E, F and G. There are two married couples-one each of first and second generation respectively. They travel in three different cars -Audi, BMW and Honda so that no car has more than three members and there is at least one female in each car. C, who is a grand-daughter, does not travel with her grandfather and grandmother. B travels with his father E in BMW. F travels with her grand-daughter D in Audi. A travels with her daughter in Honda. Which of the following is one of the married couples?

A DB

B BC

C EF

D Cannot be determined

Answer: C

Question 50

P, Q, R, S, T and U are six members of a family. R is not the mother of Q but Q is the son of R. P and R are a married couple. T is the brother of R. U is the brother of Q. S is the daughter of P.
T is S 's _____.

A Uncle

B Mother

C Brother

D Father

Answer: A

Explanation:
R is not the mother of Q but Q is the son of R

=> R is father of Q

P and R are a married couple

=> P(f) is wife of R(m), and Q(m) is their son.

U is the brother of Q. S is the daughter of P

=> Q(m), U(m) and S(f) are siblings and children of P(f) and R(m).

Also, T is the brother of R

∴ T is S's **uncle.**

=> Ans - (A)

Verbal

Instructions

Read the passage carefully and answer the question that follows.

Passage I

All of us play but we are not athletes. We are homo ludens (Latin for play) and our playfulness is unproductive. But athletes play for profit and contest for prizes. It is the transformation of our play and games into athletics that leads to medals. What makes Haryana such a fine place for athletics in India? With barely 2% of India's population, people from Haryana won around 40% of the gold medals in the recently concluded CWG 2010.

People in Haryana tend to count the gold medals of the Hyderabadi shuttler, Saina Nehwal and the Delhi wrestler, Sushil Kumar, in their tally. This is because both of them are Jats. People of this dominant caste form more than 20% of Haryana's population and, therefore, in popular perception, Haryana is Jat-land. All sports are oriented towards the Olympic slogan 'higher, faster, and stronger'. But the ones in which Haryana got medals stand for plain force and aggression like wrestling, boxing and shooting. Anthropologists call them contact sports because the opponents have bodily contact in them. Shooting is a combative sport because opponents use a combat weapon. Such sports are a substitute of war or training for it.

Haryana is India's pride in contact and combative games. I can think of t hree reasons for it, viz. historical geography, peasant culture of perseverance and a feeble government policy. Firstly, the province has a volatile history of continuous aggression due to its geographical location on the frontier. Secondly, the people of Haryana have valued physical strength and perseverance due to its peasant culture. Thirdly, the sports policy since 2006 has honed the killer athletic spirit in Haryana. The half-hearted policy does not create achievers but supports the successful ones among them. Punjab was divided on religious lines in 1947. The non-Sikh majority parts of this truncated Punjab were constituted as Haryana in 1966. Like a horseshoe, Haryana encircles Delhi from three sides and the culture of both is similar. At the popular level, people are rough and tough - meaning 'rough by tongue and tough in body'. In the medieval times, Haryana flourished when weak rulers ruled Delhi.

Most of the area remained under Delhi's tutelage but small principalities also dotted the arid landscape of Haryana. Mostly, people of the region joined the Mughals and Marathas in repulsing invaders. But the same locals did not mind plundering Delhi or looting the retreating armies sometimes. The British colonialists expanded from the east. They conquered most of India with the help of soldiers from western UP and Bihar. But, in the late 19th century, the colonial strategists honored ordinary peasant castes by calling them 'martial races' in united Punjab. This was a clever way of taming the aggression in this frontier region.

This smart move was also to recruit rural Punjabis in the colonial army so that they could be used to thwart the southward expansion of Tsarist Russia. There is a family resemblance between military/hunting activities and wrestling, shooting, races, riding or archery. For the military serving population of Haryana, therefore, such sports come easily. Secondly, before the advent of machinery, agriculture was a backbreaking occupation. The size of agricultural income had a direct relation with the quantity of sweat produced during one's toil.

Question 51

Why do people of Haryana tend to count the medals bagged by Saina Nehwal in the tally of their own state, though she is a Hyderabadi?

A Her father played Ranji for Haryana and is quite popular in the state

B Saina's coach whom she attributes her success to, is from Haryana

C Her father was posted for 12 years in Haryana during his professional career as a government officer

D Her caste is the same as a dominant caste from Haryana