# MY INSPIRATION: BELIEVE IN YOURSELF!

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#### PREFACE

Dear Students,

I am pleased to present before you the study material on Logical Reasoning (**Volume II** of Business Mathematics, Statistics and Logical Reasoning) for CA Foundation. This book is strictly based upon the latest syllabus by Board of Studies, ICAI and therefore comprehensively covers everything. I have tried to incorporate all my practical experiences and learnings in such a way that it helps you all to understand and remember in a better way.

I always focus on understanding the concepts first but also equally on remembering it so that you can recollect it when required during the exams. I am sure that this book will surely help you score better in your exams!

I have been blessed to have such an extraordinary support from the colleagues, friends and family who have helped me in every sphere of my life. These people deserve much more than a deep thanks and love! I express gratitude to each and every-one for assisting me in all my endeavours.

I am thankful to **IDT Guru CA Vishal Bhattad Sir** for his continuous support and mentoring.

**Thanks to the student community**. I am grateful for the opportunity to be of service to you. It has always been a pleasure spending time with you all, teaching you and learning so much from you all.

I express my respect, love and gratitude to my Parents for not only giving me life but giving your entire life to me. I am indebted to you a lot.

Let me remind you two important things:

- 1. This book is not a substitute for study material issued by the BOS, ICAI; it's only an aid.
- 2. There is no shortcut to success; it is resolute hard work that pays.

Best Wishes and Happy Learning!

Constantly yours,

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#### LOGICAL REASONING (20 Marks)

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### **HEADINGS**

- **SUB HEADINGS**
- ↓ Information and Text
- **4** Important words to be noted
- 🖊 Formulae



### **SERIES:**

Classified into three types:

- Number Series
- Alphabet Series
- Letter Series

### **NUMBER SERIES:**

#### CASE 1: MISSING TERMS OF THE SERIES:

We have to identify the missing term of the series in according to a **specific pattern of the series rule** to form its code. We are required to detect the missing number of the series and answer the questions accordingly.

**Example:** Find the missing term of the series 2, 7, 16, ..., 46, 67, 92.

**Example:** Find the wrong terms of the series 9, 29, 65, 126, 217, 344.

**Example:** Find the missing term of the series 1, 9, 25, 49, 81, 121, ...

### **ALPHABET SERIES:**

Alphabet series consists of letters of the alphabet placed in a **specific pattern**. For example, the series are in the following order of the numbers:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
А	В	С	D	E	F	G	Η	Ι	J	Κ	L	Μ	Ν	0	Р	Q	R	S	Т	U	V	W	Х	Y	Ζ
26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

**Example:** Find the next term of the series BKS, DJT, FIU, HHV?

### **LETTER SERIES:**

These questions usually consist of a **series of small letters** which follow certain pattern. However, some letters are missing from series. These missing letters are then given in a proper sequence as one of alternatives.

Example: aab, \_\_\_\_, aaa, bba, \_\_\_\_\_ (a) baa (b) abb (c) bab (d) aab

### **CODING AND DECODING:**

Before transmitting, the data is **encoded and at receiver side encode data is decoded** in order to obtain original data by determining common key in encoded data.

The Coding and Decoding is classified into:

Type 1: Letter Coding Type 2: Number Coding

### **TYPE 1: LETTER CODING:**

In this type the real alphabets in a word are replaced by certain other alphabets according to a **specific rule** to form its code. The candidate is required to detect the **common rule** and answer the questions accordingly.

#### CASE1: TO FORM THE CODE FOR ANOTHER WORD:

**Example:** If in a certain language MYSTIFY is coded as NZTUJGZ, how is MENESIS coded in that language?

**Example:** If TAP is coded as SZO, then how is FRIEND coded?

**Example:** In a certain code, MENTION is written as LNEITNO. How is PRESENT written in that code?

#### CASE 2: TO FIND THE WORD BY ANALYSING THE GIVEN CODE (DECODING):

**Example:** If in a certain language CARROM is coded as BZQQNL, which word will be coded as HORSE?

### **TYPE 2: NUMBER CODING:**

In these questions, either **numerical code values are assigned to a word or alphabetical code letters are assigned to the numbers**. We are required to analyse the code as per the directions.

#### CASE 1: WHEN A NUMERICAL CODE VALUES ARE ASSIGNED TO WORDS:

**Example:** If in a certain language A is coded as 1, B is coded as 2, and so on, how is AICCI is coded in that code?

**Example:** If PAINT is coded as 74128 and EXCEL is coded as 93596, then how would you encode ANCIENT? Explanation: Clearly, in the given code, the alphabets are coded as follows:

#### CASE 2: NUMBER TO LETTER CODING:

**Example:** In a certain code, 2 is coded as P, 3 as N, 9 as Q, 5 as R, 4 as A and 6 as B. How is 423599 coded in that code?

### **ODD MAN OUT:**

Classification means 'to assort the items' of a given group on the basis of a certain common quality they possess and then spot the stranger or 'odd one out'.

These questions are based on words, letters and numerals. In these types of problems, we consider the defining quality of particular things. In these questions, 4 or 5 elements are given, out of which one does not belong to the group. You are required to find the 'odd one'.

<b>Example:</b> January, May (a) January (b)	y, July, November. o) May	(c) July	(d) November
<b>Example:</b> 10, 14, 16, 18 (a) 26 (b)	8, 23, 24 and 26. ) 17	(c) 23	(d) 9
<b>Example:</b> 15: 6, 9, 15, 2 (a) 9 (b)	21, 24, 26, 30. 5) 26	(c) 24	(d) 30
<b>Example:</b> 1, 5, 14, 30, 5 (a) 5 (b)	51, 55, 91. ) 55	(c) 51	(d) 91
<b>Example:</b> 16, 25, 36, 62 (a) 36 (b)	2, 144, 196, 225. )) 62	(c) 196	(d) 144

## **QUESTIONS FOR SELF PRACTICE**

Choose the most appropriate (a) or (b) or (c) or (d).

1) 6, 11, 21, 36, 56?	(a) 42	(b) 51	(c) 81	(d) 91
2) 10, 100, 200, 310?	(a) 400	(b) 410	(c) 420	(d) 430
3) 11, 13, 17, 19, 23, 25, 29	(a) 33	(b) 27	(c) 31	(d) 49
4) 6, 12, 21, 33?	(a) 33	(b) 38	(c) 40	(d) 48
5) 2, 5, 9, 14, ? , 27	(a) 20	(b) 16	(c) 18	(d) 24
6) 6, 11, 21, ? , 56, 81	(a) 42	(b) 36	(c) 91	(d) 51
7) 10, 18, 28, 40, 54, ? , 88	(a) 70	(b) 86	(c) 87	(d) 98
8) 120, 99, ? , 63, 48, 35	(a) 80	(b) 36	(c) 45	(d) 40
9) 22, 24, 28, 36, ? , 84	(a) 44	(b) 52	(c) 38	(d) 54

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10) 4832, 5840, 6848, 7856?	(a) 8864	(b) 8815	(c) 8846	(d) 8887
11) 10, 100, 200, 310, 430?	(a) 560	(b) 540	(c) 550	(d) 590
12) 28, 33, 31, 36, 34?	(a) 38	(b) 39	(c) 40	(d) 42
13) 120, 80, 40, 45, ? , 5	(a) 15	(b) 20	(c) 25	(d) 30
14) 2, 15, 41, 80, 132?	(a) 184	(b) 144	(c) 186	(d) 197
15) 6, 17, 39, ? , 116	(a) 72	(b) 75	(c) 85	(d) 80
16) 1, 4, 10, 22, ? , 94	(a) 46	(b) 48	(c) 49	(d) 47
17) 4, 9, 25, 49, ? , 169, 289, 30	<b>61</b> (a) 12	0 (b) 12	1 (c) 122	2 (d) 164
18) 4, 12, 36, ? , 324	(a) 107	(b) 109	(c) 108	(d) 110
19) 1, 1, 4, 8, 9, ? , 16, 64	(a) 27	(b) 28	(c) 32	(d) 40
20) 5760, 960, 192, ? , 16, 8	(a) 47	(b) 48	(c) 52	(d) 50
21) 1, 2, 6, 7, 21, 22, 66, ? , 20	<b>1</b> (a) 69	(b) 68	(c) 67	(d) 69
22) 48, 24, 96, ? , 192	(a) 48	(b) 47	(c) 44	(d) 54
23) 165, 195, 255, 285, ? , 435	(a) 345	(b) 390	(c) 335	(d) 395
24) 2, 3, 3, 5, 10, 13, 39, ? , 172	<b>2, 177</b> (a) 42	(b) 44	(c) 43	(d) 40
25) 7, 26, 63, 124, 215, ? , 511	(a) 342	(b) 343	(c) 441	(d) 421
26) 3, 7, 15, 31, ? , 127	(a) 62	(b) 63	(c) 64	(d) 65
27) 8, 28, 116, 584, ? ,	(a) 1752	(b) 3502	(c) 3504	(d) 3508
28) 6, 13, 28, 59, ? ,	(a) 122	(b) 114	(c) 113	(d) 112
29) 2, 7, 27, 107, 427, ? ,	(a) 1707	(b) 4027	(c) 4207	(d) 1207
30) 5, 2, 7, 9, 16, 25, 41, 40, 26	<b>5, ? ,</b> (a) 65	(b) 66	(c) 67	(d) 68
<b>31) In a certain language, MAE</b> (a) EMMJI(b) EFMIJ	ORAS is code (c) EM	<b>d NBESBT, ho</b> IFIJ	<b>w DELHI is c</b> (d) JIFEM	oded in that code?
<b>32) If RAMAN is written as 123</b> (a) 92323 (b) 92233	<b>25 and DINE</b> (c) 93	<b>SH as 67548</b> 233	<b>9 how HAMA</b> (d) 93292	M is written?
<b>33) If RED is coded as 6720 the</b> (a) 9207716 (b) 167129	en GREEN wo (c) 16	<b>ould be coded</b> 77209	<b>l as:</b> (d) 1672091	
34) If A = 1, FAT = 27, FAITH =	= <b>?</b> (a) 44	(b) 45	(c) 46	(d) 36

<b>35) If BR</b> (a) 254288	<b>OTHER is</b> 39	<b>coded</b> (b) 254	<b>245</b> 2898	6784, S	<b>ISTER</b> (c) 24	<b>code</b> 54889	<b>d as 91</b>	<b>9684,</b> (d) 2	<b>what i</b> 524889	s code	ed for BO	RBERS?
<b>36) If DE</b> (a) 527943	<b>LHI is co</b> 31	<b>ded 735</b> (b) 597	<b>541 a</b> 8213	nd CAI	<b>CUTTA</b> (c) 82	<b>as 8</b> 51896	<b>325896</b> 5	6 <b>2, Ho</b> (d) 8	<b>w can</b> 543962	CALIC	UT be co	ded?
<b>37) If CLO</b> (a) 72894	OCK is co	<b>ded 34</b> (b) 776	<b>235 a</b> 84	and TIN	/IE is 8 (c) 72	<b>679,</b> 964	what w	r <b>ill be</b> (d) 2	<b>code o</b> 7894	f MOT	EL?	
<b>38) If PAI</b> (a) 29530	LE is cod	<b>ed as 2</b> 1 (b) 241	<b>134 a</b> 53	and EAI	<b>RTH is</b> (c) 25 <sup>,</sup>	<b>code</b> 430	d as 41	. <b>590, l</b> (d) 2	<b>low is</b> 54313	PEARL	is code?	
<b>39) If LO</b> (a) NGLAI	SE is cod	<b>ed as 13</b> (b) NGI	<b>357 a</b> Lia	and GA	IN is co (c) GN	oded ILIA	as 246	<b>8, wha</b> (d) (	<b>at do fi</b> GNLIA	gure 8	32146 sta	nds for?
<b>40) If ME</b> (a) 97854	KLF is co	<b>ded as</b> (b) 645	<b>9178</b> 12	32 and 3	<b>LLLJK</b> (c) 54	<b>as 88</b> 610	867, h	<b>ow cai</b> (d) 7	<b>1 IHJE</b> I 5632	D is co	ded as?	
<b>41)If in a</b> (a) 2458	certain	<b>code la</b> (b) 584	ngua 2	ge NAN	<b>IE is w</b> (c) 852	<b>ritte</b> 24	n as 42	<b>58 the</b> (d) 5	e <b>n wha</b> 824	t is co	ded as M	EAN?
<b>42) If GO</b> (a) YKPF	LD is wri	tten as (b) VHO	<b>IQN</b> I CM	F, how	WIND (c) XJ	<b>can l</b> OE	e writt	<b>en as</b> (d) [	<b>code?</b> DNIW			
<b>43) If RO</b> (a) DKUEW	<b>SE is wri</b> VKV	<b>tten as</b> (b) CJT	<b>TQU</b> DVJL	<b>G, how</b>	BISCU (c) DK	<b>IT ca</b> VEW	<b>n be w</b> i KV	<b>ritten</b> (d) [	<b>in that</b> KUEWI	: <b>code?</b> (Y		
LETTER CODE DIC	: GIT :	C 8	Z 6	N 4	V 7	R 2	S 9	W 3	F 5	D 1		
(Q. No. 4 from amo	4 - 46) Ir ongst the	n each o given f	of the	e follov alterna	ving qı tives (a	uesti a), (b	ons fin ), (c), (	d out d).	the co	rrectly	coded a	lternative
44) ZDRC	VF	(a) 612	875		(b) 61	9875		(c) 6	12845		(d) 612	835
45) WNC	SZV	(a) 348	267		(b) 31	8267		(c) 3	48957		(d) 348	967
46) RDNF	VS	(a) 216	79		(b) 21	6549		(c) 2	14579		(d) 218	579
47) If DE	LHI is co	ded as (	CCID	D, how	would	l you	encode	e BOM	BAY?			
(a) AJMTV	Т	(b) AM.	JXVS		(c) MJ	XVSU	ſ	(d) V	VXYZAX			
48) In a c written ir	ertain co 1 that coo	de, RIP de?	<b>PLE i</b> (a) 3	<b>s writte</b> 18826	<b>en as 6</b> (b) 31	<b>1338</b> 8286	<b>2 and I</b> (c) 6	<b>.IFE is</b> 18826	<b>writte</b> (d) 3	<b>n as 8</b> 1 38816	192. How	is PILLER
49) If PA SANTACR	LAM cou UZ?	ıld be	<b>give</b> (a) 11	<b>n the c</b> 23	ode n (b) 85	umbe	er 43, 7 (c) 12	<b>what</b> 20	<b>code n</b> (d) 1	<b>umbe</b> 25	r can be	given to
Direction	s: The nı	ımber i	n ea	ch ques	tion b	elow	is to b	e codi	fied in	the fo	llowing c	ode:
Digit	7	2	1		5	3		9	8		6	4
Letter	W	L	Ν	I	S	Ι		Ν	D		J	В
50) 1846:	32	(a) MD	JBSI	(b) M	DJBIL	(c) I	<b>ADJBWL</b>	(d) N	/IDBJIL			

<b>51)</b> In a certain code '256' me'good and bad'. Which of the f(a) 2(b) 5(c) 8	ans 'you are following rep (d) 3	good', '637' resents 'and	means 'we an ' in that code	re bad' and ': ??	358' means						
Directions: Find odd man out of the following (51-60):											
52) 3, 5, 7, 15, 17, 19	(a) 15	(b) 17	(c) 19	(d) 7							
53) 10, 14, 16, 18, 23, 24, 26	(a) 26	(b) 23	(c) 24	(d) 18							
54) 1, 4, 9, 16, 24, 25, 36	(a) 9	(b) 24	(c) 25	(d) 36							
55) 41, 43, 47, 53, 61, 71, 73,	75	(a) 75	(b) 73	(c) 71	(d) 53						
56) 16, 25, 36, 73, 144, 196, 2	25	(a) 36	(b) 73	(c) 196	(d) 225						
57) 1, 4, 9, 16, 19, 36, 49	(a) 19	(b) 9	(c) 49	(d) 16							
58) 1, 5, 14, 30, 49, 55, 91	(a) 49	(b) 30	(c) 55	(d) 91							
59) 835, 734, 642, 751, 853, 9	81, 532	(a) 751	(b) 853	(c) 981	(d) 532						
60) 4, 5, 7, 10, 14, 18, 25, 32	(a) 7	(b) 14	(c) 18	(d) 33							
61) 52, 51, 48, 43, 34, 27, 16	(a) 27	(b) 34	(c) 43	(d) 48							

FOUR MAIN DIRECTIONS AND FOUR		PECTIONS	
FOUR MAIN DIRECTIONS AND FOUR (	CARDINAL DI	ECHONS:	
N ♠			
NW NE	Left + Left	Down	
	Left + Right	Up	
	Right + Left	Up	
	Right + Right	Down	
₩◀	Up + Left	Left	
	Up + Right	Right	
	Down + Left	Right	
SW	Down + Right	Left	
Str SE			
ŝ			
<b>Example:</b> Senorita walks 5 kms starting from his hou Thereafter she takes left turn and walks 2 km. Further, s and walks 3 kms. In what direction she is now from her l (a) West (b) North (c) South (d) I	use towards west th he turns left and wa nouse? East	en turns right and w lks 3 km. Finally, sho	walks 3 km e turns righ
<b>Example:</b> Shinchan started walking 2 km straight from Again, he turned right and walked 1 km to reach his hou which direction did Gopal start walking from the school? (a) East (b) West (c) South (d) North	his school. Then he	e turned right and w uth-east from his sch	alked 1 km hool, then ir
<b>Example:</b> A man starts from a point, walks 2 km towa turns right again and walks. What is the direction now he (a) South (b) East (c) North (d) West	ards north, turns to e is facing?	wards his right and	walks 2 km

<b>Example:</b> Disha Patani started from h and covered one kilometre. Then she t going? (a) North (b) East	<b>Example:</b> Disha Patani started from her house and walked 2 km towards North. Then she took a right turn and covered one kilometre. Then she took again a right turn and walked for 2 kms. In what direction is she going? (a) North (b) East (c) South (d) West									
QUESTION	NS FOR S	ELF PR	ACTICE							
Choose the appropriate answer (	a) or (b) or (c)	or (d)								
1. Mohan starts from point A and he turns left again and walks 1 k	walks 1 km tou m. Now he is fa	vards south, cing.	turns left an	d walks 1km. Then						
(a) East (b) West	(c) North	(d) S	outh-west							
2. Suresh starts from a point, wal turns left and walks ½ miles and	ks 2 miles towa then he turns b	rds south, tu back. What is	rns right and the direction	l walks 11/2 miles, 1 he is facing now?						
(a) East (b) West	(c) South	(d) N	lorth							
3. A man starts from a point, walks 4 miles towards north and turns left and walks 6 miles, turns right and walks for 3 miles and again turns right and walks 4 miles and takes rest for 30 minutes. He gets up and walks straight 2 miles in the same direction and turns right and walks one mile. What is the direction he is facing? (a) North(b) South(c) South-East(d) West										
4. Arun started from point A and walked 3 km to point C and the turned South and walked 3 kms (a) East(a) East(b) South	d walked 10 km n turned West to point E. In w (c) West	a East to poin and walked hich direction (d) N	nt B, then tu 12 kms to p n is he from Jorth	rned to North and oint D, then again his straight point?						
<b>5. A starts from a point and walkturns left and walks 5 km. Point</b> (a) North(b) South	<b>s 5 kms north,</b> <b>out the directio</b> (c) East	<b>then turns le</b> n <b>in which h</b> (d) V	<b>ft and walks e is going no</b> Vest	3 kms. Then again w.						
6. A rat run 20 towards East and turns to left runs 5 and then tur what direction is the rat facing?	turns to right a ns to left runs (a) East	runs 10 and t 12 and finally (b) North	turns to righ y turns to lef (c) West	t runs 9 and again ft and runs 6. Now (d) South						
7. A driver left his village and dr Then he turned left and drove an he again turned left and drove 20 left and drove 30 kms to reach to direction did he drive?	ove North for 2 nother 30 km, v kms before sto he town where (a) West	0 km, after w when he stop opping for eve he had supp (b) East	which he stop ped for lunc ening tea. On per. After eve (c) North	<b>pped for breakfast.</b> <b>h. After some rest,</b> <b>ice more he turned</b> <b>ening tea in which</b> (d) South						
8. A man is facing East, then he to goes 5 m to the South and from t place?	urns left and go here 5 m to We (a) East	es 10 m, then st. In which d (b) West	n turns right lirection is b (c) North	and goes 5 m then e from his original (d) South						

9. From her home Alia Bhatt wishes to go to school. From home she goes towards North and then turns left and then turns right, and finally she turns left and reaches school. In which direction her school is situated with respect to her home?

(a) North-East (b) North-West (c) South-East (d) South-West

10. A child walks 25 feet towards North, turns right and walks 40 feet, turns right again and<br/>walks 45 feet. He then turns left and walks 20 feet. He turns left again walks 20 feet. Finally,<br/>he turns to his left to walks another 20 feet. In which direction is the child from his starting<br/>point?(a) North(b) South(c) West(d) East

11. Namo facing North and moves 20 km, then he turned to his right and moves 20 km and then he moves 10 km in North-East, then he turned to his right and moves 20 km and then he turned to his right and moves 20 km and again he turned to his left and moves 20 km. Now in which direction Rahu is facing?

(a) South-East (b) North-East (c) South-West (d) North-West

12. K is a place which is located 2 km away in the north-west direction from the capital P. R is another place that is located 2 km away in the south-west direction from K. M is another place and that is located 2 km away in the north-west direction from R. T is yet another place that is located 2 km away in the south-west direction from M. In which direction is T located in relation to P? (a) South-west (b) North-west (c) West (d) North

13. Babu is Rahim's neighbour and his house is 200 meters away in the north-west direction. Joseph is Rahim's neighbour and his house is located 200 meters away in the south-west direction. Gopal is Joseph's neighbour and he stays 200 meters away in the south-east direction. Roy is Gopal's neighbour and his house is located 200 meters away in the northeast direction. Then where is the position of Roys' house in relation to Babu's? (a) South-east (b) south-west (c) North (d) North-east

14. A tourist drives 10 km towards west and turns to left and takes a drive of another 4 km.He then drives towards east another 4 km and then turns to his right and drives 5 km.Afterwards he turns to his left and travels 6 km. In which direction is je from the startingpoint?(a) North(b) East(c) West(d) South

**15.** A man started walking West. He turned right, then right again and finally turned left. Towards which direction was he walking now? (a) North (b) South (c) West (d) East

16. One evening, Raja started to walk toward the Sun. After walking a while, he turned to<br/>his right and again to his right. After walking a while, he again turned right. In which<br/>direction is he facing?(a) South(b) East(c) West(d) North

17. Five boys A, B, C, F, E, are sitting in a park in a circle. A is facing South-West, D is facingSouth-East, B and E are right opposite A and D respectively and C is equidistant between Dand B. Which direction is C facing?(a) West(b) South(c) North(d) East

**18.** If a man on a moped starts from a point and rides 4 km South then turns left and rides**2 km and turn again to the right to ride to go more towards which direction is he moving?**(a) North(b) West(c) East(d) South

19. A man starts from a point, walk 8 km towards North, turns right and walks 12 km, turns<br/>left and walks 7 km turns and walks 20 km towards South, turns right and walks 12 km. In<br/>which direction is he from the starting point?(a) North(b) South(c) West(d) East

20. Daily in the m the shadow of Bar to Bara Kaman?	20. Daily in the morning the shadow of Gol Gumbaz falls on Bara Kaman and in the evening the shadow of Bara Kaman falls on Gol Gumbaz exactly. So, in which direction is Gol Gumbaz to Bara Kaman?(a) Easter side(b) Western side(c) Northern side(d) Southern side									
21. Ashok went 8 walked 5 kms. He from the starting	km South ar took a final t point?	nd turned W turn to East (a) East	V <b>est and</b> and wa (b) Not	walked 3 lked 3 km rth (c) V	<b>km again s. In whicl</b> West (	<b>he turned North</b> and <b>direction was As</b> d) South	and hok			
22. If X stands on point?	his head wit	<b>h his face to</b> (a) East	wards s (b) We	st (c) l	<b>hich direc</b> North (	<b>tion will his left-h</b> a d) South	and			
<b>23. I drove East fo</b> <b>miles and again to</b> (a) South	or 5 miles the urned to my l (b) North	n drove Nor eft. Which ( (c) W	r <b>th 3 mi</b> lirection <sup>J</sup> est	les, then to n am I goin (d) I	urned to m ng now? North-west	ny left and drove fo	or 2			
24. If A stands on point?	<b>his head wit</b> (a) North-East	h his face to t (b) N	wards n orth	orth. In w (c) l	<b>hich direc</b> East	<b>tion will his left-h</b> a (d) North-West	<b>and</b>			
<ul><li>25. A car travellin</li><li>9 kms and again t</li><li>(a) South</li></ul>	<b>g from south</b> <b>turns to the r</b> (b) North	covers a di ight and wa (c) W	<b>stance o</b> <b>s stoppo</b> <sup>7</sup> est	of 8 km, the ed. Which (d) 1	<b>en turns r</b> i <b>direction d</b> East	ight and runs anot loes it face now?	ther			
26. A taxi driver of turned to his left his right and cont but in which direct (a) South	26. A taxi driver commenced his journey from a point and drove 10 km toward north and turned to his left and drove another 5 km. After waiting to meet a friend here, he turned to his right and continued to drive another 10 km. He has covered a distance of 25 km so far, but in which direction would he be now?(a) South(b) North(c) East(d) South-east									
27. A walks 3 kms goes 3 km. He tur (a) East	<b>northward a</b> ns right and (b) West	and then he walks straig (c) N	<b>turns le</b> <b>;ht. In w</b> orth	eft and goe hich direc (d) :	<b>es 2 km. H</b> etion is he South	e again turns left a walking now?	and			
28. A walks south from the starting	-wards, then point?	<b>turns right,</b> (a) So	<b>then le</b> outh	<b>ft and the</b> (b) East	<b>n right. In</b> (c) West	which direction is (d) North	s he			
<b>29. A man starts fr turns right again</b> (a) North	rom a point, v and walks. To (b) East	walks 15 me owards whic (c) W	e <b>tres tov</b> ch direc <sup>V</sup> est	vards East, tion is he r (d) :	<b>, turns left now wakir</b> South	and walks 10 met ng?	res,			
30. A boy starts v now?	<b>valking towa</b> (a) West	r <b>ds turns le</b> (b) N	<b>ft at las</b> orth	t. Towards (c) S	<b>s which di</b> South	rection is he walk (d) East	cing			
31. I stand with m will my back be?	<b>y right-hand</b> (a) North	extended si (b) W	i <b>de-way</b> s Vest	s towards (c) l	<b>South. Tov</b> East	vards which direct (d) South	tion			
<b>32. If a person moright and moves 6</b> (a) East	oves 4 km to km, which is (b) West	wards west, s the directi (c) N	<b>then tu</b> ons in v orth	rns right a vhich he is (d) (	<b>and moves</b> <b>5 now mov</b> South	3 km and then tu ing?	ırns			
<b>33. If Mohan sees</b> station from his h (a) South	<b>the rising su</b> <b>ouse, what is</b> (b) North	n behind tl the directi (c) Ea	<b>ne temp on of th</b> ast	le and the e temple f (d)	e <b>setting su</b> from the ra West	in behind the raily nilway station?	way			

34. Laxman went 15 km to North then he turned West and covered 10 kms. In which direction he is from his house?       (a) East       (b) West       (c) North       (d) South         35. A man starts from a point, walks 4 miles North, turns to his right and walks 2 miles, again adates a turn to left and continue to walk and there also and the go to the left. In which direction are you now? (a) East (b) South (c) North (d) West         40. You go North, turn right, then right again and then go to the left. In which direction are you now? (a) South (b) East (c										
35. A man starts from a point, walks 4 miles North, turns to his right and walks 2 miles, again turns to his right and walks 2 miles, again turns to his right and walks 2 miles. In which direction would he be now? <ul> <li>(a) North</li> <li>(b) South</li> <li>(c) East</li> <li>(d) West</li> </ul> <li>36. I started walking down a road in the morning facing the Sun. After walking for sometime I turned to my left. Then I turned to my right. In which direction was I going then?</li> <li>(a) East</li> <li>(b) West</li> <li>(c) North</li> <li>(d) South</li> <li>37. Lakshmi walked 2 furlongs north from her house and took a turn to left and continued to walk another one kilometre and finally she turned left and reached the school. Which direction is she facing now?                 <ul> <li>(a) East</li> <li>(b) West</li></ul></li>	34. Laxman south and c is from his	went 15 km overed 5 km house?	n to North the ns. Finally tur (a) East	en he turned rning to East (b) West	West and co he covered (c) North	<b>vered 10 km</b> <b>10 kms. In w</b> (d) South	s. Then he turned hich direction he			
36. I started walking down a road in the morning facing the Sun. After walking for sometime I turned to my left. Then I turned to my right. In which direction was I going then? <ul> <li>(a) East</li> <li>(b) West</li> <li>(c) North</li> <li>(d) South</li> </ul> 37. Lakshmi walked 2 furlongs north from her house and took a turn to left and continued to walk another one kilometre and finally she turned left and reached the school. Which direction is she facing now? <ul> <li>(a) West</li> <li>(b) North</li> <li>(c) South</li> <li>(d) North</li> </ul> 38. You are going straight, first eastwards, then turn to the right, then right again, then left. In which direction would you be going now? (a) East         (b) West <li>(c) South</li> <li>(d) East</li> 39. If Ahmed travels towards North from his house, then to left, then to South covering equal distances in each direction to reach Sohan's house, in which direction is Ahmed's house now? <ul> <li>(a) East</li> <li>(b) South</li> <li>(c) North</li> <li>(d) West</li> </ul> 40. You go North, turn right, then right again and then go to the left. In which direction are you now? <ul> <li>(a) South</li> <li>(b) East</li> <li>(c) West</li> <li>(d) North</li> </ul> 41. Roopa starts from a point and walks 15 metre towards west, turns left and walks 12 metre, turns right again and walks. What is the direction she is now facing? <li>(a) South</li> <li>(b) West</li> <li>(c) East</li> <li>(d) North</li>	35. A man again turns which direc	starts from to his right tion would l	a point, walk t and walks 2 he be now?	<b>xs 4 miles N</b> 2 miles, agai (a) North	orth, turns to in turns to h (b) South	o his right an is right and (c) East	nd walks 2 miles, walks 2 miles. In (d) West			
37. Lakshmi walked 2 furlongs north from her house and took a turn to left and continued to walk another one kilometre and finally she turned left and reached the school. Which direction is she facing now?       (a) West       (b) North       (c) South       (d) North         38. You are going straight, first eastwards, then turn to the right, then right again, then left. In which direction would you be going now?       (a) East       (b) West       (c) South       (d) North         39. If Ahmed travels towards North from his house, then to left, then to South covering equal distances in each direction to reach Sohan's house, in which direction is Ahmed's house now?       (a) East       (b) South       (c) North       (d) West         40. You go North, turn right, then right again and then go to the left. In which direction are you now?       (a) South       (b) East       (c) West       (d) North         41. Roopa starts from a point and walks 15 metre towards west, turns left and walks 12 metre, turns right again and walks. What is the direction is is now facing?       (a) South       (b) East       (d) North         42. A man starts his journey facing the sun early morning. He then turns right and walks 2 km. He then walks 3 km after turning right again. Which is the direction he is facing now?       (a) South       (b) North       (c) West       (d) South         43. Roy walks 2 km to East, then turns North-West and walks 3 km. Then he turns South and walks 5 km. Then again, he turns Worth-East       (c) North-East       (d) North-East         44. Seeta starts from a point, wal	<b>36. I starte</b> <b>time I turne</b> (a) East	<b>d walking d</b> ed to my left (b) W	own a road i : <b>. Then I turne</b> Vest	n the mornin ed to my righ (c) North	ng facing the nt. In which c (d) So	e Sun. After v lirection was	valking for some- I going then?			
38. You are going straight, first eastwards, then turn to the right, then right again, then left.         In which direction would you be going now? (a) East       (b) West       (c) South       (d) East         39. If Ahmed travels towards North from his house, then to left, then to South covering equal distances in each direction to reach Sohan's house, in which direction is Ahmed's house now?       (a) East       (b) South       (c) North       (d) West         40. You go North, turn right, then right again and then go to the left. In which direction are you now?       (a) South       (b) East       (c) West       (d) North         41. Roopa starts from a point and walks 15 metre towards west, turns left and walks 12 metre, turns right again and walks. What is the direction she is now facing?       (a) South       (b) West       (c) East       (d) North         42. A man starts his journey facing the sun early morning. He then turns right and walks 2 km. He then walks 3 km after turning right again. Which is the direction he is facing now?       (a) South         (a) North-East       (b) North       (c) West       (d) South         43. Roy walks 2 km to East, then turns North-West and walks 2 km. Then he turns South and walks 5 km. Then again, he turns West and walks 2 km. Finally, he turns North and walks 6 km. In which direction, is he from the starting point?       (d) North-East         (a) South-West       (b) South-East       (c) North-West       (d) North-East         44. Seeta starts from a point, walks 2 km towards north, turns towards	37. Lakshm to walk and direction is	i walked 2 f other one ki she facing 1	urlongs north lometre and 10w?	n from her h finally she t (a) West	ouse and too turned left a (b) North	ok a turn to lo nd reached t (c) South	eft and continued he school. Which (d) North			
<ul> <li>39. If Ahmed travels towards North from his house, then to left, then to South covering equal distances in each direction to reach Sohan's house, in which direction is Ahmed's house now? <ul> <li>(a) East</li> <li>(b) South</li> <li>(c) North</li> <li>(d) West</li> </ul> </li> <li>40. You go North, turn right, then right again and then go to the left. In which direction are you now? <ul> <li>(a) South</li> <li>(b) East</li> <li>(c) West</li> <li>(d) North</li> </ul> </li> <li>41. Roopa starts from a point and walks 15 metre towards west, turns left and walks 12 metre, turns right again and walks. What is the direction she is now facing? <ul> <li>(a) South</li> <li>(b) West</li> <li>(c) East</li> <li>(d) North</li> </ul> </li> <li>42. A man starts his journey facing the sun early morning. He then turns right and walks 2 km. He then walks 3 km after turning right again. Which is the direction he is facing now? <ul> <li>(a) North-East</li> <li>(b) North</li> <li>(c) West</li> <li>(d) South</li> </ul> </li> <li>43. Roy walks 2 km to East, then turns North-West and walks 3 km. Then he turns South and walks 5 km. Then again, he turns West and walks 2 km. Finally, he turns North and walks 6 km. In which direction, is he from the starting point? <ul> <li>(a) South-West</li> <li>(b) South-East</li> <li>(c) North-West</li> <li>(d) North-East</li> </ul> </li> <li>44. Seeta starts from a point, walks 2 km towards north, turns towards her right and walks 2 km, turns right again and walks. What is the direction she is facing now? <ul> <li>(a) East</li> <li>(b) West</li> <li>(c) South</li> <li>(d) North</li> </ul> </li> <li>45. Shyam was facing East. He walked 5 km forward and then after turning to his right walked 3 km. Again, he turned to his right and walks 4 km. After this he turned back. Which direction was he facing at that time?</li> <li>(a) East</li> <li>(b) West</li> <li>(c) North</li> <li>(c) North</li> </ul> <li>46. Raju is standing facing north. He goes 30 metres and finally turns to his right and w</li>	38. You are In which di	going straig rection woul	ght, first eastv ld you be goin	wards, then t ng now? (a) I	<b>turn to the ri</b> East (b) W	<b>ght, then righ</b> Vest (c) So	<b>at again, then left.</b> buth (d) East			
40. You go North, turn right, then right again and then go to the left. In which direction are you now?       (a) South       (b) East       (c) West       (d) North         41. Roopa starts from a point and walks 15 metre towards west, turns left and walks 12 metre, turns right again and walks. What is the direction she is now facing?       (a) South       (b) West       (c) East       (d) North         42. A man starts his journey facing the sun early morning. He then turns right and walks 2 km. He then walks 3 km after turning right again. Which is the direction he is facing now?       (a) South         (a) North-East       (b) North       (c) West       (c) West       (d) South         43. Roy walks 2 km to East, then turns North-West and walks 3 km. Then he turns South and walks 5 km. Then again, he turns West and walks 2 km. Finally, he turns North and walks 6 km. In which direction, is he from the starting point?       (a) South-West       (b) South-East       (c) North-West       (d) North-East         44. Seeta starts from a point, walks 2 km towards north, turns towards her right and walks 2 km, turns right again and walks. What is the direction she is facing now?       (a) North         45. Shyam was facing East. He walked 5 km forward and then after turning to his right walked 3 km. Again, he turned to his right and walked 4 km. After this he turned back. Which direction was he facing at that time?       (a) East       (b) West       (c) North       (d) South         46. Raju is standing facing north. He goes 30 metres ahead and turns left and goes for 15 metres. Now he turns right and goes for 5	39. If Ahme distances in now?	d travels tow n each direc (a) East	vards North fi ction to reach (b) South	<b>com his hous</b> <b>Sohan's ho</b> (c) North	<b>e, then to lef</b> <b>ouse, in whic</b> (d) West	t, then to Sou ch direction i	th covering equal s Ahmed's house			
41. Roopa starts from a point and walks 15 metre towards west, turns left and walks 12         metre, turns right again and walks. What is the direction she is now facing?         (a) South       (b) West       (c) East       (d) North         42. A man starts his journey facing the sun early morning. He then turns right and walks 2 km. He then walks 3 km after turning right again. Which is the direction he is facing now?         (a) North-East       (b) North       (c) West       (d) South         43. Roy walks 2 km to East, then turns North-West and walks 3 km. Then he turns South and walks 5 km. Then again, he turns West and walks 2 km. Finally, he turns North and walks 6 km. In which direction, is he from the starting point?       (a) South-West       (b) North-East       (c) North-West       (d) North-East         44. Seeta starts from a point, walks 2 km towards north, turns towards her right and walks 2 km, turns right again and walks. What is the direction she is facing now?       (a) North         (a) East       (b) West       (c) South       (d) North         45. Shyam was facing East. He walked 5 km forward and then after turning to his right walked 3 km. Again, he turned to his right and walked 4 km. After this he turned back. Which direction was he facing at that time?       (a) East       (b) West       (c) North         46. Raju is standing facing north. He goes 30 metres ahead and turns left and goes for 15 metres. Now he turns right and goes for 50 metres and finally turns to his right and walks. In which direction is he heading?       (a) North       (b) West	40. You go you now?	North, turn a (a) South	<b>right, then rig</b> (b) East	<b>ght again an</b> (c) West	<b>d then go to</b> (d) North	the left. In w	hich direction are			
42. A man starts his journey facing the sun early morning. He then turns right and walks 2 km. He then walks 3 km after turning right again. Which is the direction he is facing now?         (a) North-East       (b) North       (c) West       (d) South         43. Roy walks 2 km to East, then turns North-West and walks 3 km. Then he turns South and walks 5 km. Then again, he turns West and walks 2 km. Finally, he turns North and walks 6 km. In which direction, is he from the starting point?         (a) South-West       (b) South-East       (c) North-West       (d) North-East         44. Seeta starts from a point, walks 2 km towards north, turns towards her right and walks 2 km, turns right again and walks. What is the direction she is facing now?       (a) North         (a) East       (b) West       (c) South       (d) North         45. Shyam was facing East. He walked 5 km forward and then after turning to his right walked 3 km. Again, he turned to his right and walked 4 km. After this he turned back. Which direction was he facing at that time?       (a) East       (b) West       (c) North       (d) South         46. Raju is standing facing north. He goes 30 metres ahead and turns left and goes for 15 metres. Now he turns right and goes for 50 metres and finally turns to his right and walks. In which direction is he heading?       (a) North       (b) West       (c) South       (d) West	<b>41. Roopa</b> a <b>metre, turn</b> (a) South	starts from s right again (b) West	a point and n and walks. (c) East	walks 15 me What is the c (d) North	etre towards lirection she	west, turns l is now facing	left and walks 12 g?			
<ul> <li>43. Roy walks 2 km to East, then turns North-West and walks 3 km. Then he turns South and walks 5 km. Then again, he turns West and walks 2 km. Finally, he turns North and walks 6 km. In which direction, is he from the starting point? <ul> <li>(a) South-West</li> <li>(b) South-East</li> <li>(c) North-West</li> <li>(d) North-East</li> </ul> </li> <li>44. Seeta starts from a point, walks 2 km towards north, turns towards her right and walks 2 km, turns right again and walks. What is the direction she is facing now? <ul> <li>(a) East</li> <li>(b) West</li> <li>(c) South</li> <li>(d) North</li> </ul> </li> <li>45. Shyam was facing East. He walked 5 km forward and then after turning to his right walked 3 km. Again, he turned to his right and walked 4 km. After this he turned back. Which direction was he facing at that time?</li> <li>(a) East</li> <li>(b) West</li> <li>(c) North</li> <li>(d) South</li> </ul> <li>46. Raju is standing facing north. He goes 30 metres ahead and turns left and goes for 15 metres. Now he turns right and goes for 50 metres and finally turns to his right and walks. In which direction is he heading? <ul> <li>(a) North</li> <li>(b) East</li> <li>(c) South</li> <li>(d) West</li> </ul> </li>	<b>42. A man s</b> <b>km. He the</b> (a) North-Eas	<b>starts his jou n walks 3 km</b> t	<b>urney facing t</b> n after turnin (b) North	he sun early g right agair	<b>w morning. H</b> <b>h. Which is th</b> (c) West	e then turns le direction h	right and walks 2 e is facing now? (d) South			
<ul> <li>(a) South-West</li> <li>(b) South-East</li> <li>(c) North-West</li> <li>(d) North-East</li> </ul> 44. Seeta starts from a point, walks 2 km towards north, turns towards her right and walks 2 km, turns right again and walks. What is the direction she is facing now? <ul> <li>(a) East</li> <li>(b) West</li> <li>(c) South</li> <li>(d) North</li> </ul> 45. Shyam was facing East. He walked 5 km forward and then after turning to his right walked 3 km. Again, he turned to his right and walked 4 km. After this he turned back. Which direction was he facing at that time? <ul> <li>(a) East</li> <li>(b) West</li> <li>(c) North</li> <li>(c) South</li> <li>(d) North</li> </ul> 46. Raju is standing facing north. He goes 30 metres ahead and turns left and goes for 15 metres. Now he turns right and goes for 50 metres and finally turns to his right and walks. In which direction is he heading? <ul> <li>(a) North</li> <li>(b) East</li> <li>(c) South</li> <li>(d) West</li> </ul>	43. Roy wal walks 5 km km. In whic	ks 2 km to E . Then again ch direction,	ast, then turr a, he turns We is he from th	ns North-Wes est and walk a starting po	st and walks : s 2 km. Final oint?	3 km. Then h ly, he turns N	e turns South and Jorth and walks 6			
<ul> <li>44. Seeta starts from a point, walks 2 km towards north, turns towards her right and walks 2 km, turns right again and walks. What is the direction she is facing now? <ul> <li>(a) East</li> <li>(b) West</li> <li>(c) South</li> <li>(d) North</li> </ul> </li> <li>45. Shyam was facing East. He walked 5 km forward and then after turning to his right walked 3 km. Again, he turned to his right and walked 4 km. After this he turned back. Which direction was he facing at that time? (a) East</li> <li>(b) West</li> <li>(c) North</li> <li>(c) North</li> <li>(d) South</li> </ul> <li>46. Raju is standing facing north. He goes 30 metres ahead and turns left and goes for 15 metres. Now he turns right and goes for 50 metres and finally turns to his right and walks. In which direction is he heading? <ul> <li>(a) North</li> <li>(b) East</li> <li>(c) South</li> <li>(d) West</li> </ul> </li>	(a) South-We	st	(b) South-Eas	et of	(c) North-We	est	(d) North-East			
<ul> <li>(a) East (b) West (c) South (d) North</li> <li>45. Shyam was facing East. He walked 5 km forward and then after turning to his right walked 3 km. Again, he turned to his right and walked 4 km. After this he turned back. Which direction was he facing at that time? (a) East (b) West (c) North (d) South</li> <li>46. Raju is standing facing north. He goes 30 metres ahead and turns left and goes for 15 metres. Now he turns right and goes for 50 metres and finally turns to his right and walks. In which direction is he heading? (a) North (b) East (c) South (d) West</li> </ul>	44. Seeta st 2 km, turns	arts from a right again	point, walks : and walks. W	2 km toward /hat is the di	s north, turn irection she i	ns towards he	er right and walks ?			
<ul> <li>45. Shyam was facing East. He walked 5 km forward and then after turning to his right walked 3 km. Again, he turned to his right and walked 4 km. After this he turned back. Which direction was he facing at that time? (a) East (b) West (c) North (d) South</li> <li>46. Raju is standing facing north. He goes 30 metres ahead and turns left and goes for 15 metres. Now he turns right and goes for 50 metres and finally turns to his right and walks. In which direction is he heading? (a) North (b) East (c) South (d) West</li> </ul>	(a) East		(b) West		(c) South	_	(d) North			
46. Raju is standing facing north. He goes 30 metres ahead and turns left and goes for 15metres. Now he turns right and goes for 50 metres and finally turns to his right and walks.In which direction is he heading?(a) North(b) East(c) South(d) West	45. Shyam was facing East. He walked 5 km forward and then after turning to his right walked 3 km. Again, he turned to his right and walked 4 km. After this he turned back. Which direction was he facing at that time? (a) East (b) West (c) North (d) South									

47. Sanmitra starts from his house and walks 3 km towards north. Then he turns right and walks 2 km and then turns right and walks 5 km, then turns right and walks 2 km and then again turns right and walks 2 km. Which direction is he facing now?										
(a) North	(b) South	(c) West	(d) East							
<b>48.</b> Raju is Ramu's neighbour and he stays 100 metres away towards southeast. Venu is Raju's neighbour and he stays 100 metres away towards southwest. Khader is Venu's neighbour and he stays 100 metres away towards, north-west. Then where is the position of Khader's home in relation to Ramu's? (a) South-East (b) South (c) North-West (d) East										
<ul> <li>49. Ramesh walke turned to his right</li> <li>2 km. In which dir (a) East</li> </ul>	ed 3 km, towards W and walked 3 km. I ection is Ramesh fr (b) West	Vest and turned to Finally, he turned to rom his starting po (c) North	his left and o his right aga oint now? (d) South	walked 2 ain and wa	km. He, then alked another					
50. Deepa starts was some distance, she again. In which di	alking north toward e turns to his left a rection she moving	ds and after a while and walks a distance anow? (a) North	<b>e she turns to</b> <b>ce of 1 km. Sl</b> (b) West	<b>her right.</b> he then ur (c) East	After walking rns to her left (d) South					
<b>51. Raman starts</b> <b>left later again he</b> (a) East	walking in the mor turned to his left. A (b) West	rning facing the Su At what direction is (c) South	<b>n. After some</b> <b>s Raman mov</b> (d) North	etime, he ing now?	turned to the					
52. A starts walking towards North turns left, again turns left, turns right, again turns rightonce again turns left. In which direction is A walking now?(a) East(b) South(c) West(d) South-East										
53. X walks south he moving now?	wards and then tur (a) South	<b>ns right, then left</b> a (b) North	and then righ (c) West	t <b>. In whic</b> (d)	<b>h direction is</b> South-West					
54. A man started a distance, he turn In which direction	to walk East. After led to his right agai was he going now	moving a distance, in. After moving a ? (a) North	he turned to little he turne (b) South	<b>his right.</b> ed in the e (c) East	After moving nd to his left. (d) West					

### **ARRANGEMENTS ARE CLASSIFIED BASED ON PATTERNS OF SITTING:**

- Linear - Circular - Polygon

While making arrangements, **all the conditions** should be **compiled** with. Such questions generally involve **5 to 8 individuals** arranged in a certain manner or pre-conditions. They may have to be arranged in a **circle or in a row** accordingly. Questions may be made more difficult by allowing an **individual to a particular position with some conditions**.

### **GUIDELINES TO SOLVE QUESTIONS:**

- Take a review on the given information. **Get** an **idea** of the **situation** of people or objects.
- Determine the usefulness of each information's and classify them accordingly into '**definite** information', '**comparative** information' and '**negative** information'.
- When the **place** of any objects or persons is **definitely mentioned** then we say that it is a definite information. **Example: X is sitting on the right end of the bench.**
- When the **place** of any object or person is not mentioned definitely but **mentioned only in the comparison of another** person or object, then this is a comparative information. **Example: A is sitting second to the right of E.** *This type of information can be helpful when we can get the definite information about E.*
- A **part of definite** information may consist of negative information. A negative information does not tell us anything definitely but it **gives an idea to eliminate a possibility. Example: C is not sitting on the immediate left of A.**

### **TYPE-1 LINEAR ARRANGEMENT:**

We **arrange** objects or persons in a **line or row.** The arrangement is done only on **one 'axis'** and hence, the **position** of persons or objects assumes importance in terms of order like positions. We **take directions according to our left and right.** 

#### **STEPS TO SOLVE THE LINEAR ARRANGEMENTS:**

- Identify the **number of** objects and their names.
- Use **pictorial method** to represent the people or objects and their positions.
- Arrange the information with relevant facts and their positions and try to find out the solution.
- **Answer** the questions based on the arrangement having made.

Words which must be paid adequate attention - **'between' means sandwiched**, **'immediate left' is different from 'to the left'**.

When direction of face is not clear, then we take **ONE ROW SEQUENCE**.

(A) When direction of face is not clear, then we take based on diagram will be as follows:



From the above diagram, following points are clear:

- Q, R, S, T are right of P but only Q is the immediate right of P.
- S, R, Q, P are left of T but only S is the immediate left of T.
- R, S, T are right of Q only R is the immediate right of Q.

- R, Q, P are left of S but only R is the immediate left of S.
- S and T are right of R but only S is the immediate right of R.
- Q and P are left of R but only Q is the immediate left of R.
- A is the immediate left of Q while T is the immediate right of S.

(B) When direction of face is towards you, then the diagram will be as follows:



From the above diagram, following points are clear:

- Left of P = P, R, S and T
- Right of T = S, R, Q and P
- Q is immediate left of P; R is immediate left of Q; S is immediate left of R & T is immediate left of S
- S is immediate right of T; R is immediate right of S; Q is immediate right of R; & P is immediate right of Q

Right

Left

### TWO ROWS SEQUENCE.

Let us see 6 persons seating in two rows.

From the above diagram, following points are clear:

- A is sitting opposite D
- B is sitting opposite E
- C is sitting opposite F
- D and C are sitting at diagonally opposite positions
- A and F are sitting at diagonally opposite positions

**Example:** 4 children are sitting in arrow. A is occupying seat next to B but not next to C. If C is not sitting<br/>next to D? Who is occupying seat next to adjacent to D.(a) B(b) B and A(c) Impossible to tell(d) ASolution:

Example: P, Q, R, S, T, U, V and W are sitting in a row facing North.
(i) P is fourth to the right of T
(ii) W is fourth to the left of S
(iii) R and U, which are not at the ends, are neighbours of Q and T respectively.
(iv) W is next to the left of P and P is the neighbour of Q, who are sitting at the extreme ends Solution:

C Left

Right

Ε

**Example:** There are 5 houses P, Q, R, S, T. P is right of Q and T is left of R and right of P. Q is right of S. Which house in the middle. (a) P (b) Q (c) R (d) T Solution: **Example:** Friends are sitting on a bench. A is to the left of B but on the right of C, D is to the right of B but one the left of E. Who are at the extremes? (a) A, B (b) A, D (c) C, E (d) B, D Solution: **Example:** In a college party, 5 girls are sitting in a row. F is to the left of M and to the right of O. R is sitting to the right of N but to the left of O. Who is sitting in the middle? (a) O (b) R (c) P (d) M Solution: **Example:** Five boys A, B, C, D and E are standing in a row. D is on the right of E, B is on the left of E but on the right of A. D is one the left of C, who is standing on the extreme right. Who is standing in the middle? (a) B (b) C (c) D (d) E Solution: **CIRCULAR ARRANGEMENT:** - Left movement is called **clockwise rotation**. Right 🔶 → Left - Right movement is called **anti-clockwise rotation**. - The above presentation is for 4 persons but for any number of Left Right persons, the direction is taken in the same manner. - For rectangular and sequence arrangement, directions are taken Right Left as discussed in two rows sequence. Left 🗲 ➤ Right

<b>Example:</b> Study the following question c 4 ladies A, B, C & D and 4 Gentlemen E, F, I. No two ladies or gentlemen are sitting II. C, who I sitting between G and E, is fac III. F is between D and A and facing G.	arefully and ans , G & H are sittin side by side. cing D.	wer the given ong in a circle ar	questions. ound a table fa	cing each other.
<ul><li>(1) Who is sitting left of A?</li><li>(2) E is facing whom?</li><li>(3) Who is immediate neighbour of B?</li></ul>	(a) E (a) F (a) G and H	(b) F (b) B (b) E and F	(c) G (c) G (c) E and H	(d) H (d) H (d) F and H
Solution:				
<b>Example:</b> 8 persons A, B, C, D, E, F, G & as given in the figure. They are facing the they move up to three places anti-clockwise (a) B will face west (b) E will face East (c) H will face North-West (d) A will face South <b>Solution:</b>	A H are sitting at direction oppos se, then.	round the circle site to centre. I	e f West a	North A C East E South
<b>Example:</b> 5 People A, B, C, D & E are s adjacent chairs. <b>I</b> . C is seated next to A. <b>II</b> . Which of the following must be true? Select the correct from the options given b (a) Only I (b) Only II (c) Both I ar <b>Solution:</b>	eated about a r A is seated two I. D is seated elow: ad II (d) N	ound table. Eve o seats from D. next to B. either I nor II	ery chair is spa III. B is not sea II. E is seated	ced equidistant from ted next to A. l next to A.

**Example:** Study the following question carefully and answer the given questions.

8 friends A, B, C, D, E, G and H are sitting in a circle facing the centre, not necessarily in the same order. D sits third to the left of A. E sits to the immediate right of A. B is third to left of D. G is second to the right of B. C is neighbour of B. C is third to left of H.

1) Who amongst the following is sitting exactly between F and D?

(a) C (b) E (c) H (d) A

2) Three of the following four are alike in a certain way based on the information given above and so form a group. Which is does not belong to that group.

(a) DC (b) AH (c) EF (d) DF

3) Who amongst the following second to the left of H?

(a) E (b) B (c) A (d) Noe of these

4) Who amongst the following are immediate neighbours of G?

(a) CA (b) AF (c) DC (d) DF

5) Who amongst the following is sitting third to the right of A? (a) F (b) B (c) H (d) C

#### Solution:

## **QUESTIONS FOR SELF PRACTICE**

1. Five boys A, B, C, D and E are sitting in a row A is to the right of B and E is to the left of B but to the right of C. A is to the left of D. Who is second from the left end? (a) D (b) A (c) E (d) B 2. There are 5 different houses, A to E, in a row. A is to the right of B and E is to the left of C and right of A, B is to the right of D. Which of the houses is in the middle? (b) B (a) A (c) C (d) D 3. Five friends P, Q, R, S and T are sitting in a row facing North. Here, S is between T and Q and Q is to the immediate left of R. P is to the immediate left of T. Who is in the middle? (b) T (d) R (a) S (c) Q 4. Six children A, B, C, D, E and F are standing in a row. B is between F and D. E is between A and C. A does not stand next to eight F or D. C does not stand next to D. F is between which of the following pairs of children? (a) B and E (b) B and C (c) B and D (d) B and A 5. There are eight books kept one over the other. Two books are on Organisation Behaviour, two books on TQM, three books on Industrial Relations and one book is on Economics. Counting from the top, the second, fifth and sixth books are on Industrial Relations. Two books on Industrial Relations are between two books on TQM. One book of Industrial Relations is between two books on Organizational Behaviour while the book above the book of Economics is a book of TQM. Which book is the last book from the top? (c) Industrial Relations (a) Economics (b) TOM (d) Organizational Behaviour 6. Five boys are standing in a row facing East. Pavan is left of Tavan, Vipin and Chavan to the left of Nakul. Chavan is between Tavan and Vipin. Vipin is fourth from the left, then how far is Tavan to the right? (a) First (b) Second (c) Third (d) Fourth 7. Six persons M, N, O, P, Q and R are sitting in two row with three persons in each row. Both the row are in front of each other. Q is not at the end of any row. P is second the left of R. O is the neighbour of Q and diagonally opposite to P. N is the neighbour of R. Who is in front N? (a) R (b) Q (c) P (d) M 8. Six persons A, B, C, D, E and F are sitting in two row, three in each row. (I) E is not at the end of any row (II) D is second to the left of F (III) C, the neighbour of E, is sitting diagonally opposite (IV) B is the neighbour of F. Which of the following are in one of the two rows? (a) D, B and F (b) C, E and B (c) A, E and F (d) F, B 9. Five boys A1, A2, A3, A4 and A5 are sitting in a stair in the following way. **I**. A5 is above A1 **II**. A4 is under A2 **III**. A2 is under A1 **IV**. A4 is between A2 and A3. Who is at the lowest position of the stair? (b) A3 (d) A2 (a) A1 (c) A5 10. Five children are sitting in a row. S is sitting next to P but not T. K is sitting next to R,

who is sitting on the extreme left and T is not sitting next to K. Who is/are adjacent to S?(a) K and P(b) R and P(c) Only P(d) P and T

11. Five senior citi Mr. Ashokan, Mr. Gaurav and Mr. Ra	zens are living in a Lokesh in a flat be akesh lives in a flat	multi-storeyed bui low Mr. Gaurav, M below Mr. Lokesh.	lding. Mr. Muan lives in a r. Ashokan lives in a flat Who lives in the topmos	a flat above : below Mr. t flat?
(a) Mr. Lokesh	(b) Mr. Gaurav	(c) Mr. Muan	(d) Mr. Rakesh	
12. In a gathering to 'D'. 'A' is sitting Find the person si	seven members are g right to 'B', 'F; is s tting in the middle	e sitting in a row. 'C sitting right to 'E' b . (a) C	<b>'' is sitting left to 'B' but c</b> <b>ut left to 'D'. 'H' is sitting</b> (b) D (c) E	on the right g left to 'E'. (d) F
Directions (No: 13	-17): Study followi	ng information care	fully to answer the given	questions:
A to H are seated of G. Only two peo B is not an immed	in straight line fac ple sit between D a iate neighbour of A	ing North. C sits for and A. B and F are in A. H is not neighbou	urth left of G. D sits seco mmediate neighbours of 1r of D.	nd to right each other.
13. Who amongst	the following sits	exactly in the midd	le of the persons who si	t fifth from
(a) C	(b) H	(c) E	(d) F	
<b>14. Who amongst</b> (a) B	<b>the following sits t</b> (b) F	<b>hird to the right of</b> (c) A	<b>C?</b> (d) E	
<b>15. Which of the f</b> (a) C, D	ollowing represent (b) A, B	<b>s persons seated at</b> (c) B, G	<b>the two extreme ends of</b> (d) D, H	the line?
<b>16. What is the po</b> (a) Third to the left	<b>sition of H with re</b> (b) Immediate right	<b>spect to F?</b> (c) Second to right	(d) Fourth to left	
<b>17. How many per</b> (a) One	<b>rsons are seated be</b> (b) Two	tween A and E? (c) Three	(d) Four	
Directions (Q. No.	18-22) Study follo	wing information c	arefully to answer given	questions:
<b>Ten students are A</b> <b>I</b> . B and F are not sitti <b>III</b> . There are four pe <b>V</b> . J is between A and	<b>A to J are sitting in</b> ing on either of the edg rsons between E and A D and G is in E and F.	a row facing west.ges.II. G is sittingIV. I is the nonVI. There are	left of D and H is sitting to th rth of B and F is the south of I two persons between H and C	e right of J. ). 2.
18. Who is sitting	at the seventh plac	e counting from lef	it?	
(a) H	(b) C	(c) J	(d) Either H or C	
<b>19. Who among th</b> (a) C	e following is defin (b) H	nitely sitting at one (c) E	<b>of the ends?</b> (d) Cannot be determined	
<b>20. Who are imme</b> (a) BC	e <b>diate neighbours o</b> (b) BH	of I? (c) AH	(d) Cannot determined	
<b>21. Who is sitting</b> (a) G	<b>second left of D?</b> (b) F	(c) E	(d) J	
<b>22. If G &amp; A interc</b> (a) G and F	<b>hange their positio</b> (b) Only F	ns, then who becor (c) Only A	<b>ne the immediate neighb</b> (d) J and H	ours of E?

Directions (Nos. 2	3-24): Read follo	wing inf	ormation	carefully & th	en answer th	e questions:
A group of singers I. D is not right to C III. B is not left of F V. C and B have one p	<b>5, facing the audi</b> e person between E an	<b>ence, are</b> nd F	e standing II. F is no IV. E is no VI. There	<b>g in line on the</b> It standing beside ot left of A are two persons	e <b>stage as foll</b> G. H and C.	ows.
23. Who is on the	Second extreme	right?	(a) D	(b) F	(c) G	(d) E
<b>24. If we start cou</b> (a) 1st	<b>nting from the le</b> (b) 2nd	e <b>ft, on w</b> l (c) 3rd	<b>hich num</b> 1	<b>ber is B?</b> (d) 5th		
Directions (Q. 25-	27): Study follow	ving info	rmation o	carefully to ans	swer the give	n questions:
Eight persons P to persons. P is betw facing W. R is betw	o W are sitting i veen U and V an veen T and M and	n front d facing d W is to	of one ar North. Q the imm	nother in two : ), who is to th ediate right of	rows. Each ro e immediate V.	ow has four left of M is
25. Who is sitting	in front of R?		(a) U	(b) Q	(c) V	(d) P
26. Who is to the i	mmediate right o	of R?	(a) M	(b) U	(c) M or T	(d) None
<b>27. In which of the</b> (a) MV	e following pairs, (b) RV	, <b>person</b> s (c) TV	s are sitti	ng in front of a (d) UR	each other?	
<b>28. Four girls A, B</b> other, which of th (a) A and D in front c	, C, D are sitting a e following is def of each other	around a finitely t	<b>circle fa</b> <b>rue?</b> (b) A is no	cing the centre	e <b>. B and C in f</b>	ront of each

(c) D is left of C

(d) A is left of C

### **DEFINITION:**

A person who is **related** to another by **birth** rather than by marriage.

### **PREREQUISITES:**

#### **RELATIONS OF PATERNAL SIDE:**

Father's father	> Grandfather
Father's mother	> Grandmothe
Father's brother	> Uncle
Father's sister	> Aunt
Children of uncle	> Cousin
Wife of uncle	> Aunt
Children of aunt	> Cousin
Husband of aunt	> Uncle

- Grandmother Uncle Aunt Cousin
- Aunt
- Cousin
- Uncle

#### **RELATIONS:**

- 1. Grandfather's son
- 2. Grandmother's son
- 3. Grandfather's only son
- Grandmother's only son 4.
- 5. Mother's or father's mother
- Son's wife 6.
- 7. Daughter's husband
- 8. Husband's or wife's sister
- 9. Brother's son
- Brother's daughter 10.
- Uncle/aunt's son/daughter 11.
- Sister's husband 12.
- 13. Brother's wife
- 14. Grandson's/daughter's d'ter >

#### **SOME IMPORTANT RELATIONS:**

- My mother's or father's son is my Brother. a)
- My mother's or father's daughter is my Sister. b)
- My mother's or father's father is my Grandfather. c)
- My mother's or father's sister is my Aunt. d)
- My mother's or father's brother is my Uncle. e)
- My son's wife is my Daughter-in-law. f)
- My daughter's husband is my Son-in-law. g)
- My brother's son is my Nephew. h)
- i) My brother's daughter is my Niece.
- My sister's husband is my Brother-in-law. j)
- My brother's wife is my Sister-in-law. k)
- My husband's or wife's sister is my Sister-in-law. 1)
- My husband's or wife's brother is my Brother-in-law. m)
- My uncle's or aunt's son or daughter is my Cousin. n)
- 0) My wife's father or husband's father is my Father-in-law.
- My wife's mother or husband's mother is my Mother-in-law. p)

#### **RELATIONS OF MATERNAL SIDE:**

- Mother's father Mother's mother Mother's brother Mother's sister Children of m' uncle > Cousin Wife of m' uncle
  - > Maternal grandfather
  - > Maternal grandmother
  - > Maternal uncle
  - > Aunt

  - > Maternal aunty

- Father or Uncle
- Father or Uncle
- Father

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- Father
- Grandmother
- Daughter-in-Law
- Son-in-Law
- Sister-in-Law
- Nephew
- Niece Cousin
- Brother-in-Law
- Sister-in-Law
  - Great grand Daughter

q)My failr)My models)My sot)My so	ther's wife is my Mother. other's husband is my Father. n's or daughter's son is my Grandso n's or daughter's daughter is my Gr	on. rand-daughter.	
<b>Example:</b> A is B's d (a) Father <b>Solution:</b>	aughter, B is C's mother. D is C's bi (b) Grandfather	rother. How is D related (c) Brother	l to A? (d) Son
<b>Example:</b> P is Q's b (a) Grand-daughter <b>Solution:</b>	rother. R is Q's mother. S is R's fath (b) Great grandson	ner. T is S's mother. Ho (c) Grandson	w is P related to T? (d) Grandmother
<b>Example:</b> A is B's b (a) Sister <b>Solution:</b>	rother. C is D's father. E is B's moth (b) Sister-in-law	er. A and D are brother (c) Niece	rs. How is E related to C? (d) Wife
<b>Example:</b> A is the s (a) Mother <b>Solution:</b>	ister of B. B is the brother of C. C is (b) Daughter	s the son of D. How is D (c) Son	related to A? (d) Uncle
<b>Example:</b> B is the b related to D? <b>Solution:</b>	prother of A. whose only sister is m (a) Daughter-in-law (b)	other of C. D is matern Daughter (c)	al grandmother of C. How is A Aunt (d) Nephew
<b>Example:</b> A and B a (a) Mother <b>Solution:</b>	are sisters. R and S are brothers. A's (b) Grandmother (c)	s daughter is R's sister. Sister (d)	What is B's relation to S? Aunt
<b>Example:</b> E is the st (a) Grandfather <b>Solution:</b>	ister of B. A is the father of C. B is t (b) Grand-daughter (c)	he son of C. How is A r Father (d)	elated to E? Great-grandfather

<b>Example:</b> Given that: A is the Who is grandmother of D? <b>Solution:</b>	he mother of B. C is th (a) A (b) B	e son of A. D is the bro (c) C	other of E. E is the daughter of B. (d) D
<b>Example:</b> A is D' brother. D (a) Son (b) Gr <b>Solution:</b>	) is B's father. B and C randson	are sisters. How is A re (c) Father	elated to C? (d) Uncle
<b>Example:</b> A is B's sister. C is (a) Grandfather (b) Da <b>Solution:</b>	s B's mother. D is C's faughter	ather. E is D's mother, (c) Grandmother	then how A is related to D? (d) Granddaughter
<b>Example:</b> (i) F is brother of Who is the uncle of G? <b>Solution:</b> G is A and F is bro	f A. (ii) G is daughter c (a) A (b) C rother of A.	of A. (iii) K is sister of F (c) K	F. (iv) G is brother of C. (d) F
<b>Example:</b> A is father of C an (a) Sister-in-law <b>Solution:</b>	nd D is son of B. E is b (b) Sister	rother of A. If C is siste (c) Brother	er of D how is B related to E? (d) Brother-in-law
<b>Example:</b> C is wife of B. E i (a) Mother <b>Solution:</b>	s son of C. A brother o (b) Sister	f B & father of D. Wha (c) Brother	t is the relationship of E to D? (d) Cousin
<b>Example:</b> M is the son of P. (a) Son <b>Solution:</b>	. Q is the grand-daugh (b) Daughter	ter of O, who is the hu (c) Mother	sband of P. How is M related to O? (d) Father
<b>Example:</b> X & Y are brother (a) Mother <b>Solution:</b>	rs. R is father of Y. S is (b) Wife	brother of T and mate (c) Sister	ernal uncle of X. What is T to R? (d) Brother

## **QUESTIONS FOR SELF PRACTICE**

<b>1. A is B's b</b> (a) Son	<b>rother. C is A'</b> (b) Grandson	<b>s mother. D is</b> (c) Grand	<b>C's father,</b> lfather	<b>E is B's so</b> (d) Great Gra	<b>n. How is</b> l andfather	D related to A?
<b>2. As is B's l</b> (a) Grand-dau	brother. C is A	<b>'s father. D is</b> (b) Great grands	<b>C's sister a</b> daughter	n <b>d E is D's</b> (c) G	<b>mother. H</b> randaunt	<b>(d)</b> Daughter
<b>3. A is B's S</b> (a) Grandmot	<b>ister. C is B's</b> I her	<b>Mother. D is C</b> (b) Grandfather	's Father. I	E <b>is D's Mot</b> (c) Daughter	<b>her. How</b> i (d	<b>is A related to D?</b> ) Grands-daughter
4. A is the father relation	ather of B. C is ship between	s the daughter C and E?	<b>of B. D is</b> 1	the brother	of B. E is	the son of A. What is
					(u	
<b>5. If P is the</b> (a) Mother	e husband of Q	<b>and R is the</b> (b) Sister	(c) Aur	<b>S &amp; Q. Wha</b> nt	t is R to P? (d	) Mother-in-law
<b>6. P and Q a</b> (a) Uncle	re brothers. R	<b>t and S are sis</b> (b) Brother	<b>ter. P's sor</b> (c) Fatl	<b>i is S's brot</b> her	<b>her. How</b> i (d	<b>is Q related to R?</b> ) Grandfather
7. X is the h What is the	usband of Y. relationship o	W is the daug of N to Y?	hter of X. 7	Z is husban	d of W. N	is the daughter of Z.
(a) Cousin	(b) Niec	ce (c	) Daughter	(d) G	rand-daugh	ter
8. A reads a uncle of C. (	book and fin	id the name o ter of A. How	f the authoris B related	or familiar. l to A?	The autho	or 'B' is the paternal
(a) Brother	(D) Siste	er (C	) Famer	(u) U	licie	
9. A's mother to D?	er is sister of (a) Uncle	<b>B and she has</b> (b) Mater	<b>a daughte</b> mal Uncle	er C who is (c) N	21 years of iece	<b>old. How is B related</b> (d) Daughter
<b>10. A is B's</b> (a) Son	<b>brother. C is A</b> (b) Grandson	<b>A's mother. D i</b> (c) Grand	i <b>s C's fathe</b> l-grandson	<b>r. F is A's s</b> (d) G	on. How is rand-daught	e <b>F related to D?</b> ter
<b>11. A is B's</b> (a) Son	<b>brother. C is A</b> (b) Grand-daug	<b>A's mother. D i</b> hter (c) Grand	i <b>s C's fathe</b> lfather	<b>r. E is B's s</b> (d) G	<b>on. How is</b> reat grandfa	<b>B related to D?</b> other
12. A is B's child?	<b>brother. C is</b> (a) Aunt	<b>A's mother. D</b> (b) Cousi	<b>is C's fath</b> n	<b>er. F a is A</b> (c) Nephew	<b>'s son. Ho</b> (d	<b>w is B related to F's</b> ) Grandfather
<b>13. A is B's</b> (a) Father	<b>daughter. B is</b> (b) Grai	<b>C's mother. D</b> ndfather	<b>is C's bro</b> t (c) Bro	t <b>her. How i</b> s ther	<b>s D related</b> (d) Son	l to A?
<b>14. A is D's</b> (a) Cousin	<b>brother. D is I</b> (b) Niec	<b>B's father. B a</b> ce (c	n <b>d C are si</b> s ) Aunt	sters. How d (d) N	<b>is C relate</b> Tephew	d to A?
<b>15. A is B's</b> (a) Grandson	<b>brother. C is A</b> (b) Grea	A's mother, D i at Grandson	<b>s C's fathe</b> (c) Gre	<b>r. E is B's s</b> at Grandfathe	on. How is er (d	<b>D related to E?</b> ) Grandfather

<b>16. X &amp; Y are chil</b> (a) Sister	<b>dren of A. A is t</b> (b) Brother	<b>he father</b> (c) Son	of X but Y is	<b>not his s</b> (d) Daught	<b>on. How</b> ter	is Y related to A?
<b>17. A is B's brothe</b> (a) Cousin	er. C is A's mother (b) Nephew	er. D is C's (c) Und	<b>father. E is</b> ele	<b>B's son. H</b> (d) Grands	Iow is E 1 son	related to A?
18. Based on the s (i) K is bother of J (iii) P is brother o	statements giver (i f N (iv	n below, fi i) M is sist ⁄) N is dau	nd out who : er of K ghter of J	is the unc	le of P?	
(a) K	(b) J	(c) N		(d) M		
19. A and B are si husband of A. How	sters. A is moth w is C related to	er of D. D D?	has a daug	hter C wh	o is marı	ried to F. G is the
(a) Cousin	(b) Niece	(c) Aur	it	(d) Sister-i	in-law	
<b>20. R and S are br</b> (a) Uncle	<b>others. X is the</b> (b) Brother	<b>sister of Y</b> (c) Fati	and X is mo ner	o <b>ther of R.</b> (d) Mother	<b>What is</b>	Y to S?
21. A is B's brothe	r. C is A's mothe	er. D is C's	father. B & I	D's grand-o	daughter	. How is B related
to D. Who is A's so	on? (a) Aunt	(b) Coi	ısin	(c) Niece	(d) Gr	andaunt
<b>22.</b> A is the son of son of E, which of (a) D is the maternal (c) D is the cousin of	<b>B while B and C</b> <b>the following s</b> uncle of A A	are sister tatements (b) E is (d) B a	<b>s to one and</b> <b>is correct?</b> the brother of nd D are broth	o <b>ther. E is</b> t f B iers	the moth	er of C. If D is the
<b>23. P is the father</b> (a) Father	<b>of T. T is the da</b> (b) Father-in-law	ughter of (c) Bro	<b>M. M is the</b> of the states the states the states the states the states and states the states are states as the states are states are states are states as the states are states ar	<b>daughter (</b> (d) Son-in-	<b>of K. Wha</b> -law	t is P to K?
<b>24. A &amp; B are brot</b> (a) Sister	<b>hers. E is daugh</b> (b) Daughter	t <b>er of F. F</b> (c) Nie	<b>is the wife d</b>	of B. What (d) Daught	<b>is the re</b> ter	lation of E to A?
<b>25. M and F are a</b> (a) Sister	<b>married couple</b> . (b) Sister-in-law	A and B a (c) Nie	r <b>e sisters. A</b> ce	<b>is the sis</b> (d) Daught	<b>ter of F. V</b> ter	Who is B to M?
<b>26. If A is mother</b> (a) Mother	of D. B is son of (b) Brother	<b>C. C is fat</b> (c) Ste	<b>her of D, D</b> i o son	<b>is sister of</b> (d) Sister	f B, how i	s A related to B?
27. A & B are brot How is B related t	<b>her &amp; sister res</b> <b>o E?</b> (a) Grand-da	<b>pectively.</b> ughter (b)	<b>C is A's fath</b> Great grand-o	<b>er. D is C'</b> laughter	<b>s sister 8</b> (c) Aunt	<b>E is D's mother.</b> (d) Daughter
28. Q is the son of then what is L to l	f P. X is the dau	ghter of Q	. R is the au	nty (Bua)	of X and	L is the son of R,
(a) Grandson	(b) Grand-daught	er	(c) Daughter	(d)	Nephew	
<b>29. P and Q are br</b> (a) Uncle	<b>others. R and S</b> (b) Brother	are sister	<b>s. P's son is</b> (c) Father	<b>S's brothe</b> (d)	e <b>r. How is</b> Grandfath	<b>G Q related to R?</b> ner
<b>30. A &amp; B are the y</b> what is the relation (a) Nephew & Aunty	young ones of C. Onship between (b) Brother & Sist	If C is the C & A? er	<b>mother of E</b> (c) Mother &	<b>B but A is r</b> Son (d)	<b>ot the da</b> Niece & A	<b>ughter of C, then</b>
31. A is the mother husband of A. How	er of D and sist v is G related to	<b>er of B. B</b> <b>D?</b> (a) Unc	has a daugl le (b) Hu	nter C who usband (c)	<b>o is marr</b> Son	ied to F. G is the (d) Father

32. Pointing towar related to B?	r <b>ds A, B said</b> (a) Uncle	"your r (	<b>mother is the you</b> (b) Cousin	<b>inger si</b> (c) Ne	i <b>ster of my</b> i phew	<b>mother". How is A</b> (d) Father
33. A is B's wife's related to C?	<b>husband's b</b> (a) Brother	orother. (	<b>. C &amp; D are siste</b> (b) Sister-in-law	<b>ers. A's</b> (c) Wi	<b>son is D's</b> fe	<b>brother. How is B</b> (d) Sister
<b>34. A and B are br</b> (a) Father	<b>others. C and</b> (b) Brother	D are	<b>sisters. A's son is</b> (c) Uncle	<b>s D's br</b> (d) So	<b>other. How</b> n	is B related to C?
<b>35. A is B's sister.</b> (a) Grandmother	<b>C is B's moth</b> (b) Grandfathe	e <b>r. D is</b> er (	<b>s C's father. E is I</b> (c) Daughter	<b>D's mot</b> (d) Gr	<b>her. How is</b> and-daughter	A related to D?
36. P, Q, R, S, T, U teacher is married one son and one g student and one m daughter of the fa	are 6 memb to a doctor w grandson. Of ale engineer mily?	ers of a who is r the two in the f (a) She (c) She	a family in which mother of R and R married ladies of family. Which of t is a lawyer is a student	<b>U. Q the</b> <b>One is a</b> <b>the follo</b> (b) Sh (d) Sh	are two ma lawyer is n housewife owing is tru e is an engine e is a doctor	rried couples. T, a narried to P. P has . There is also one e about the grand- er
<b>37. Six members of C but C is not th daughter of A. F is</b> (a) 3	of a family name ne mother of the brother (b) 2	mely A, B. A an of B. Ho	, B, C, D, E and F d C are married ow many male m (c) 4	are trav couple. embers (d) 1	velling toge E is the bro are there i	ther. 'B' is the son other of C. D is the n the family?
38. A's mother is a the following?	<b>sister of B an</b> (a) Niece	nd has a	<b>a daughter C. Ho</b> (b) Uncle	<b>w can</b> <i>A</i> (c) Da	<b>A be related</b> ughter	d) Father
39. Rajiv is the brock Rajiv related to So	other of Atul. onia? (a) Nep	<b>Sonia</b> phew	is the sister of S (b) Son	unil. At	cul is the so (c) Brother	n of Sonia. How is (d) Father
40. Sita is the nie Kalyani's husband Gopal?	<b>ce of Ashok.</b> l <b>is Gopal. Pa</b> (a) Gre (c) Sita	<b>Ashok'</b> <b>rvathi</b> eat grand i is Gopa	<b>'s mother is Laks</b> <b>is the mother-in</b> - lson's daughter l's great grand-daug	<b>shmi. K -law of</b> ;hter	<b>Calyani is La</b> <b>Gopal. How</b> (b) Gopal's S (d) Grand ni	<b>Akhshmi's mother.</b> <b>is Sita related to</b> Sita's father sece
<b>41. Seema is the d</b> <b>Sudhir and only b</b> (a) Sister-in-law	<b>aughter-in-la</b> rother of Ran (b) Aur	<b>w of Su</b> nesh. Fi nt	<b>Idhir and sister-in ind the relation b</b> (c) Cousin	n-law of Detween	f Ramesh. M I Seema and (d) Wife	Iohan is the son of l Mohan.
<b>42. Suresh introd</b> <b>husband of my mo</b> (a) Uncle	uces a man a other". How is (b) Sor	as "He s Sures	is the son of th h related to the r (c) Cousin	ie wom man?	<b>an who is</b> t (d) Grandsor	<b>the mother of the</b>
<b>43. Pointing to a</b> <b>mother-in-law." H</b> (a) Nephew	lady in a ph ow is Meera's (b) Uno	otogra s husba cle	<b>ph. Meera said,</b> and related to tha (c) Son	"Her fa at lady i	ather's only in the photo (d) Father	y son's wife is my ?
<b>44. Pointing to a p</b> <b>How is the related</b> (a) Father	<b>hotograph Vi</b> t <b>o Vikas in t</b> (b) Bro	i <b>kas sai</b> he phor other	id "She is the dau tograph? (c) Sister	ıghter o	<b>of my grand</b> (d) Mother	father's only son."
45. Suresh's sister is Ram's grandmo Who is Rohit to Su	is the wife of other. Rema i uresh? (a) Bro	<b>Ram. F</b> is Shee ther-in-la	Ram is Rani's bro tal is daughter-in aw (b) Son	ther. Ra n-law. I (c) Bro	am's father i Rohit is Rai other (d) N	<b>is Madhur. Sheetal ni's brother's son.</b> Jephew

46. Vinod introdu related to Vishal?	<b>ces Vishal as</b> (a) Cor	<b>the son of the</b> usin (l	only brothe b) Brother (	<b>r of his fatl</b> (c) Son	<b>her's wif</b> (d) Unc	<b>e. How is Vinod</b> le
47. Among her ch Sharat, who is low succeeded by his a and have 3 childred (a) Uncle	nildren, Gang ved most by l sons Gopal an en. What is th (b) Son	a's favourites nis uncle Mithe nd Mohan. Goj ne relation betw (c) Broth	are Ram an un. The hea pal and Gan ween Mithun er	nd Rekha. d of the fa ga have be n and Moha (d) No relatio	Rekha is mily is I en marr an?	s the mother of Ram Lal, who is ied for 35 years
48. Rahul and Ro Prema is Promod Shubha?	<b>bbin are brot</b> l' <b>s niece. Sh</b> u (a) Brother	hers. Promod 1bha is Sheela (b) Coust	<b>is Rohin's</b> a's grand-da in (	father. She aughter. He (c) Uncle	eela is F ow is R	<b>Pramod's sister.</b> <b>ahul related to</b> (d) Nephew
<b>49. Preeti has a so Reema. Neeta is R</b> (a) Brother	on, named Ar am's sister. V (b) Nephew	un. Ram is Pre What is Arun's (c) Cousi	<b>eti's brothe</b> <b>relationshi</b> n (	<b>r. Neeta too</b> <b>to Reema</b> (d) Uncle	o has a c ?	laughter named
50. There are 2 fil the two with each	lm stars. One other?	e <b>is the father</b> (a) Grandfather (c) Husband and	<b>of the other</b> and Grandson l wife	<b>r's son. Wh</b> a (b) Gi (d) Fa	<b>at is the</b> randfather other and	<b>relationship of</b> and son Son
51. Ramu's mothe relation to Ramu?	<b>r said to Ram</b> (a) Uncle	<b>u, "My mother</b> (b) Cousin	has a son w (c) Brot	r <b>hose son is</b> her (d) Ne	<b>Achyut'</b> ephew	'. How is Achyut
52. Ravi's father i father-in-law is Me (a) Nephew	has a son Ro ohan. What is (b) Grandfathe	<b>hit who has a</b> <b>s the relation o</b> er (c) Son	n aunt Laxr of Mohan to	<b>ni who has Ravi?</b> (d) Uncle	s a husb	and Rao whose
53. Vijay says, Ana to Vijay?	anda's mothe (a) Brother	<b>r is the only da</b> (b) Fathe	<b>ughter of m</b> er (	<b>y mother".</b> (c) Nephew	How is .	<b>Ananda relation</b> (d) Grandfather
54. Introducing a the woman related	man, a woma d with the ma	n said, "His w n?	ife is the on	<b>ly daughte</b>	r of my i	nother." How is
55. A prisoner intr I have none, he is	roduced a boy my father's s	y who came to son's son". Wh	visit him to o is the boy	the jailor :	as "Brot	hers and sisters
(a) Nephew	(b) Son	(c) Cousi	n (	(d) Uncle		

### **INTRODUCTION:**

Syllogism is a '**Greek**' word that means **inference** or **deduction**. As such inferences are based on logic, then these inferences are called **logical deduction**. These deductions are based on **propositions** (premise).

#### TWO STATEMENTS AND TWO CONCLUSIONS:

'Syllogism' checks basic aptitude and ability of a candidate to derive inferences from given statements using step by step methods of solving problems.

### **PROPOSITION:**

Let us consider the following sentences:



In all the sentences mentioned above, a relation is established between **subject** and **predicate** with the help of **quantifier** and **copula**.

Now, we can **DEFINE PROPOSITION** as under:

A proposition or premise is **grammatical sentence** comprising of **four** components. • Quantifier • Subject • Copula • Predicate

#### **COMPONENTS OF PROPOSITION:**

• **Quantifier** – The words 'All' 'No' and 'Some' are called quantifiers as they **specify a quantity**. Keep in mind that 'All' and 'No' are **universal** quantifiers because they refer to each and every object of a certain set. 'Some' is a **particular** quantifier as it refers to atleast one existing object in a certain set.

• **Subject** – Subject is the part of the sentence **something is said about**. It is denoted by **S**.

- Copula It is that part of a proposition that denotes the relation between subject and predicate.
- **Predicate** It is that part of a proposition which is **affirmed detail about that subject**.

### **CLASSIFICATION OF PROPOSITION:**

- **CATEGORICAL PROPOSITION**: There exists a **relationship** between the subject and the predicate **without any condition**. It means predicate is either affirmation or denial of the subject unconditionally. **Example:** I. All cups are pens.

I. All cups are pens. II. No boy is girl.

#### - HYPOTHETICAL PROPOSITION: Relationship between subject & predicate asserted conditionally.

**Example:** I. If it rains, he will not come. II. If he comes, I will accompany him.

#### - **DISJUNCTIVE PROPOSITION**: The assertion is of **alteration**.

**Example:** I. Either he is sincere or he is loyal. II. Either he is educated or he is scholar.

### **VENN DIAGRAM REPRESENTATION OF 2 PROPOSITIONS:**



Following things are very much clear:

- (i) **Universal** propositions, Either
  - (a) completely **include** the subject (**A**-type) or
  - (b) completely **exclude** the subject (**E**-type)

#### (ii) **Particular** propositions, Either

- (a) partly **include** the subject (**I**-type) or
- (b) partly **exclude** the subject (**O**-type)

Format		Туре
All S are P	(Universal Affirmative)	Α
No S is P	(Universal Negative)	E
Some S are P	(Particular Affirmative)	I
Some S are not P	(Particular Negative)	0

### **VENN DIAGRAM REPRESENTATION:**

- (i) **A**-Type (All S are P)
- (ii) **E**-Type (No S is P)
- (iii) **E** Type (No S is P)
- (iv) **O** Type (Some S are not P)

### **HIDDEN PROPOSITIONS:**

There are propositions which do <b>not appear in standard format</b> and yet can be classified under any of the four types.
- A-TYPE PROPOSITIONS
(i) All positive propositions beginning with ' <b>every</b> ' and ' <b>any</b> ' are A type propositions.
Example:(a) Every cat is dog>>All dogs are cats(b) Each of students of class has passed>>All students of class X have passed(c) Anyone can do this job>>All (Women) can do this job
(ii) A positive sentence with a <b>particular person</b> as its subject is always an A-type proposition.
Example: (a) He should be awarded Noble Prize (b) Raman is a Great Scientist Subject Subject Subject Predicate
(iii) A sentence with a <b>definite exception</b> is A type.
Example: (a) All girls except Sanjana is healthy (b) All boys except Ram is intelligent Definite exception Definite exception
- E-TYPE PROPOSITIONS
(i) All negative sentences beginning with ' <b>no one</b> ', ' <b>not a single</b> ' etc., are E-type propositions.
<ul> <li>(i) All negative sentences beginning with 'no one', 'not a single' etc., are E-type propositions.</li> <li>Example: <ul> <li>(a) Not a single student could answer the question.</li> <li>(b) None can cross the English channel.</li> </ul> </li> </ul>
<ul> <li>(i) All negative sentences beginning with 'no one', 'not a single' etc., are E-type propositions.</li> <li>Example: <ul> <li>(a) Not a single student could answer the question.</li> <li>(b) None can cross the English channel.</li> </ul> </li> <li>(ii) A negative sentence with a very definite exception is also of E-type proposition.</li> </ul>
<ul> <li>(i) All negative sentences beginning with 'no one', 'not a single' etc., are E-type propositions.</li> <li>Example: <ul> <li>(a) Not a single student could answer the question.</li> <li>(b) None can cross the English channel.</li> </ul> </li> <li>(ii) A negative sentence with a very definite exception is also of E-type proposition.</li> <li>Example: <ul> <li>(a) No girl except</li> <li>Sanjana</li> <li>is healthy</li> <li>(b) No boy except</li> <li>Ram</li> <li>is intelligent</li> <li>Definite exeption</li> </ul> </li> </ul>
<ul> <li>(i) All negative sentences beginning with 'no one', 'not a single' etc., are E-type propositions.</li> <li>Example: <ul> <li>(a) Not a single student could answer the question.</li> <li>(b) None can cross the English channel.</li> </ul> </li> <li>(ii) A negative sentence with a very definite exception is also of E-type proposition.</li> <li>Example: <ul> <li>(a) No girl except</li> <li>Sanjana</li> <li>is healthy</li> <li>(b) No boy except</li> <li>Ram</li> <li>is intelligent</li> <li>Definite exception</li> </ul> </li> <li>(b) No boy except</li> <li>Ram</li> <li>is intelligent</li> <li>Definite exception</li> </ul> <li>(iii) When an interrogative sentence is used to make an assertion, this could be reduced to an E-type proposition.</li>
<ul> <li>(i) All negative sentences beginning with 'no one', 'not a single' etc., are E-type propositions.</li> <li>Example: <ul> <li>(a) Not a single student could answer the question.</li> <li>(b) None can cross the English channel.</li> </ul> </li> <li>(ii) A negative sentence with a very definite exception is also of E-type proposition.</li> <li>Example: <ul> <li>(a) No girl except</li> <li>Sanjana</li> <li>is healthy</li> <li>(b) No boy except</li> <li>Ram</li> <li>is intelligent</li> <li>Definite exception</li> </ul> </li> <li>(b) No boy except</li> <li>(c) Proposition</li> <li>(c) No boy except</li> <li>(c) Proposition</li> <li>(c</li></ul>



#### - I-TYPE PROPOSITIONS

(i) Positive propositions beginning with words such as 'most', 'a few' 'mostly', 'generally', 'almost', 'frequently', and 'often' are to be reduced to the I-type propositions.

#### **Example:**

- (a) Almost all the Vegetables have been sold.
- >> Some vegetables have been sold.
- (b) Most of the students will qualify in the test. >>
- (c) Boys are frequently physically weak.
- Some of the students will qualify in the test.
- >> Some boys are physically weak.

(ii) Negative propositions beginning with words such as '**few**' '**seldom**', '**hardly**', '**rarely**', '**little**' etc. are to be reduced to the I-type propositions.

#### **Example:**

(a) Seldom writers do not take rest.	>>	Some writers take rest.
(b) Few Teachers do not tell a lie.	>>	Some teachers tell a lie.
(c) Rarely Scientists do not get a good job.	>>	Some Scientists get a good job

(iii) A positive sentence with an **exception** which is **not definite**, is reduced to an I-type proposition.



#### - O-TYPE PROPOSITIONS

(i) All negative propositions beginning with words such as **'all'**, **'every'**, **'any'**, **'each'** etc. are to be reduced to O-type propositions.

#### Example:

(a) All Psychos are not guilty.	>>	Some Physchos are not guilty.
(b) All that glitters is not gold.	>>	Some glittering objects are not gold.
(c) Everyone is not Scientist.	>>	Some are not Scientist.

(ii) Negative propositions with words as '**most**', '**a few**', '**mostly**', '**generally**', '**almost**', '**frequently**' are to be reduced to the O-type propositions.

#### **Example:**

- (a) Boys are usually not physically weak. >> Some boys are not physically weak.
- (b) Priests are not frequently thieves.
- Some priests are not thieves. >>
- (c) Almost all the questions cannot be solved.
- >>Some questions cannot be solved.

(iii) Positive propositions with starting words such as 'few', 'seldom', 'hardly', 'scarcely', 'rarely', 'little', etc., are to be reduced to the O-type propositions.

#### **Example:**

- (a) Few boys are intelligent.
- (b) Seldom are innocents guilty.

- Some boys are not intelligent. >>
- >> Some innocent are not guilty.

(iv) A negative sentence with an exception, which is **not definite** is to be reduced to the O-type propositions.

#### **Example:**



### **EXCLUSIVE PROPOSITIONS:**

Such propositions start with 'only', 'alone', 'none but', 'none else but' etc., and they can be reduced to either A or E or l-type.

#### **Example:**

Only Post-graduates are officers.	(E-type)
None Post-graduate is officer.	(A-type)
All officers are Post-graduates.	(I-type)
Some Post-graduates are officers.	

### **TYPES OF INFERENCES**

- IMMEDIATE INFERENCE: Inference is drawn from a single statement.

Example: Statement: All books are pens. Conclusion: Some pens are books.

In the above example, a conclusion is drawn from a single statement and does not require the second statement to be referred, hence the inference is called an immediate inference.

#### - MEDIATE INFERENCE: Conclusion is drawn from two given statements.

Statements: All cats are dogs. All dogs are black. Conclusion: All cats are black. Example:

In the above example, conclusion is drawn from the two statements or in other words, both the statements are required to draw the conclusion. Hence, the above conclusion is known as mediate inference.

### **METHOD TO DRAW IMMEDIATE INFERENCES:**

There are various methods to draw immediate inferences like **conversion**, **obversion**, **contraposition**; etc.

- **IMPLICATIONS (OF A GIVEN PROPOSITION)**: Below we shall discuss the implications of all the four types of propositions. While drawing a conclusion through implication, *subject remains the subject and predicate remains the predicate.* 

#### **A-TYPE: ALL BOYS ARE BLUE**

From the above A-type proposition, it is very 'clear that if all boys are blue, then some boys will definitely be blue because some is a part of all. Hence, *from A-type proposition, we can draw l-type conclusion* (through implication).

#### **E-TYPE: NO CARS ARE BUSES**

If no cars are buses, it clearly means that some cars are not buses. Hence, *from E-type proposition, O-type conclusion* (through implication) can be drawn.

#### **I-TYPE: SOME CHAIRS ARE TABLES**

*From the above l-type proposition, we cannot draw any valid conclusion* (through implication).

#### **O-TYPE: SOME A ARE NOT B**

From the above O-type proposition, we cannot draw any valid inference (through implication).

On first look, it appears that if some A are not B, then conclusion that some A are B must be true but the possibility of this conclusion being true can be over ruled with the help of following **example:** 

Case I	$A = \{a, b, c\} and B = \{d, e, f\}$
Case II	$A = \{a, b, c\} and B = \{b, c, d\}$

The above two cases show the relationship between A and B given by **O-type proposition**. "Some A are not B". Now, in case I, none of the element of set A is the element of set B. Hence, conclusion "Some A are B" cannot be valid. However, in case II, elements b and c are common to both sets A and B. Hence, here conclusion "Some A are B" is valid. But for any conclusion to be true, it should be true for all the cases. Hence, conclusion "Some A are B" is **not a valid conclusion** drawn from an O-type proposition.

All the results derived for immediate inference through implication can be presented in the table as below:

<b>Proposition Types</b>	Proposition	<b>Inferences Types</b>	Inference
Α	All S are P	Ι	Some S are P
Е	No S is P	0	Some S are not P
Ι	Some S are P	-	-
0	Some S are not P	-	-

**Conversion:** Conversion is other way of getting immediate inferences. Unlike implication, in case of conversion, subject becomes predicate and predicate becomes subject. Let us see:



Types of Propositions	Gets Converted into
А	А
E	Е
I	Ι
0	Never gets converted

Immediate Inference Table:

Proposition Types	Proposition	Valid immediate inference	Immediate inference types	Method
А	All S are P	Some S are P	Ι	Implication
		Some P are S	Ι	Conversion
E	No S is P	Some S are not P	E	Implication
		No P is S	Е	Conversion

Ι	Some S are P	No Valid Inference Some P are S	- I	Implication Conversion
0	Some S are not P	No Valid Inference No Valid Inference	-	Implication Conversion

### **VENN DIAGRAM REPRESENTATION OF IMMEDIATE INFERENCES:**

Immediate inferences are drawn from each type of Propositions (A, E, I, O)

#### 1) A type All S are P

(i)  $S = \{a, b, c\}, P = \{a, b, c, d, e\}$ 

(i)  $S = \{a, b, c\}, P = \{a, b, c, d, e, f\}$ (ii)  $S = \{a, b, c\}, P = \{a, b, c\}$ 



The above cases show all the possibilities of two sets S and P showing the relationship by the proposition.

All S are P in both cases.

Some S are P. (Is true from relationship) Some P are S (Its true) Some P are not S is not valid because from it is case (i) but false from case (ii) Inference All (P are S) is not valid because its true from case (ii) and False from case (i)

#### 2) E type – No S Is P

We can draw the inferences as:

 $P = \{d, e, f\}$  $S = \{a, b, c\}$ (i) No P is S (ii) Some S are not P (iii) Some P are not S Any other inference drawn from E- type proposition is not valid. 3) I-type: Some S are P (i)  $S = \{a, b, c, d\}, P = \{c, d, e, f\}$ e a b f Some S are P (ii)  $S = \{a, b, c, d\}$  and  $P = \{a, b\}$ Set {a, b} is the part of S as well as Set P, hence some set S are P. (iii)  $S = \{a, b\}, P = \{a, b, c, d\}$ Set {b} is the part of the set S as well as Set P, hence some S are P.  $S, P = \{a, b, c\}$ (iv)  $S = \{a, b, c\}, P = \{a, b, c\}$ The above diagrams show the relationship between S and P from I-type relationship. From the possible

The above diagrams show the relationship between S and P from I-type relationship. From the possible combinations, it's clear that inference (Some P are S) is true. Inference (S are not P) is true from combinations (i) and (ii) but is not true from combinations (iii) and (iv).

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a b

Therefore inference (Some S are not P) is not a valid inference drawn from the above proposition.

Set {a, b} is part of set S and P, hence some S are P.

#### 4) O-Type: Some S are not P

(i)  $S = \{a, b, c, d\}, P = \{c, d, e, f\}$ 

Set {a, b} is part of the set S but not Set P. Hence Some S are not P

(ii)  $S = \{a, b, c\}$  and  $P = \{d, e, f\}$ 

Set {a, b} is the part of S but not set P. Hence the above relation represented by Some S are not P.

(iii)  $S = \{a, b, c, d, e, f\}, P = \{e, f\}$ 

Set {a, b, c} is the part of set S about not P. Hence Proposition Some S are not P.

On the basis of all possible combinations showing relationship between S and P, no valid inference can be drawn. Inference from Some P are not S) is true combination (i) and (iii) but not true for combination (iii). Hence it is invalid inference.

Inference (Some P are not S) is true from combination (i) and (ii) but not true for combination (iii), hence it is also invalid.

### MAIN RULES FOR SOLVING SYLLOGISM PROBLEMS:

- $1) \qquad All + All = All$
- **2) \qquad All + No = No**
- 3) All + Some = No conclusion
- 4) Some + No = Some Not
- 5) Some + Some = No conclusion
- 6) No + All = Some not (Reversed)
- 7) No + All = Some Not (Reversed)
- 8) No + Some = Some Not (Reserved)
- 9) No + No = No conclusion
- 10) Some Not/ Some not reserved + Anything = No conclusion
- 11) If all A are B then we can say Some B are Not A is a possibility
- 12) If Some B are not A then we can say All A are B is a possibility
- 13) If some A are B then we can say All A are B is a possibility. All B are A is a possibility.
- 14) All <<>> Some not reserved
- **15)** Some >> All
- **16)** No conclusion = Any possibility is true

Implications (In case of Conclusions from Single Statement)

All >> Some That means If A are B then Some B is true.

Some <<>> Some that means if Some A are B then Some B are A is true.

No <<>> No that means if No A is B then No B is true.

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Example: Statement: Conclusions: Solution:	I. Some boys are student. II. All students are Engineers. I. All Engineers are students. II. Some boys are Engineers. (a) Only I follows (b) Only II follows (c) Both I and II follow (d) Neither I nor II follows.
Example: Statements: Conclusions: Solution:	I. All Lotus are flowers. I. No Lily is a flower. II. Some Lilies are flowers. (a) Only I follows (b) Only II follows (c) Either I or II follows (d) Neither I nor II follows
Example: Statements: Conclusion: Solution:	I. All A's are C's I. All D's are C's I. All D's are C's (a) Only I follows (b) Only II follows (c) Both I and II follows (d) None follows
Example: Statements: Solution:	All balls are bats. All bats are stumps.
Example: Statements: Solution:	All Professors are readers. All Professors are writers.

Example: Statements: Solution:	Some Mangos are sweets.	All Mangos are Fruits.
Example: Statements: Solution:	All lights are bats.	No balls are lights.
Example: Statements: Solution:	Some caps are blue.	No clip is blue.
Example: Statements: Solution:	Some powders are not soaps	. All soaps are detergents.

The steps to be followed to do a syllogism problem by **ANALYTICAL METHOD** are mentioned below:

- **Align** the sentences properly.
- Draw **conclusion** using the **table**.
- Check for immediate **inferences**.
- Check for **complementary pair** if steps 2 and 3 fail.

## **QUESTIONS FOR SELF PRACTICE**

Directions (Qs. 1 - 25): Each of the following questions contains two statements followed by two conclusions numbered I and II. You have to consider the two statements to be true, even if they seen to be at variance at the commonly known facts. You have to decide which of the given conclusions definitely follows from the given statements.

Give answer:(a) if only I follows;(b) if only conclusion II follows;(c) if either I or II follows;(d) if neither I nor II follows; and(e) if both I and II follow.				
1. Statement:	Some Chairs are glasses.	All trees are Chairs.		
Conclusions:	Some trees are glasses.	Some glasses are trees.		
2. Statement:	No man is a lion.	Ram is a man.		
Conclusions:	Ram is not a lion.	All men are not Ram.		
3. Statement:	All boys are Fathers.	All Fathers are Mothers.		
Conclusions:	All Fathers are boys.	All boys are Mothers.		
4. Statement:	All pens are cups.	All cups are bowls.		
Conclusions:	All pens are bowls.	All cups are pots.		
5. Statement:	All students are boys.	No boy is dull.		
Conclusions:	There are no girls in the class.	No student is dull.		
6. Statement:	Some cats are kittens.	All Rats are kittens.		
Conclusions:	Some cats are Rats.	Some Rats are cats.		
7. Statement:	All names are dogs.	No dogs are foxes.		
Conclusions:	All names are foxes.	No dogs are names.		
8. Statement:	All pens are dogs.	Some pens are lights.		
Conclusions:	Some dogs are lights.	Some lights are not dogs.		
9. Statement:	Some animals are clouds.	Horse is a animal.		
Conclusions:	Some clouds are animal.	Hen is not a cloud.		
10. Statement:	All tables are rats.	Some Rats are chairs.		
Conclusions:	All rats are tables.	Some chairs are not rats.		
11. Statement:	All tigers are birds.	Some birds are cows.		
Conclusions:	Some cows are birds.	Some tigers are cows.		

12. Statement:	All papers are pens.	All pens are erasers.
Conclusions:	Some erases are papers.	Some pens are no papers.
13. Statement:	Some trees are monkeys.	Some ships are trees.
Conclusions:	Some Monkeys are ships.	Some trees are neither ships nor monkeys.
14. Statement:	All glasses are mirrors.	Some mirrors are Black.
Conclusions:	All mirrors are glasses.	Some glasses are black.
15. Statement:	Some dogs are monkeys.	No monkey is black.
Conclusions:	Some dogs are black.	Some monkeys are dogs.
16. Statement:	All roads are poles.	No poles are Bungalows.
Conclusions:	Some roads are Bungalows.	Some Bungalows are poles.
17. Statement:	Many actors are directors.	All Directors are dancers.
Conclusions:	Some actors are dancers.	No director is an actor.
18. Statement:	Only dogs are animals.	No historian is an animal.
Conclusions:	Some dogs are not historians.	Some historians are not dogs.
19. Statement:	Some chairs are caps.	No cap is red.
Conclusions:	Some caps are chairs.	No Chair is red.
20. Statement:	Some cups are belts.	No belt is black.
Conclusions:	Some cups are black.	Some cups are not black.
21. Statement:	Some girls are flowers.	Some flowers are books.
Conclusions:	Some girls are books.	No books are girls.
22. Statement:	Some flies are rats.	All animals are rats.
Conclusions:	All flies are rats.	Some rats are animals.
23. Statement:	All cricketers are tall.	Rajesh is tall.
Conclusions:	Rajesh is a cricketer.	Rajesh is not cricketer.
24. Statement:	Some cats are cows.	All cows are horses.
Conclusions:	Some horses are cats.	Some cats are horses.
25. Statement:	All scientists are hard working.	No scientists are superstitious.
Conclusions:	No scientists are superstitious.	All superstitious are not scientists.

#### SPACE INTENTIONALLY LEFT BLANK

#### **ANALYSIS OF QUESTIONS**

Chapter Name	Exam (M18/N18/ M19/N19)	RTP (M18/N18/ M19/N19)	MTP (M18/N18/ M19/N19)	Remarks
09. Number Series, Coding and Decoding and Odd Man Out				
10. Direction Sense Test				
11. Seating Arrangement				
12. Blood Relations				
13. Syllogism				

#### ANALYSIS OF SYLLABUS AND STUDY PLAN

Chapter Name	Wt. as per ICAI	Difficulty Level	Mandatory Questions	1 Day Material	1 <sup>st</sup> Rev.	2 <sup>nd</sup> Rev.	1 <sup>st</sup> 1D Rev.	2 <sup>nd</sup> 1D Rev.
09. Number Series, Coding and Decoding and Odd Man Out								
10. Direction Sense Test								
11. Seating Arrangement								
12. Blood Relations								
13. Syllogism								

### HEART TO HEART TALK !

- 1. Don't fail to plan. Once planned, make sure you execute it too!
- 2. If you don't modify your plan, it means either you are going just superb/ not even started with.
- 3. Practice will surely make you perfect.
- 4. Never compromise on sleep. Make sure you get a sound sleep of atleast 5-6 hours daily, even during the exam time.
- 5. Avoid junk food. Stay healthy, fit and fine throughout your study period and exams.
- 6. Time management is the key.
- 7. Self-evaluations at continuous intervals is a must. Do solve as many papers you can.
- 8. Always sit with an English dictionary by your side.
- 9. Once you finish a topic, make summary notes in a separate notebook. It should contain only important points for referring during the one-day before the exam time.
- 10. Try not to write very lengthy answers for theory questions in the exam.
- 11. ICAI wants you to write the answers in brief and to the point, covering all the key points. You may write the answers in point form instead of paragraphs.
- 12. You may also underline key points or use CAPITAL LETTERS to highlight it.
- 13. Make sure you attempt all the questions and complete the whole paper.
- 14. Avoid social media as much as you can in order to stay focused on your studies.
- 15. Prepare your daily study time table; plan weekly targets and goals and also the deadlines.
- 16. Make sure you prepare for the one-day revision that you will be doing immediately before the exam.
- 17. You should atleast practice the one-day revision plan once much before the exam.
- 18. Remember, the more you revise, the more marks you score! Rankers revise the whole syllabus atleast 5-7 times before the exam.
- 19. Rankers also plan their study schedule and the one-day revision minute by minute.
- 20. Most important- believe in yourself, think positive and feel positive  $\bigcirc$

#### HAPPY LEARNING AND ALL THE BEST!

Constantly yours - KC!



### ABOUT THE AUTHOR

- Cleared all levels of CA Course at the age of **21**!
- Taught **3,000**+ students in a short span of 6 months!
- Counselled **15,000**+ students on careers in commerce and entrepreneurship education in short span of 1 year!
- Mentored **2,500**+ aspiring Chartered Accountants!
- Visiting faculty in premier institutes & colleges in Pune.
- Presented papers at various conferences and invited as a speaker at seminars & study circles.
- Nominated Member of CPE Committee of Western India Regional Council of ICAI for 2019-20.
- Former Vice Chairman of the Western India Chartered Accountants Students Association of ICAI.