

LOGICAL ABILITY TEST I

Number of Questions: 35

Time: 35 min

Directions for questions 1 to 5: Complete the following series.

1. 4, 27, 25, 343, 121, _____.
(A) 169 (B) 2197
(C) 3197 (D) 2457
2. 11, 25, 77, 157, 473, _____.
(A) 978 (B) 1421
(C) 949 (D) 1431
3. 12, 30, 56, 132, 182, _____.
(A) 240 (B) 300
(C) 316 (D) 306
4. 53, 61, 71, 79, 89, _____.
(A) 91 (B) 93
(C) 101 (D) 95
5. 19, 58, 175, 526, _____.
(A) 1578 (B) 1238
(C) 1458 (D) 1579

Directions for questions 6 to 10: Find the missing term.

6. 24 : 576 :: 32 : _____.
(A) 961 (B) 1000
(C) 1225 (D) 1024
7. 4 : 27 :: 25 : _____.
(A) 64 (B) 216
(C) 125 (D) 36
8. BILK : DLPP : HMT0 : _____.
(A) JOWQ (B) JRWS
(C) JPVS (D) JPXT
9. Cricket : Game :: Kangaroo : _____.
(A) Animal (B) Team
(C) Bird (D) Fish
10. Driver : Bus :: _____ : Horse
(A) Saddle (B) Jockey
(C) Horseman (D) Cowboy

Directions for questions 11 to 15: Find the odd man out.

11. (A) 11 (B) 21
(C) 31 (D) 41
12. (A) 3527 (B) 2357
(C) 5723 (D) 7532
13. (A) Brown (B) Green
(C) Yellow (D) Red
14. (A) June (B) May
(C) November (D) September
15. (A) Radish (B) Carrot
(C) Potato (D) Cabbage

Directions for questions 16 to 20: Select the correct alternative from the given choices.

16. If 'CENTURY' is coded as 'AGLVSTW', then what is the code for 'SACHIN'?
(A) QCAFKL (B) UCEFGL
(C) QCAJGP (D) UCAJGP
17. If the code for 'AMBITION' is 'GSHOZOUT', then which of the following is coded as 'VXOTZUAZ'?
(A) PRINTOUT (B) PRINTING
(C) PREDATOR (D) PROFOUND
18. If 'PRESIDENT' is coded as 'KIVHRWVMG', then 'MAHENDAR' is coded as _____.
(A) NZTVMWZI (B) NZTUMWZI
(C) NZSVMWZI (D) NZSUMWZI
19. In a code language, if pen is called pencil, pencil is called eraser, eraser is called paper, paper is called book, book is called table, table is called chair and chair is called desk, then on which of the following do we sit? (according to that language)
(A) Table (B) Paper
(C) Desk (D) Book
20. In a code language, if shirt means shoe, shoe means wallet, wallet means spectacle, spectacle means fan, fan means cabin and cabin means card, then which of the following do we use when we want some air? (according to that language)
(A) Wallets (B) Spectacles
(C) Fans (D) Cabins

Directions for questions 21 to 25: In a certain code language, the codes for sentences given in column I are given in column II. Each word has a unique code. Answer the questions based on these codes.

Column I	Column II
earth gets heat from sun	pep tep nep mep wep
moon gets light from sun	hep kep tep pep nep
sun gave energy to plants	bep pep dep zep lep
human gets food from plants	qep tep nep dep rep
heat and light gave life	hep fep sep wep bep
life needs food, food needs light	fep qep gep qep gep hep

21. What is the code for the word 'food'?
(A) gep (B) fep
(C) qep (D) pep
22. What is the code for the word 'sun'?
(A) pep (B) nep
(C) mep (D) wep
23. Which word is coded as 'lep'?
(A) gave (B) energy
(C) to (D) Cannot be determined

24. what is the code for 'earth sun and moon'?
- (A) mep kep sep pep (B) mep tep nep sep
(C) kep qep sep mep (D) sep pep rep tep
25. What can be the meaning of 'fep gep zep sep hep'?
- (A) life needs energy and light
(B) sun gave light and energy
(C) human needs sun and moon
(D) plants need sun and moon

Directions for questions 26 to 30: These questions are based on the following data.

A, B, C, D, E, F and G are the seven members in a family. Among them, there are two couples and each couple has exactly two children. *B*, who is married, has no siblings and he is not married to *E*, a female, who is also married. *D* is the father of *G*. *F*, the youngest in the family, has a paternal uncle. *A* is unmarried while *F* and *C* are of the same gender. *A* and *G* are of different gender.

26. How is *F* related to *A*?
- (A) Daughter (B) Niece
(C) Nephew (D) Son
27. How is *C* related to *E*?
- (A) Mother (B) Daughter
(C) Daughter-in-law (D) Mother-in-law
28. How is *A* related to *E*?
- (A) Brother-in-law (B) Husband
(C) Brother (D) Father-in-law
29. Which among the following is the complete group of females in the family?
- (A) *E, F* and *G* (B) *A, C, E* and *F*
(C) *C, E, B* and *F* (D) *C, E, F* and *G*
30. How is *C* related to *G*?
- (A) Mother (B) Father
(C) Uncle (D) Grandmother

Directions for questions 31 to 35: These questions are based on the following data.

Five artists - a violinist, a pianist, a singer, a dancer and an actress-have to present their work one after the other, not necessarily in that order. The five artists are Anu, Gowri, Radhika, Sudha and Mythili. Also

- (i) Mythili presents her work after the singer - not necessarily immediately.
(ii) the dancer presents her work immediately after Radhika.
(iii) Gowri, the violinist, plays second.
(iv) Radhika's item is not immediately next to Gowri's.
(v) Anu is not an actress.
(vi) Radhika is the singer.
31. Who is the dancer?
- (A) Mythili (B) Sudha
(C) Anu (D) Radhika
32. If the actress plays first, who plays third?
- (A) Anu (B) Mythili
(C) The dancer (D) Radhika

33. Who is the actress?
- (A) Anu (B) Sudha
(C) Mythili (D) Radhika
34. The order in which the artists present their programmes is
- (A) pianist, violinist, actress, singer, dancer.
(B) actress, violinist, pianist, dancer, singer.
(C) actress, violinist, dancer, pianist, singer.
(D) Cannot be determined.
35. If the actress plays third, when does Sudha play?
- (A) Immediately after Radhika.
(B) Immediately before the singer.
(C) After the dancer.
(D) After Gowri but not immediately.

Directions for questions 36 to 39: These questions are based on the following data.

A man goes to work in his car on all days except Sundays. There are 4 different parking spaces near his office. Out of these, the cellar and the ground floor are the closest to his office while the garage and the parking lot are the farthest. Whenever he comes to office, he parks his car in one of the four parking spaces. It is known that

- (i) the parking lot is open on all days of the week but he can afford it for only 2 days a week.
(ii) the Garage is open on Mondays, Tuesdays and Thursdays but he can use it only once a week.
(iii) he can use the cellar for 2 days of the week but he cannot use it on Tuesdays, Thursdays and Saturdays.
(iv) he can use the ground floor for one day of the week, but not on Mondays, Wednesdays, and Fridays.
(v) as he is always late on Mondays, he likes to park his car close to his office.
36. If he parks his car on the ground floor on Tuesday and in the parking lot on Wednesday, then where should he park it on Friday?
- (A) Cellar (B) Parking lot
(C) Ground floor (D) Garage
37. If he uses the garage on Tuesday and the parking lot on Thursday, where does he park his car on Wednesday?
- (A) Cellar (B) Parking lot
(C) Ground floor (D) Either (A) or (B)
38. If he uses the garage on Tuesday and parking lot on Saturday, then which is the place he uses on Thursday?
- (A) Ground floor or Parking lot
(B) Cellar
(C) Ground floor
(D) Parking lot
39. If he uses the parking lot on Tuesday, then what must he use on Thursday?
- (A) Parking lot
(B) Garage or Ground floor
(C) Ground floor
(D) Garage

Directions for questions 40 to 42: These questions are based on the following information.

Eight persons – Anand, Brijesh, Chandak, Dweepesh, Sayan, Jagat Rupak and Palak – are sitting around a square table such that two persons are sitting along each side. The following information is known about them.

- (i) Jagat, who is sitting to the immediate right of Rupak, is sitting opposite Chandak who is sitting to the immediate right of Brijesh.
 - (ii) Sayan is sitting opposite Dweepesh, who sits along the same side as Brijesh.
 - (iii) Palak is not sitting along the same side as Sayan.
40. Who is sitting along the same side as Chandak?
 (A) Anand (B) Palak
 (C) Sayan (D) Rupak
 41. Who is sitting opposite Rupak?
 (A) Palak (B) Anand
 (C) Brijesh (D) Data inadequate
 42. Who is sitting to the immediate right of Sayan?
 (A) Anand (B) Rupak
 (C) Chandak (D) Data inadequate

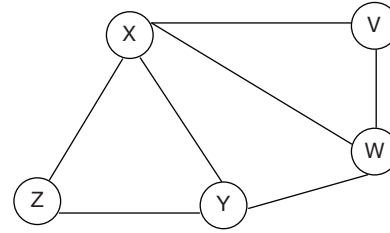
Directions for questions 43 to 45: These questions are based on the following information.

Three people are to be selected from a group of six people – M, N, P, Q, R and S under the following constraints.

- (i) If M is not selected, then N is selected.
 - (ii) If P is not selected, then Q is selected.
 - (iii) If R is not selected, then S is selected.
43. In how many ways can the team be selected?
 (A) 2 (B) 4
 (C) 8 (D) None of these
 44. Who must be there in the team?
 (A) N (B) Q
 (C) S (D) None of these
 45. Which of the following is a possible team?
 (A) P, R, S
 (B) P, Q, S
 (C) M, Q, S
 (D) More than one of the above

Directions for questions 46 and 47: Answer the questions on the basis of the following information.

Shown below is the layout of the major cities of a state and the rail tracks, connecting those cities.



Five trains – T_1, T_2, T_3, T_4 and T_5 run only on two days (Saturday and Sunday), along the following routes, between these cities.

- $T_1 : Y - X - V$
 $T_2 : Z - Y - X - V$
 $T_3 : Z - Y - W - V$
 $T_4 : Z - X - W - V$
 $T_5 : Z - X - W$

Route $Y - W$ cannot be used on Sunday. On any day, no two trains are scheduled to run on the same track connecting two adjacent cities.

Each train should run exactly once in these two days.

46. T_4 can run
 (A) only on Saturday
 (B) only on Sunday
 (C) on either day
 (D) only if $W - Y$ route is used on Sunday.
47. Which of the following is NOT true?
 (A) T_2 and T_4 can be scheduled to run on the same day.
 (B) T_5 cannot be scheduled to run on Sunday.
 (C) T_3 can be scheduled to run on Saturday.
 (D) T_4 and T_1 can be scheduled to run on the same day.

Directions for questions 48 to 50: These questions are based on the data given below.

Six persons – A, B, C, D, E and F – stand in a row. A is to the left of B . C is to the right of D . E and F have two persons standing between them and neither of these two persons is C or A .

48. What is the total number of possible arrangements?
 (A) 2 (B) 4
 (C) 6 (D) 5
49. Who among the following stand at the extreme ends of the row?
 (A) E and F (B) E and C
 (C) A and C (D) F and A
50. If A sits to the immediate left of E , then who sits to the immediate right of B ?
 (A) D
 (B) F
 (C) C
 (D) Cannot be determined

ANSWER KEYS

1. B	2. C	3. D	4. C	5. D	6. D	7. B	8. D	9. A	10. B
11. B	12. D	13. A	14. B	15. D	16. C	17. A	18. C	19. C	20. B
21. C	22. A	23. D	24. A	25. A	26. B	27. D	28. A	29. D	30. D
31. A	32. A	33. B	34. D	35. B	36. A	37. D	38. C	39. D	40. B
41. A	42. B	43. C	44. D	45. C	46. B	47. D	48. B	49. C	50. D

HINTS AND EXPLANATIONS

- The given series can be expressed as follows.
 $2^2, 3^3, 5^2, 7^3, 11^2$ where 2, 3, 5, 7, 11 are prime numbers.
 The next in the series is $13^3 = 2197$ Choice (B)
- The given series can be expressed as follows.
 $(11 \times 2) + 3 = 25$; $(25 \times 3) + 2 = 77$; $(77 \times 2) + 3 = 157$
 $(157 \times 3) + 2 = 473$; $(473 \times 2) + 3 = 949$ Choice (C)
- The given series can be expressed as follows.
 $3^2 + 3, 5^2 + 5, 7^2 + 7, 11^2 + 11, 13^2 + 13$ with 3, 5, 7, 11, 13 being prime numbers. The next number in the series is $17^2 + 17 = 289 + 17 = 306$ Choice (D)
- The given series is the series of alternate prime numbers. The next in the series is 101. Choice (C)
- The given series can be expressed as
 $6 \times 3 + 1 = 19$; $19 \times 3 + 1 = 58$; $58 \times 3 + 1 = 175$
 $175 \times 3 + 1 = 526$; $526 \times 3 + 1 = 1579$ Choice (D)
- $24 : (24)^2 :: 32 : (32)^2$
 Square of the first number is the second number.
 $(32)^2 = 1024$. Choice (D)
- $4 : 27 :: 25 : \underline{\quad}$
 $(2)^2 : (3)^3 :: (5)^2 : (6)^3$
 This is of the form $(n)^2 : (n+1)^3$.
 $(6)^3 = 216$ is the next number. Choice (B)
- BILK : DLPP :: HMT0 :

B	I		L	K
+2	+3		+4	+5
D	L		P	P

 Similarly, H M T O
 +2 +3 +4 +5
 J P X T
 Hence, JPXT is the next term. Choice (D)
- Cricket is a type of game.
 Similarly, kangaroo is type of animal. Choice (A)
- Bus is driven by a driver.
 Similarly, jockey rides a horse. Choice (B)
- All the given numbers except 21 are prime numbers where as 21 is a composite number. Choice (B)
- All the given numbers except 7532 are odd numbers whereas 7532 is an even number. Choice (D)
- All the given colours except brown are the colours in (rainbow) VIBGYOR. Choice (A)
- All the given months except May have 30 days where as in May there are 31 days. Choice (B)
- All except Cabbage, grow under the soil. Choice (D)
- Word: C E N T U R Y
 Logic: $\begin{matrix} \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ -2 & +2 & -2 & +2 & -2 & +2 & -2 \end{matrix}$
 Code: A G L V S T W
 Similarly,
 Word: S A C H I N
 Logic: $\begin{matrix} \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ -2 & +2 & -2 & +2 & -2 & +2 \end{matrix}$
 Code: Q C A J G P
 \therefore QCAJGP is the code for 'SACHIN'. Choice (C)
- Word: A M B I T I O N
 Logic: $\begin{matrix} \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ +6 & +6 & +6 & +6 & +6 & +6 & +6 & +6 \end{matrix}$
 Code: G S H O Z O U T
 Similarly,
 Code: V X O T Z U A Z
 Logic: $\begin{matrix} \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ -6 & -6 & -6 & -6 & -6 & -6 & -6 & -6 \end{matrix}$
 Word: P R I N T O U T
 'PRINTOUT' is coded as 'VXOTZUAZ' Choice (A)
- The code for the letter whose place value is 'n' is the letter whose place value is $(27 - n)$.
 \therefore MAHENDAR is coded as NZSVMWZI. Choice (C)
- We sit on a chair and chair is called desk. Choice (C)
- We use fans when we want air and spectacles means fan. Choice (B)

Solutions for questions 21 to 25:

The given statements and their codes are as follows.

- earth gets heat from sun – pep tep nep mep wep
- moon gets light from sun – hep kep tep pep nep
- sun gave energy to plants – bep pep dep zep lep

- (4) human gets food from plants – qep tep nep dep rep
 (5) heat and light gave life – hep fep sep wep bep
 (6) life needs food, food needs light – fep qep gep qep gep hep

From (6), the words 'food' and 'needs' are repeated and the codes 'qep' and 'gep' are repeated. And now from (4) and (6) as only the word food is repeated the code for 'food' is 'qep' and hence the code for 'needs' is 'gep'.

From (2) and (6) the word 'light' and the code 'hep' are common.

Hence, the code for 'light' is 'hep'. The code for the remaining word in (6), i.e., 'life' is 'fep'.

The words 'gets' and 'from' are common for (1), (2) and (4).

Similarly the codes 'tep' and 'nep' are common. But the codes for 'gets' and 'from' cannot be individually obtained. Except the word 'and' and the code 'sep' in (5), all other words and codes are used in at least one of the other sentences. Hence, the code for 'and' is 'sep'.

By using comparison and elimination procedures we can find the codes for other words.

Word	earth	sun	heat	gets/ from	moon	light	gave	energy/ to	plants	human	and	life	needs	food
Code	mep	pep	wep	nep/tep	kep	hep	bep	zep/lep	dep	rep	sep	fep	gep	qep

21. The code for 'food' is 'qep'. Choice (C)
 22. The code for 'sun' is 'pep'. Choice (A)
 23. Either 'energy' or 'to' is coded as 'lep'. Choice (D)
 24. The code for 'earth sun and moon' is 'mep kep sep pep'. Choice (A)
 25. The meaning of 'fep gep zep sep hep' can be 'life needs energy and light'. Choice (A)

Solutions for questions 26 to 30:

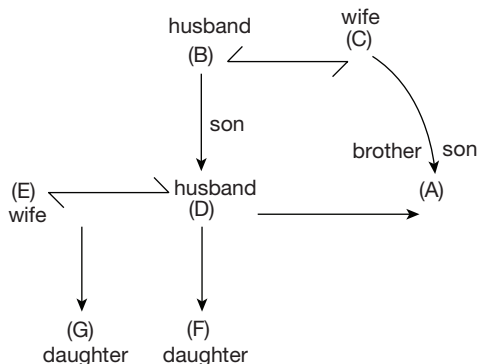
It is given that there are seven members in the family. *A, B, C, D, E, F* and *G*.

There are two couples in the family and each couple has exactly two children.

F, the youngest in the family has a paternal uncle which implies that *F*'s father has a brother. *B*, who is a male has no siblings and he is married. Hence, *B* will come in the first generation and he has two children and a spouse.

E is married and is a female. Hence, *E* is the mother of *F* and she is married to *D*. *G* is the child of *D* and *A* is the brother of *D*. Hence, *C* is the wife of *B*.

F and *C* are of same gender. Hence, *F* is female. *A* and *G* are of different gender. Since *A* is male, *G* is female. The given information can be represented in the diagram as follows:



26. *F* is *A*'s brother's daughter. Hence, *F* is the niece of *A*. Choice (B)

27. *C* is *E*'s husband's mother. Hence, *C* is the mother-in-law of *E*. Choice (D)

28. *A* is *E*'s husband's brother. Hence, *A* is the brother-in-law of *E*. Choice (A)

29. *C, E, F* and *G* are the females. Choice (D)

30. *C* is the grandmother of *G*. Choice (D)

Solutions for questions 31 to 35:

From the given information, we have

Gowri, the violinist, plays second. Radhika is a singer who does not come immediately after Gowri, Radhika cannot be 3rd since the dancer presents her work immediately after Radhika. Radhika cannot be 1st or 5th so, Mythili comes in the 5th place. Radhika has to be 4th and dancer 5th.

So, Anu is a Pianist and Sudha is an actress and they come in the first and the third places – not necessarily in that order. Thus we have

Order	Artist	Profession
1		
2	Gowri	Violinist
3		
4	Radhika	Singer
5	Mythili	Dancer

31. Mythili is the dancer. Choice (A)

32. If actress plays first, then Anu plays third. Choice (A)

33. Sudha is the actress. Choice (B)

34. It is not clear whether the actress or the pianist plays first. Hence, cannot be determined. Choice (D)

35. If the actress (Sudha) plays third, then Sudha plays immediately before the singer. (Radhika) Choice (B)

Solutions for questions 36 to 39:

Let us tabulate the days of the week when different slots are available.

	Cellar	Ground Floor	Garage	Parking lot
Monday		X	✓	
Tuesday	X		✓	
Wednesday		X		
Thursday	X		✓	
Friday		X		
Saturday	X			
Can use for	2 days of the week	Only one day	Only one day	2 days of the week

In addition, on Mondays he should park the car closest to his office, i.e., cellar or ground floor. But since ground floor cannot be used on Mondays, only the cellar can be used on Mondays. Hence, garage cannot be used on Mondays. Now, we can answer the questions.

36. If ground floor is used on Tuesday & parking lot on Wednesday; then we have

	Cellar	Ground Floor	Garage	Parking lot
Monday	✓	X	X	X
Tuesday	X	✓	X	
Wednesday	X	X	X	✓
Thursday	X	X	✓	
Friday		X	X	
Saturday	X	X	X	
Total	2	1	1	2

As can be seen, he has to park his car in the cellar on Friday. Otherwise he won't be able to use the cellar 2 times a week.

Choice (A)

37. On Wednesday, he can park his car in the cellar or in the parking lot.

Choice (D)

	Mon	Tue	Wed	Thur	Fri	Sat
Cellar	✓	X		X		X
Ground Floor	X	X	X	X	X	✓
Garage	X	✓	X	X	X	X
Parking Lot	X	X		✓		

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	Mon	Tue	Wed	Thur	Fri	Sat	Total
Cellar	✓	X		X		X	2
Ground Floor	X	X	X	✓	X	X	1
Garage	X	✓	X	X	X	X	1
Parking Lot	X	X				✓	2

As can be seen, on Thursday only ground floor can be used (because, if he uses the parking lot on Thursday, then no day is available for the ground floor).

Choice (C)

39.

	Mon	Tue	Wed	Thur	Fri	Sat
Cellar	✓	X				
Ground Floor	X	X	X		X	
Garage	X	X	X		X	X
Parking Lot	X	✓				

Now, garage has only Thursday and no other day left. Hence, garage should be used on Thursday.

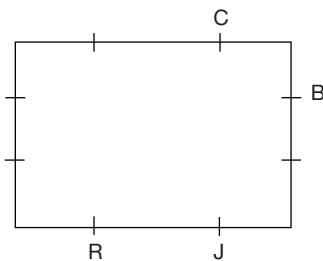
Choice (D)

Solutions for questions 40 to 42:

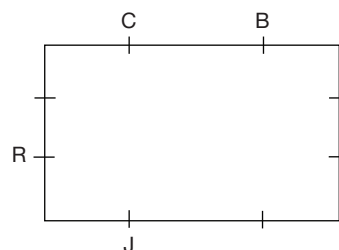
Let us represent the persons by the first letters of each name.

From (i), we get the following possibilities

Case (a),

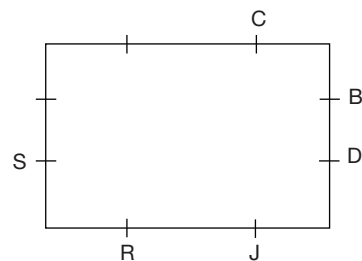


Case (b)

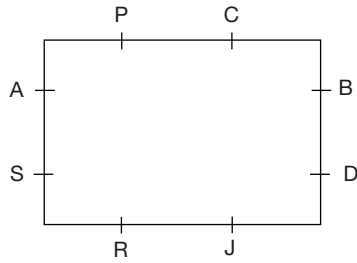


From (ii) as Brijesh and Dweepesh are sitting along the same side, case (b) is not possible.

From (ii) we get



From (iii) the possibility is as follows.



40. Palak is sitting along the same side as Chandak. Choice (B)
41. Palak is sitting opposite Rupak. Choice (A)
42. Rupak is sitting to the immediate right of Sayan. Choice (B)

Solutions for questions 43 to 45:

From (i), M and N can be selected as follows.

→ Only M is selected.

→ Only N is selected.

→ Both M and N are selected.

This implies, at least one between M and N must be selected.

Similarly, from (ii) and (iii)

At least one among P and Q must be selected.

At least one among R and S must be selected.

As only 3 persons are to be selected, both M and N , both P and Q and both R and S cannot be selected.

∴ Exactly one among M and N , exactly one among P and Q and exactly one among R and S must be selected.

⇒ $M/N, P/Q, R/S$

43. The number of possible ways to select the team.
 $= 2 \times 2 \times 2 = 8$ Choice (C)
44. There is no such person who must always be there in the team. Choice (D)
45. M, Q, S is a possible team. Choice (C)

Solutions for questions 46 and 47:

Given that the route $Y - W$ cannot be used on Sunday. Hence T_3 can be scheduled to run on Saturday. As it is given that, on any day, no two trains are scheduled to

run on the same track connecting two adjacent cities, $Z - Y$ and $W - V$ should not run on Saturday ($\because T_3$ is covering the route).

As T_2 is covering $Y - X - V$ on Sunday, T_1 has to be scheduled on Saturday. Similarly, T_5 is to be scheduled on Saturday.

Finally, T_1, T_5, T_3 are to be scheduled on Saturdays and T_2 and T_4 are to be scheduled on Sundays.

46. T_4 should run Sunday. Choice (B)
47. From the choices,
 T_4 and T_1 can be scheduled on two different days. Choice (D)

Solutions for question 48 to 50:

The data is as given below:

- (i) Six persons – A, B, C, D, E and F stand in a row.

Left of

- (ii) $A B$

Right

- (iii) $D C$

- (iv) $\frac{E}{F} \text{ --- } \frac{F}{E}$

$x C/A$ (neither C nor A)

Let us make all the possible arrangements as per the above data.

— $\frac{E/F}{1}$ — $\frac{F/E}{2}$ — $\frac{F/E}{3}$ — $\frac{F/E}{4}$ — $\frac{F/E}{5}$ — $\frac{F/E}{6}$

Positions 2 and 5 would be occupied by E or F . A cannot be at 3 and 4 (condition (iv)) and also A cannot be at 6 (condition (ii)). Hence, A must be at position 1. Similarly, C must be at position 6. Hence, we will get the following arrangement:

$\underline{A} \quad \underline{E/F} \quad \underline{B/D} \quad \underline{D/B} \quad \underline{F/E} \quad \underline{C}$

Therefore, the total number of arrangements are 4.

48. Total possible arrangements are four. Choice (B)
49. A and C stand at extreme ends. Choice (C)
50. The arrangement will be as shown below:
 $\underline{A} \quad \underline{E} \quad \underline{B/D} \quad \underline{D/B} \quad \underline{F} \quad \underline{C}$
 Hence, the person sitting to the immediate right of B cannot be determined. Choice (D)