

=====*A New Approach to*=====

REASONING FOR BANKS

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1 CHAPTER

CODING-DECODING

Coding is a method of encrypting a message (usually done by the sender) while decoding is a method of deciphering the message to get the original data (usually done by the receiver).

Steps to Solve the Coding-Decoding Questions

“Codes for one or more messages are given, based on which we either have to code or decode the message”.

Step 1: Identifying the technique to decode the given message.

Step 2: Code or decode the message (as required) to get the answer following the identified technique.

Here the codes are expressed in the form of alphabets.

PAIR OF OPPOSITE LETTERS

According to the alphabetical order, the n th letter from the beginning and the n th letter from the end are known as pair of opposite letters.

Letter from left side	A	B	C	D	E	F	G	H	I	J	K	L	M
Position	1	2	3	4	5	6	7	8	9	10	11	12	13
Letter from left side	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Position	14	15	16	17	18	19	20	21	22	23	24	25	26

Letter from right side	Z	Y	X	W	V	U	T	S	R	Q	P	O	N
Position	1	2	3	4	5	6	7	8	9	10	11	12	13
Letter from right side	M	L	K	J	I	H	G	F	E	D	C	B	A
Position	14	15	16	17	18	19	20	21	22	23	24	25	26

NOTE: There are 5 vowels in the alphabetic series, viz. A, E, I, O and U.

Other than vowels all other letters are known as consonants.

TYPE 1. Number Coding

Here the codes for alphabets are expressed in the form of numbers.



1.1. DIRECT NUMBER CODING

(Codes are directly written)

Example 1. If in a certain code language, ‘POSITION’ is written as ‘12345426’ and ‘MORE’ is coded as ‘7289’, then how will the word ‘PROMOTION’ be coded?

Solution. We have codes: P → 1, O → 2, S → 3, I → 4, T → 5, N → 6, M → 7, R → 8, E → 9

It is clear that the coding is done directly.

The code for the word ‘PROMOTION’ is ‘182725426’.

1.2. POSITION OF THE ALPHABETS IN THE ALPHABETIC SERIES

Example 2. If the word ‘SCHOOL’ is coded as ‘1938151512’, then how will the word ‘COLLEGE’ be coded?

Solution. It is clear that the coding is done according to the position of the letters in the alphabetic series *i.e.* A → 1, B → 2, C → 3 etc.

We have the codes:

C → 3, O → 15, L → 12, E → 5, G → 7.

The code for the word ‘COLLEGE’ is ‘3151212575’.

1.3. ADDING UP THE POSITIONAL VALUE OF THE ALPHABETS IN THE ALPHABETIC SERIES

Example 3. If the word ‘THANKS’ = 73, then what will be the value of the word ‘WELCOME’?

Solution. It is clear that the coding is done by adding the positional value of letters in the word.

$$\begin{array}{cccccc}
 T & H & A & N & K & S \\
 \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\
 20 & + & 8 & + & 1 & + & 14 & + & 11 & + & 19 & = & 73
 \end{array}$$

$$\begin{array}{cccccc}
 W & E & L & C & O & M & E \\
 \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\
 23 & + & 5 & + & 12 & + & 3 & + & 15 & + & 13 & + & 5 & = & 76.
 \end{array}$$

The code for the word ‘WELCOME’ is ‘76’.

1.4. CODES GIVEN IN THE TABLE

Example 4. In this question, you have to code the word ‘GESTURE’ using the table and conditions given below.

Letters	T	G	R	U	E	P	B	S	A
Codes	1	2	3	4	5	6	7	8	9

Solution. It is clear that the coding is done according to the codes of the letters given in the table.

The code for the word ‘GESTURE’ is ‘2581435’.

We have the coded,
 $G \rightarrow 2, E \rightarrow 5, S \rightarrow 8, T \rightarrow 1, U \rightarrow 4, R \rightarrow 3, E \rightarrow 5$.
 The codes for the word 'GESTURE' is '2581435'.

TYPE 2. Letter Coding



2.1. DIRECT LETTER CODING-DECODING

(Here the codes are directly written).
 Look for the repetition of letters and their codes, if every time same code is used for the same letter then the coding is direct in nature.

Example 5. If in a certain code, 'CHAIR' is coded as 'JHVZC' and 'PAINT' is coded as 'TVZLQ', then how will the word 'CHANT' be coded?

Solution. The codes of the two given words are analysed and it was observed that each alphabet has a unique replacement. I is coded as Z, A is coded as V in both examples, and likewise.

So, we have codes: $C \rightarrow J, H \rightarrow H, A \rightarrow V, I \rightarrow Z, R \rightarrow C, P \rightarrow T, N \rightarrow L, T \rightarrow Q$

The code for 'CHANT' is 'JHVLQ'.

Example 6. If in a certain code, 'REPRESENTATIVES' is coded as 'KWQKWLWACRCNMWL', then how will the word 'PRESENT' be coded?

Solution. The code of the given word analysed and it was observed that each alphabet has a unique replacement. R is coded as K, E is coded as W in both examples, and likewise.

So, we have the codes: $R \rightarrow K, E \rightarrow W, P \rightarrow Q, S \rightarrow L, N \rightarrow A, T \rightarrow C, I \rightarrow N, V \rightarrow M$.

The code for 'PRESENT' is 'QKWLWAC'.

2.2. ALPHABET JUMP

(Some mathematical operation is applied)

Example 7. If 'MOBILE' is coded as 'OQDKNG', then how the word 'FACEBOOK' will be coded as?

Solution. The letters used as the code for the message 'MOBILE' are two places ahead of the corresponding letters.

The code for the word 'FACEBOOK' is 'HCEGDQQM'.

2.3. JUMBLING UP THE ARRANGEMENT OF THE LETTERS

Example 8. If the word 'RESPONSIBLE' is coded as 'ELBISNOPSER', then how will the word 'ENJOYMENT' be coded?

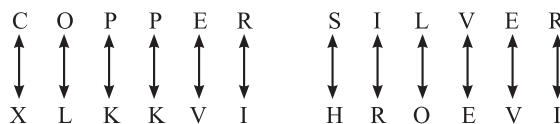
Solution. The code of the message is the reverse order of the message.

The code for the word 'ENJOYMENT' is 'TNEMYOJNE'.

2.4. OPPOSITE PAIR OF LETTERS

Example 9. If the word 'COPPER' is coded as 'XLKKVI', then how will the word 'SILVER' will be coded?

Solution. Letters in the word and its code are equidistant from both the sides of the alphabetic series.

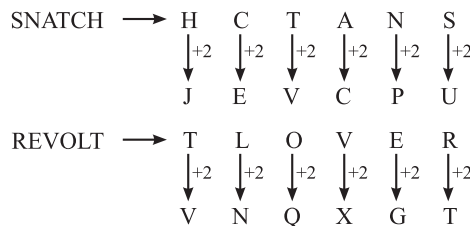


The code for the word 'SILVER' is 'HROEVI'.

2.5. MATHEMATICAL OPERATION AND JUMBLING OF LETTERS

Example 10. If the word 'SNATCH' is coded as 'JEVCPU', then how will the word 'REVOLT' be coded?

Solution. The letters are first written in the reverse order and then the coding is done where the code is the second alphabet from the given letter.



The code for the word 'REVOLT' is 'VNQXGT'.

TYPE 3. Symbol Coding



Here the codes are expressed in the form of symbols.

Example 11. If in a certain code language, TRUCK is written as '@#\$\$%', then how will CUT be written?

Solution. It is clear that every letter has different code in the form of a symbol.

We have the codes:
 $T \rightarrow @, R \rightarrow \#, U \rightarrow \$, C \rightarrow \%, K \rightarrow \&$.
 The code for the word 'CUT' will be '%\$@'.

TYPE 4. Substitution Coding



Some words are assigned certain substituted names as codes.

Example 12. If 'teacher' is called 'doctor', 'doctor' is called 'manager', 'manager' is called 'peon' and 'peon' is called 'teacher', then who will treat a patient?

Solution. Teacher → Doctor
 Doctor → Manager
 Manager → Peon
 Peon → Teacher

Hence 'Manager' treats a patient (as doctor is called manager).

TYPE 5. Sentence Coding



Here some messages are given in the coded language and the code for a particular word or message is required to answer the question.

Any two messages bearing a common word are picked up to analyse the codes.

Example 13. In a certain language, ‘moon is a satellite’ is written as ‘la ka ja ha’, ‘satellite is present in space’ is written ‘ha ka ga fa da’ and ‘earth has one satellite’ is written as ‘sa ma na ha’, then what is the code for the word ‘satellite’?

Solution.

moon is a satellite	la ka ja ha
satellite is present in space	ha ka ga fa da
earth has one satellite	sa ma na ha

Code for the word ‘satellite’ is ‘ha’.

TYPE 6. Conditional Coding



The codes used are mixture of letters, numbers and symbols.

DIRECTIONS (14–16): In the questions given below, you have to code the given word using the table and conditions given below, then choose the correct alternative from the options:

Letters	A	B	C	D	E	F	G	H	I
Codes	@	3	#	4	%	6	&	8	\$

Conditions:

- (i) If the first letter is a consonant and the last letter is a vowel, then both are coded as X.
- (ii) If both the first and the last letters are vowels, then their codes are to be interchanged.
- (iii) If the first letter is a vowel and the last letter is a consonant, then both are to be coded as the code for the first letter.

Example 14. What will be the code of ‘GFDAE’?

Solution. Since the first letter is a consonant and the last one is a vowel, condition (i) is satisfied. So, G → X, E → X and F → 6, D → 4, A → @

The code for the word ‘GFDAE’ will be ‘X64@X’.

Example 15. What will be the code of ‘ADBCI’?

Solution. Since both the first and the last letters are vowels, condition (ii) is satisfied. So, A → \$, I → @ and D → 4, B → 3, C → #

The code for the word ‘ADBCI’ will be ‘\$43#@’.

Example 16. What will be the code of ‘IDGFH’?

Solution. Since the first letter is a vowel and the last one is a consonant, condition (iii) is satisfied. So, I → \$, H → \$, and D → 4, G → &, F → 6

The code for the word ‘IDGFH’ will be ‘\$4&6\$’.

TYPE 7. Advance Pattern Coding

7.1. LETTER-SYMBOL-NUMBER CODING

Each word is coded with the combination of letter, symbol and number using different logics. We are supposed to find the logic to decode the words and answer the following questions based on that.

DIRECTIONS (17–21): Study the following information carefully and answer the questions given below:

In a certain code language

“login and Internet” is written as “#8 @3 @5”

“scroll the websites” is written as “#6 @3 #8”

“exam based note” is written as “#4 #4 @5”

Example 17. Which of the following code stands for ‘Sand’?

- (a) #4
- (b) @4
- (c) #3
- (d) @5
- (e) None of these

Example 18. In the given code language, which of the following words can be coded as ‘@7’?

- (a) Solution
- (b) Absence
- (c) Radian
- (d) Observed
- (e) None of these

Example 19. What will be the code for “Total Money”?

- (a) #4 #5
- (b) #5 @5
- (c) @5 @5
- (d) @4 #5
- (e) None of these

Example 20. In the given code language, what will be the code for ‘Banker’?

- (a) @5
- (b) #5
- (c) @6
- (d) #6
- (e) None of these

Example 21. What will be the code for ‘Snapshots’?

- (a) @8
- (b) #8
- (c) @7
- (d) #7
- (e) None of these

Common Solution (17–21):

Let us understand the logic behind the given codes:

Codes	Logic
Number	Represents the total number of letters in the word. For example, the word ‘Internet’, has 8 letters. So, the code is ‘8’.
Symbols	If the word has an odd number of letters: ‘@’. If the word has an even number of letters: ‘#’. For example, the word ‘Internet’ has an even number of letters. Hence, the code is ‘#’.

17. (a) Given word: Sand
Number letters in the given word is 4. So, the code is #4.
18. (b) Given code: '@7'
The word should have 7 letters. Hence the correct answer is Absence.
19. (c) Given word: Total Money
Number of letters in both words is 5. Hence, the code is @5 @5
20. (d) Given word: Banker
Number of letters in the given word is 6. Hence, the code is #6.
21. (e) Given word: Snapshots
Number of letters in the given word is 9. So the code is @9.

7.2. CLOCK CODING

In this type, a few symbols are given which represent the positions of either the minute hand or the hour hand of a clock.

DIRECTIONS (22–26): Study the following information carefully and answer the questions given below.

- The following symbols represent time in a clock:
- & – Either the hour or minute hand of the clock on 10.
 - \$ – Either the hour or minute hand of the clock on 7.
 - % – Either the hour or minute hand of the clock on 4.
 - # – Either the hour or minute hand of the clock on 6.
 - @ – Either the hour or minute hand of the clock on 2.
 - * – Either the hour or minute hand of the clock on 8.
 - ♥ – Either the hour or minute hand of the clock on 5.

NOTE: If two symbols are given then by default the first symbol is considered as an hour hand and the second symbol is considered as the minute hand. And all times are considered as p.m. For example, '&#' = 10:30 p.m.

Example 22. Vikram takes 110 minutes to reach the station from his home. At what time should he leave to arrive at the station at least 10 minutes before the scheduled departure if the train is scheduled to depart at '\$*%'?

- (a) *% (b) ♥*
- (c) %* (d) ♥#
- (e) None of these

Solution. (b) The given codes,

Code	&	\$	%	#	@	*	♥
Number	10	7	4	6	2	8	5

The train departs at '\$*' i.e. '7:40' p.m.
Vikram takes 110 min to reach from home to station and he has to reach the station 10 min prior.
Total time = 110 + 10 min = 120 min
So, Vikram must leave his house 2 hours before the scheduled time of the train.
Hence, Vikram has to leave his house at 5:40 i.e. '♥*%'.

Example 23. Ritu started running in a park to complete a round, she started from point A at '%@' and reached the starting point at

'%&'. If she covers a total distance of 8km, what is her average speed of running?

- (a) 10 kmph (b) 15 kmph
- (c) 11 kmph (d) 12 kmph
- (e) None of these

Solution. (d) The given codes,

Code	&	\$	%	#	@	*	♥
Number	10	7	4	6	2	8	5

Ritu started running in the park from point A at '%@' i.e. 4:10 p.m.,
And, she reached the same starting point at '%&' i.e. 4:50 p.m.

The total time taken by her to complete a rotation = 40 min
i.e. $\frac{2}{3}$ hour.

The total distance she covered = 8 km.

So, the average speed = $\left\{ \frac{8}{\left(\frac{2}{3}\right)} \right\}$ km/hr = 12 km/hr.

Hence, Ritu's average speed is 12 km/hr.

Example 24. Suresh takes 375 minutes to reach the station from home. If he missed the train by 20 minutes, then at what time did he leave his home if the train departs at '&#' from the station?

- (a) %\$ (b) %&
- (c) *% (d) *&
- (e) None of these

Solution. (a) The given codes,

Code	&	\$	%	#	@	*	♥
Number	10	7	4	6	2	8	5

The train departs at '&#' i.e. 10:30 pm.
But Suresh reaches the station 20 min late i.e. 10:50 pm.
The total time taken by him to reach the station is 375min i.e. 6 hours 15 min.
Hence, Suresh left his house at 4:35 p.m. i.e. '%\$'.

Example 25. A train leaves from city A at '@%' to reach city B. Usually, it takes 260 minutes to reach city B but due to some technical error it halts at one of the stations for 1 hour 30 minutes. Then, at what time does the train reach city B?

- (a) %\$ (b) *@
- (c) *% (d) &♥
- (e) None of these

Solution. (c) The given codes:

Code	&	\$	%	#	@	*	♥
Number	10	7	4	6	2	8	5

The scheduled time of the train leaving station A is '@%' p.m. i.e. 2:20 p.m.

The total time taken by the train to reach city B from city A is ‘%%’ hours i.e. 4:20 hours.

The arrival timing of the train at city B is 6:40 p.m.

But the train reaches the destination 1 hour 30 min late i.e. at 8:10 p.m.

Hence, the train reaches its destination at ‘*@’ p.m.

Example 26. Aman takes 110 minutes to reach his home from his office and he left his office at ‘#♥’ but on the way to his home he met his friend and reached home 35 minutes late. Then, at what time did he reach his home?

- (a) &\$ (b) *@ (c) *%
 (d) \$♥ (e) None of these

Solution. (e) The given codes:

Code	&	\$	%	#	@	*	♥
Number	10	7	4	6	2	8	5

Aman left his office at ‘#♥’ p.m. i.e. 6:25 p.m.

Time required to reach Aman’s home from the office is 110 min.

But after meeting his friend he reaches his house 35 min late.

The total time taken by Aman to reach his house
 = 110 + 35 min = 145 min i.e. 2 hours 25 min.

So, Aman reaches his home at 8:50 p.m. i.e. ‘*&’ p.m.

7.3. BINARY CODING

The binary system with base 2 will have two digits ‘0’ and ‘1’ that will represent all the numbers. In this, the binary numbers are to be converted to the decimal system by multiplying with the appropriate power of 2. For example,

$$5 = 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = (101)$$

DIRECTIONS (27–31): Read the information carefully and answer the questions given below.

In a certain code, the symbol for 0 is &, and that for 1 is #. There are no other symbols for numbers and all numbers greater than 1 are written using these two symbols only as illustrated below:

- 0 is written as &
 1 is written as #
 2 is written as #&
 3 is written as ##
 4 is written as #&& and so on.

Example 27. Which of the following represents 127?

- (a) &&&&&&& (b) #&#####&
 (c) #####&## (d) #####
 (e) None of these

Solution. (d) Binary representation of 127 is:

$$127 = 1 \times 2^6 + 1 \times 2^5 + 1 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = (1111111)_2$$

Hence, the correct answer is #####.

2	127 - 1
2	63 - 1
2	31 - 1
2	15 - 1
2	7 - 1
2	3 - 1
	1

Example 28. Which of the following number will be represented by ‘###&#&#’?

- (a) 52 (b) 53 (c) 71
 (d) 83 (e) None of these

Solution. (b) The decimal number for the codes ‘###&#&#’
 = (110101)₂
 = 1 × 2⁵ + 1 × 2⁴ + 0 × 2³ + 1 × 2² + 0 × 2¹ + 1 × 2⁰ = 53
 Hence, 53 is the correct answer.

Example 29. Which of the following represent the resultant of 27 ÷ 4 × 28?

- (a) #&#####&& (b) #&&&#####&
 (c) &&#####&&# (d) #&#&#&#&#&
 (e) None of these

Solution. (e) 27 ÷ 4 × 28 = 189

Binary representation of 189 is:

$$189 = 1 \times 2^7 + 0 \times 2^6 + 1 \times 2^5 + 1 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = (10111101)_2$$

Hence, the correct answer is #&#####&#.

2	189 - 1
2	94 - 0
2	47 - 1
2	23 - 1
2	11 - 1
2	5 - 1
2	2 - 0
	1

Example 30. Which of the following represent the resultant of (5 × 8 – 9 × 2 + 27 × 3)?

- (a) #&#&#&## (b) #&&#####
 (c) ##&&##### (d) &&#####&
 (e) None of these

Solution. (c) (5 × 8 – 9 × 2 + 27 × 3) = 103

Binary representation of 103 is:

$$103 = 1 \times 2^6 + 1 \times 2^5 + 0 \times 2^4 + 0 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = (1100111)_2$$

Hence, the correct answer is ##&&#####.

2	103 - 1
2	51 - 1
2	25 - 1
2	12 - 0
2	6 - 0
2	3 - 1
2	1

Example 31. Which of the following codes will represent the resultant of ‘##&#&# + ##&#’? (Codes are changed into numbers before addition)

- (a) &&#####&# (b) &###&&&&
 (c) ##&&&&# (d) #&&&&&&&
 (e) #&&&###&

Solution. (d) The decimal number for the given codes:

$$\begin{aligned} \text{‘##&#&#’} &= (11010)_2 = 1 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 0 \times 2^0 = 26 \\ \text{‘##&#’} &= (110)_2 = 1 \times 2^2 + 1 \times 2^1 + 0 \times 2^0 = 6 \end{aligned}$$

So, the Sum = 26 + 6 = 32

The binary representation of ‘32’ is:

$$32 = 1 \times 2^5 + 0 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 0 \times 2^0 = (100000)_2$$

Hence the correct answer is #&&&&&&&.

2	32 - 0
2	16 - 0
2	8 - 0
2	4 - 0
2	2 - 0
	1

7.4. TERNARY CODING

The ternary system with base 3 will have three digits 0, 1, and 2 that will represent all the numbers. In this, the ternary numbers will be converted to the decimal system by multiplying with the appropriate power of 3. For example,

$$22 = 2 \times 3^2 + 1 \times 3^1 + 1 \times 3^0 = (211)_3$$

DIRECTIONS (32–36): Read the information carefully and answer the questions given below.

In a certain code, the symbol for 0 is written as \$, 1 as %, and 2 as #. There are no other symbols for the number greater than 2. The numbers greater than 2 are to be written only by using the three given symbols as shown below.

- In this system,
 0 is coded as \$,
 1 is coded as %,
 2 is coded as #,
 3 is coded as %\$,
 4 is coded as %% and so on.

Example 32. What is the ternary code representation of the decimal number '54'?

- (a) #\$\$%\$ (b) #%%\$\$ (c) #\$\$%\$
 (d) #\$\$\$ (e) None of these

Solution. (d) The ternary representation of 54 is:

3		54 - 0
3		18 - 0
3		6 - 0
		2

$$54 = 2 \times 3^3 + 0 \times 3^2 + 0 \times 3^1 + 0 \times 3^0 = (2000)_3$$

Hence, the code for 54 is '#\$\$\$'.

Example 33. Which of the following number will be represented by '#%\$#'?

- (a) 65 (b) 56 (c) 43
 (d) 74 (e) None of these

Solution. (a) The ternary code for the given code '#%\$#' = '2102'.

The decimal conversion of '2102' is:
 $= 2 \times 3^3 + 1 \times 3^2 + 0 \times 3^1 + 2 \times 3^0 = 65.$

Hence the decimal number for the given code '#%\$#' is 65.

Example 34. Which of the following represent the resultant of $(15 \times 7 + 9)$?

- (a) %%%## (b) %%%\$# (c) %%%\$##
 (d) %%%#\$ (e) None of these

Solution. (b) The given equation: $15 \times 7 + 9 = 114.$

3		114 - 0
3		38 - 2
3		12 - 0
3		4 - 1
		1

The ternary conversion of 114:
 $114 = 1 \times 3^4 + 1 \times 3^3 + 0 \times 3^2 + 2 \times 3^1 + 0 \times 3^0 = (11020)_3$

Hence, the code for the given equation is '%%%\$#'.

Example 35. What is the ternary representation of the number, if the binary representation of the number is '%\$\$\$%'?

- (a) ##\$\$ (b) ##%\$ (c) ##\$%
 (d) #%%\$ (e) None of these

Solution. (a) The binary representation of the given code '%\$\$\$%' is $(1001000)_2$

The decimal number for the binary number $(1001000)_2$ is:
 $= 1 \times 2^6 + 0 \times 2^5 + 0 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 0 \times 2^0 = 72$

The ternary representation of '72':

3		72 - 0
3		24 - 0
3		8 - 2
		2

So, $72 = 2 \times 3^3 + 2 \times 3^2 + 0 \times 3^1 + 0 \times 3^0 = (2200)_3$

Hence, the code for the given equation is '##\$\$'.

Example 36. What is the code of difference between the decimal representation of '%\$\$\$#' and '%\$\$\$'?

- (a) #\$\$% (b) #\$\$# (c) #%\$#
 (d) #%%# (e) None of these

Solution. (b) The decimal number for the given codes:

'%\$\$\$#' = $(10002)_3$
 $= 1 \times 3^4 + 0 \times 3^3 + 0 \times 3^2 + 0 \times 3^1 + 2 \times 3^0 = 83$

'%\$\$\$' = $(1000)_3$

3		56 - 2
3		18 - 0
3		6 - 0
		2

$= 1 \times 3^3 + 0 \times 3^2 + 0 \times 3^1 + 0 \times 3^0 = 27$

So, the required difference = $83 - 27 = 56$

The ternary representation of '56':
 $56 = 2 \times 3^3 + 0 \times 3^2 + 0 \times 3^1 + 2 \times 3^0 = (2002)_3$

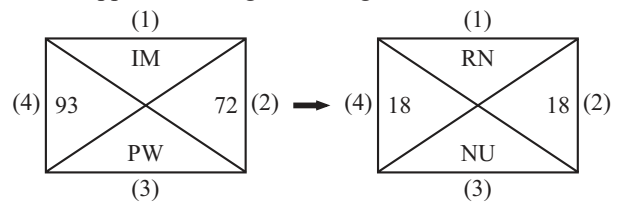
Hence, the correct answer is '#\$\$#'.

7.5. IMAGE BASED CODING

An image with words in different sections are provided along with a few operations. We need to perform the given operations on the provided question figure and mark the answer accordingly.

DIRECTIONS (37–41): Read the following information carefully and answer the questions given below:

There are four triangles given in the question. Some operations are applied individually on each triangle. You have to answer the questions from the triangle which comes after the operation applied on the given triangle.

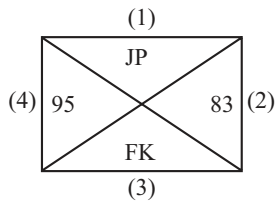


(1) For triangle 1: if the total number of letters between the given two letters in triangle 1 is odd then change each letter with their opposite letter according to the English alphabetical series.

- (2) **For triangle 2:** if the difference between the given two digits is odd then add the resultant after multiplying each digit with 2.
- (3) **For triangle 3:** if the total number of letters between the given two letters is even then replace each letter by the second previous letter according to the English alphabetical series.
- (4) **For triangle 4:** if the sum of the given two digits is even then write the difference between the products of 3 with individual digits.

NOTE: If the above condition is not applied then write the digit and letter as it is in the solution part.

Based on the above operations, solve the given question.



37. How many meaningful words can be formed from the letters of triangle 1 and 3?
 (a) None (b) Two (c) Three
 (d) One (e) Four
38. What is the sum of numbers which is obtained in triangle 2 and triangle 4?
 (a) 27 (b) 28 (c) 34
 (d) 25 (e) 26
39. How many alphabets is/are between the letters obtained in triangle 3?
 (a) 0 (b) 2 (c) 4
 (d) 3 (e) 5
40. What is the product of numbers in triangle 2 and 4?
 (a) 287 (b) 262 (c) 278
 (d) 264 (e) 286
41. Which of the following letters are obtained in triangle 3?
 (a) D, F (b) D, I (c) I, J
 (d) I, K (e) U, P

Common Solution (37–41):

For triangle 1: The number of letters between J and P is 5 (odd) i.e. KLMNO.

So, the letters J and P are replaced with 'Q' and 'K' respectively.

For triangle 2: The difference between digits 8 and 3 is odd i.e. 5.

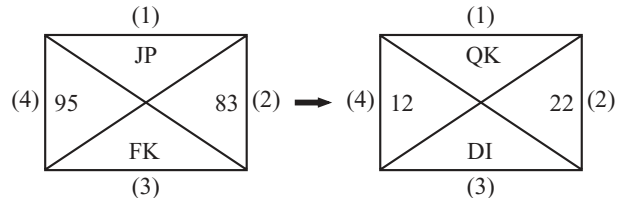
So, the resultant = $8 \times 2 + 3 \times 2 = 22$

For triangle 3: The number of letters between 'F' and 'K' is 4 (even) i.e. GHIJ.

So, the letters 'F' and 'K' are replaced by 'D' and 'I' respectively.

For triangle 4: The sum of the digits 9 and 5 is even i.e. 14.

So, the resultant = $9 \times 3 - 5 \times 3 = 12$



37. (a) Using letters 'Q, K, D, and I' no meaningful word can be made.
38. (c) The sum of each digit obtained in triangle 2 i.e. '22' and triangle 4 i.e. '12' is:
 $22 + 12 = 34$.
39. (c) The number of letters between 'D' and 'I' is 4 i.e. 'E, F, G, H'.
40. (d) The required product = $22 \times 12 = 264$
41. (b) The letters obtained in triangle 3 are 'DI'.

QUESTIONS

TYPE 1. Number Coding

- If A = 26, and X-RAY = 40, then WHAT = ?
 (a) 54 (b) 56 (c) 60
 (d) 62 (e) None of these
- If BEAT = 25-22-26-7, then how will you code 'BURST'?
 (a) 25-6-9-8-7 (b) 25-9-6-8-7
 (c) 25-9-8-7-6 (d) 25-22-9-8-7
 (e) None of these
- If SHE is written as 96 and THEM is written as 184, then ME can be written as:
 (a) 18 (b) 36 (c) 54
 (d) 72 (e) None of these
- If LAMB is written as 7 and CAT is written as 8, then Hotel can be written as:
 (a) 12 (b) 10 (c) 13
 (d) 11 (e) None of these
- If THEM = 4589, WHITE = 82475, MINE = 4912 and HIM = 289, then WHEAT = ?
 (a) 75406 (b) 85407 (c) 28954
 (d) 75906 (e) None of these

DIRECTIONS (6–10): The following numerals are written in an alphabetical or symbol form. Select the choices that represent the given numbers the best.

- 1725552
 (a) NPNRRRS (b) ABCDEFF
 (c) NNPQQRS (d) ABCDDDC
 (e) None of these
- 9955123
 (a) XYZZABC (b) AABCDEF
 (c) ABCDDEF (d) XXYYABC
 (e) None of these

8. 55345511
 (a) $\uparrow\uparrow\rightarrow\downarrow\Delta\uparrow\uparrow\Delta$ (b) $\uparrow\uparrow\rightarrow\downarrow\uparrow\Delta\uparrow\Delta$
 (c) $\uparrow\uparrow\rightarrow\downarrow\uparrow\uparrow\Delta\Delta$ (d) $\uparrow\uparrow\rightarrow\uparrow\downarrow\uparrow\Delta\Delta$
 (e) None of these
9. 6424316
 (a) LKDLBEK (b) KLDLBEK
 (c) KLLDBEK (d) KLDLEKB
 (e) None of these
10. 9133329
 (a) MDRRRKM (b) MDRRKMR
 (c) MDRRRMK (d) MDRRKKM
 (e) None of these

TYPE 2. Letter Coding

11. If LSJXVC is the code for MUMBAI, the code for DELHI is
 (a) CCIDD (b) CDKGH (c) CCJFG
 (d) CCIFE (e) None of these
12. If 'MOHAN' is coded as 'KMFYL', then 'COUNT' will be coded as:
 (a) ANSKR (b) AMSLR (c) ANSLR
 (d) AMSKR (e) None of these
13. In a certain code language, 'INDIA' is written as 'LQGLD', then 'JAPAN' will be written as:
 (a) MDTDR (b) MDSDQ (c) MDSDR
 (d) MDTDQ (e) None of these
14. If GOPAL is coded as MIVUR, then how will RADHA be coded as:
 (a) XTJBG (b) XUJCG (c) XVJBG
 (d) XUJBG (e) None of these
15. In a certain code language, APPROACH is coded as CHOAPRAP. How will RESTRICT be coded?
 (a) CTRISTRE (b) TCIRSTRE
 (c) CTRISTER (d) ERTSIRTC
 (e) None of these
16. If FRIEND is coded as HUMJTK, then how can CANDLE be written in that code?
 (a) DCQHQB (b) DEQJQM
 (c) EDRIRL (d) ESJFME
 (e) None of these
17. In a certain code DEPUTATION is written as ONTADEPUTI. How is DERIVATION written in that code?
 (a) ONVAEDIRTI (b) ONVADEIRTI
 (c) ONVADERITI (d) ONDEVARITI
 (e) None of these
18. In a certain code language, 'salute' is written as 'iuamet'. How will 'mango' be written as in that language?
 (a) phobn (b) uhpen (c) uhobn
 (d) uhoen (e) None of these

19. If in a certain code, 'SUMMIT' is written as 'KSQRGK', then how will 'UMPIRE' be written in that code?
 (a) NKSCPG (b) NKCSPG (c) NKSPCG
 (d) NKSCGP (e) None of these
20. In a code language, 'TORCH' is written as 'UNPSDI' and 'BEST' is written as 'CDFTU'. How will 'MARKS' be written in that language?
 (a) NZBSLT (b) OZBSMT (c) NABLU
 (d) NZCSLT (e) None of these

TYPE 3. Symbol Coding

21. If WING is written as *£?= and THEN as @\$©?, then how will NITE be written?
 (a) ?\$©@ (b) ?£@© (c) ?\$@©
 (d) ?£©@ (e) None of these
22. If $\alpha\delta\gamma\chi\epsilon$ is decoded as ARGUE and $\sigma\phi\lambda\pi\epsilon$ is SOLVE, what is $\pi\gamma\epsilon\sigma\delta\lambda$?
 (a) VGOSRL (b) VUESOL (c) VUASEL
 (d) VGESRL (e) None of these
23. Following words are written in a code language. Study them carefully and find out the word to the given code.
 CAR - $\phi\alpha\delta$
 SIT - $\eta\psi\kappa$
 WELL - $\sigma i\gamma\gamma$
 MAP - $\mu\alpha\beta$
 Given code - $\phi\alpha\gamma\mu$
 (a) CARP (b) CARE (c) CALM
 (d) CAMP (e) None of these
24. Given below are capital letters in the first line and symbols in the second line. Symbols and letters are codes for each other. Choose the correct code for the given letters.

A	C	E	G	H	I	O	N
+	-	÷	×	=	()	[
P	R	T	S	B	D	M	
]	≠		#	@	>	<	

- HEIGHT
 (a) = + (× || = (b) = ÷ (× = ||
 (c) = + (× = || (d) = ÷ (× || =
 (e) None of these
25. In a code language, the following alphabets are coded in a particular way:
 A B C M N F G U V H I P R S T O
 $\downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow$
 ? ! ; : • © @ > < α β ⊕ × ★ ω η
 Which word can be decoded as
 ? ⊕ ⊕ × η ? ; α
 (a) AMMONIUM (b) ACCOUNTS
 (c) APPROACH (d) APPROVAL
 (e) None of these

TYPE 4. Substitution Coding

26. If 'red' is called 'white', 'white' is called 'blue', 'blue' is called 'green', 'green' is called 'orange' and 'orange' is called 'pink', then what is the color of 'grass'?
- (a) white (b) green (c) orange
(d) pink (e) None of these
27. If pen is called paper, paper is called laptop, laptop is called eraser, eraser is called bottle then where do we write?
- (a) laptop (b) paper (c) pen
(d) Either (a) or (b) (e) None of these
28. If 'A' is written as 'C', 'C' is written as 'F', 'F' is written as 'O', 'O' is written as 'E', 'E' is written as 'B' and 'B' is written as 'G', then how 'coffee' will be written?
- (a) AFCCOO (b) FEOBB (c) FAOCC
(d) Either (b) or (c) (e) None of these
29. If 'air' is called 'green', 'green' is called 'blue', 'blue' is called 'sky', 'sky' is called 'yellow', 'yellow' is called 'water' and 'water' is called 'pink' then what is the colour of clear 'sky'?
- (a) green (b) blue (c) sky
(d) water (e) None of these
30. In 'Red' means 'White', 'white' means 'Green', 'Green' means 'black' and 'black' means 'Pink', then tell what is colour of milk?
- (a) Red (b) Black (c) White
(d) Pink (e) None of these

TYPE 5. Sentence Coding

DIRECTIONS (31–33): Read the following information to answer these questions:

In a certain code, 'il be pee' means 'roses are blue', 'sik hee' means 'red flowers' and 'pee mit hee' means 'flowers are vegetables'.

31. How is 'red' written in that code?
- (a) hee (b) sik (c) be
(d) Either (a) or (b) (e) None of these
32. How is 'roses' written in that code?
- (a) il (b) pee (c) be
(d) Cannot be determined (e) None of these
33. How is 'vegetables are red flowers' written in that code?
- (a) mit pee sik hee (b) pe isk mit thee
(c) sik pee hee be (d) il sik mit hee
(e) None of these
34. In a certain code language, 'how can you go' is written as 'ja da ka pa'. 'can you come here' is written as 'na ka sa ja' and 'come and go' is written as 'ra pa sa'. How is 'here' written in that code language?
- (a) ja (b) na (c) pa
(d) Either (b) or (c) (e) None of these

35. If 'WASP STINGS HARD' is coded as @%Z, HARD TO DEAL is coded as Z65 and HEAL LONG TIME is coded as 896, what is the code for HARD?
- (a) 5 (b) @ (c) 9
(d) Z (e) None of these

DIRECTIONS (36–40): Read the information carefully and answer the questions given below.

- In a certain code language,
'Easy game to win' is coded as "ka cu ma te".
'Match of man the' is coded as "si fo he to".
'Catches win the game' is coded as "po ma to te".
'easy win man' is coded as "ka te fo".
36. In the given code language, which of the following words can be coded as 'si'?
- (a) the (b) of (c) man
(d) match (e) Either 'of' or 'match'
37. What is the code for 'game' in the given code language?
- (a) ma (b) to (c) ka
(d) cu (e) None of these
38. In the given code language, if 'man of series' is coded as 'fo ef he' then what is the code for 'win the match'?
- (a) he to te (b) si to te (c) ma to te
(d) cu to te (e) None of these
39. Which of the following is the code for 'catches'?
- (a) te (b) fo (c) ma
(d) po (e) None of these
40. In the given code language, which of the following words can be coded as 'ka'?
- (a) to (b) man (c) easy
(d) win (e) either (a) or (c)

DIRECTIONS (41–45): Read the information carefully and answer the questions given below.

- In a certain code language,
'leafy food good for health' is coded as "fa ka ga ht ma".
'eats food daily health' is coded as "tp ht ka dl".
'leafy diet add daily' is coded as "da dt fa dl".
'Good food diet eats' is coded as "ga ka tp dt".
41. In the given code language, which of the following will be the code of 'health'?
- (a) dl (b) ka (c) ht
(d) tp (e) Either (a) or (d)
42. Which of the following words is coded as 'da' in the given coded language?
- (a) daily (b) diet (c) eats
(d) food (e) add
43. In the given code language, if 'Sita eats leafy food' is coded as 'tp fa st ka' then what is the code for 'Sita add diet food'?
- (a) st da dt ka (b) dt ka ga ma (c) st dt ka ga
(d) ka ga ma dl (e) None of these

44. Which of the following is the code for 'eats'?
- (a) dl (b) tp (c) ht
(d) ka (e) None of these
45. In the given code language, which of the following words can be coded as 'tp ht'?
- (a) health diet (b) daily eats (c) leafy eats
(d) eats health (e) Either (b) or (d)

DIRECTIONS (46–50): Read the information carefully and answer the questions given below.

In a certain code language,

'petition by the people union' is coded as "tn po jk fm no".

'people problem face union' is coded as "lm cd fm no".

'petition attention draw union' is coded as "no tn dw mn".

'the problem draw people attention' is coded as "jk lm dw fm mn".

46. In the given code language, which of the following words can be coded as 'tn'?
- (a) People (b) petition (c) Union
(d) attention (e) Either 'of' or 'match'
47. What is the code for 'the face' in the given code language?
- (a) jk cd (b) cd lm (c) jk tn
(d) cd po (e) None of these
48. In the given code language, if 'file draw problem' is coded as 'dw lf lm' then what could possibly be the code for 'people file attention'?
- (a) fm mn no (b) fm mn cd (c) po mn lf
(d) lm mn lf (e) fm mn lf
49. Which of the following could possibly be the code for 'legal petition'?
- (a) po no (b) tn po (c) tn jd
(d) po fm (e) Either (a) or (c)
50. In the given code language, which of the following words can be coded as 'mn'?
- (a) draw (b) problem (c) face
(d) attention (e) Either (a) or (d)

DIRECTIONS (51–55): Read the information carefully and answer the questions given below.

In a certain code language,

'scheme to assess candidates' is coded as 'sm pk ad ct'.

'scheme for the candidates marks' is coded as 'ct sm fm tm mk'.

'mix internal assess marks' is coded as 'ad mk nl dx'.

'candidates internal exam marks' is coded as 'ct nl mk am'.

51. In the given code language, which of the following will be the code of 'assess'?
- (a) pk (b) sm (c) dx
(d) nl (e) ad
52. Which of the following words are coded as 'am mk' in the given coded language?
- (a) exam marks (b) internal exam
(c) scheme marks (d) the mix
(e) None of these

53. In the given code language, if 'academic year marks' is coded as 'ac mk rs' then what is the code for 'internal year exam'?
- (a) nl am ac (b) sm rs dx (c) am rs sm
(d) nl am rs (e) Either (a) or (d)
54. Which of the following is the code for 'the'?
- (a) dx (b) fm (c) either (b) or (d)
(d) tm (e) None of these
55. In the given code language, which of the following words can be coded as 'nl'?
- (a) to (b) mix (c) for
(d) internal (e) Either (b) or (d)

TYPE 6. Conditional Coding

DIRECTIONS (56–60): In the question given below, there is a group of numbers followed by four/five combinations of letters/symbols marked as (a), (b), (c), (d) and (e). You have to find out which of the combinations correctly represents the group of numbers based on the coding system and mark that as your answer.

Number code	6	2	5	0	9	4	7	1	3	8
Codes	A	€	Z	μ	K	@	Ř	&	\$	Ū

Conditions:

- I. If the first digit is odd and the last digit is even then both digits are to be coded as the code of the second digit.
- II. If the first digit is even and the last digit is odd then both are to be coded as the code for the first digit.
- III. If both the first and the last digits are odd numbers then both are to be coded as '#'.
IV. If both the first and the last digits are even numbers then both are to be coded as '%'.
56. What is the code of '2394587'?
- (a) €\$K#ZŪ@ (b) €\$K@ZŪ€
(c) €\$K@Z€Ū (d) €\$K@Ū€Z
(e) None of these
57. What is the code of '3721639'?
- (a) #Ř€&A\$% (b) #Ř€&A#
(c) @Ř€&A\$# (d) #Ř€&A\$#
(e) None of these
58. What is the code of '7648138'?
- (a) AA@Ū&\$A (b) AA@Z&\$A
(c) A@@Ū&\$A (d) AA@Ū&A\$
(e) None of these
59. What is the code of '6265942'?
- (a) %€AZK@& (b) %€AZK@%
(c) A€AZK@% (d) %AZ ŘK@%
(e) None of these
60. What is the code of '9175926'?
- (a) &&ŘZK€Z (b) @&ŘZK€&
(c) &ŘZK\$€& (d) &&ŘK€Z&
(e) &&ŘZK€&

DIRECTIONS (61–65): In the question given below, there is a group of letters followed by four/five combinations of digits/symbols marked as (a), (b), (c), (d) and (e). You have to find out which of the combinations correctly represents the group of letters based on the coding system and mark that as your answer.

Letters	P	E	C	K	G	T	I	N	S	M	O	A	L
Codes	@	7	#	Z	R	α	4	Ř	2	3	&	5	X

Conditions:

- I. If both the first and the last letters are consonants, then all the vowels are to be coded as D.
- II. If both the first and the last letters are vowels, then both are to be coded by ‘♥’.
- III. If the first letter is a consonant and the last letter is a vowel, then their codes are to be interchanged.
- IV. If the first letter is a vowel and the last letter is a consonant, then their codes are to be replaced by the code of ‘G’.

61. What is the code of ‘PEOPLE’?
 (a) &7&7X@ (b) @7&7X@
 (c) 77&@X@ (d) 77&7@X
 (e) None of these
62. What is the code of ‘ITALICA’?
 (a) α♥5X4#1 (b) ♥α5X4#♥
 (c) ♥5X3#♥2 (d) ♥α4X5#♥
 (e) None of these
63. What is the code of ‘MOAPIK’?
 (a) 3#Ř@DZ (b) 3D#@DZ
 (c) 3ED@XZ (d) 3DD@DZ
 (e) None of these
64. What is the code of ‘ETANIS’?
 (a) RαŘ45R (b) R5αŘ4R
 (c) RαŘ45R (d) 5RαŘ4R
 (e) None of these
65. What is the code of ‘COLNPS’?
 (a) D&X#@D (b) D&ZŘ@D
 (c) #DXŘ@2 (d) DXŘ&@D
 (e) None of these

DIRECTIONS (66–70): There are two rows given and to find out the resultant of a particular row we need to follow the following steps:

- Step 1:** If an even number is followed by a prime number then the resultant will be the sum of two numbers.
- Step 2:** If an even number is followed by an even composite number then the resultant will be the ratio of the bigger number to the smaller number.
- Step 3:** If an odd number is followed by a prime number then the resultant will be the sum of the two numbers.
- Step 4:** If an even number is followed by an odd number but not a prime number then the resultant will be the difference between the two numbers.

- Step 5:** If an odd number is followed by an even number then the resultant will be the product of both numbers.
- Step 6:** If an odd number is followed by an odd number (non-prime) then the resultant will be the difference between the two numbers.

66. What is the difference between the resultant of the two rows?

3	2	4	3
2	6	9	15

- (a) 10 (b) 11
 (c) 14 (d) 12 (e) None of these
67. What is the product of the two resultants, if ‘z’ is the resultant of the first row?

8	5	4	4
5	z	9	21

- (a) 156 (b) 169
 (c) 144 (d) 148 (e) None of these
68. What is the sum of resultants of both the rows?

7	8	14	23
11	25	19	15

- (a) 50 (b) 42
 (c) 52 (d) 45 (e) None of these.
69. What is the resultant of the second row, if (b – a) is equal to 4 and b is the resultant of the first row?

4	7	11	9
16	4	a	b

- (a) 17 (b) 15
 (c) 16 (d) 19 (e) None of these
70. What is the product of the resultant of both the rows?

7	21	14	26
2	8	15	9

- (a) 52 (b) 51
 (c) 53 (d) 54 (e) None of these

DIRECTIONS (71–75): Study the following information carefully and answer the following questions.

In the alphabetical series, each consonant is assigned a different number from 1-6. For example, B is coded as 1, C is coded as 2, H is coded as 6, and again those numbers get repeated, for example: J-1, K-2, ... so on. Also, each vowel is assigned a different symbol viz. ‘\$, %, @, &, ♥’. If

“Leave The Ground” is coded as – ‘52♥@53 3\$&5\$ 46\$’.

“Big On fine You” is coded as – ‘4%5\$ ♥5 2♥@ 1%5’.

The words in the questions are to be coded based on the following conditions:

- I. If the first letter is a vowel and the last letter is consonant, then the code of both the letters will be interchanged.
- II. If the first and last letter of the word is a vowel, then both the letters are coded as the code for the first letter.

III. If the first and last letter of the word is a consonant, then both the letters are coded as the code for the last letter.

71. What can be the code of 'Assigned Number'?
- (a) 333%55\$& 2@42\$1 (b) 333%55\$& 2@41\$2
(c) 331%55\$& 2@31\$2 (d) 333%55\$& 2@41\$4
(e) None of these
72. What can be the code of 'White Envelope'?
- (a) 66%4\$ 55\$3♥6\$ (b) 66%4\$ 55\$3♥6\$
(c) 66%46 55\$3@6\$ (d) 66%4\$ 55\$3♥64
(e) None of these
73. What can be the code of 'World United'?
- (a) 3©233 45%5\$@ (b) 2©233 35%4\$@
(c) 3©223 35%4\$© (d) 3©233 35%4\$@
(e) None of these
74. What can be the code of 'Butter Flow'?
- (a) 2@44\$2 43©4' (b) 2@44\$3 43©6'
(c) 2@44\$2 63♥6' (d) 2@44\$2 43@6'
(e) None of these
75. What can be the code of 'Aqua Eagle'?
- (a) &1@& \$&5\$3 (b) &1@2 \$&53\$
(c) &1@& \$&535 (d) &1@4 \$&53\$
(e) None of these

DIRECTIONS (76–80): Read the following information carefully and answer the questions given below.

There is a 3*5 matrix that can produce signals which in turn help in the illumination of some bulbs. The row of the matrix is denoted by %, @, and # from top to bottom, and the columns are denoted by the alphabets A, B, C, D, and E from left to right.

- ❖ # row contains a number which is a consecutive multiple of 19, starting from 19 (from left to right).
- ❖ @ row contains a number which is a consecutive multiple of 14, starting from 14 (from left to right).
- ❖ % row contains a number which is a consecutive multiple of 11, starting from 11 (from left to right).
- ❖ The matrix helps in producing signals which can be either a single string of number X- or two-line string X and Y.
- ❖ There are 4 lights P, Q, R, and S. Based on the outcome of the strings mentioned above one of the light blinks.

Condition for blink:

1. If the outcome is less than 80, then P will blink.
2. If the outcome range is 80-110, then Q blinks.
3. If the outcome range is 111-176, then R blinks.
4. If the outcome is greater than 176, then S blinks.

For the outcome of the string:

1. If the string has only odd numbers, then add the digits of the two-digit numbers (within the number) and their resultant will be multiplied to get the outcome.

2. If an even number is followed by an odd number then the digits at ten's places of all the two-digit numbers are to be removed and the digits at the one's place are to be multiplied to get the outcome.
 3. If the string contains more than one prime number, the outcome of the string is the difference between the sum of all even numbers and the sum of all the prime numbers.
 4. If none of the above logic is followed, then the simple outcome is the sum of the numbers.
76. If String $X = \%C \#A \%A$, then which bulb will blink?
- (a) P (b) R (c) Q
(d) Cannot be determined (e) None of these
77. If the two-line string is given as $Y - X$, such that string $X = \%A \#C \#A \%A$, and the string $Y = \%E \#C \#B \%A$, and then which of the following bulbs will blink?
- (a) Q (b) P (c) R
(d) Cannot be determined (e) None of these
78. If a one-line string is given by $(3/7)X = \#A \#B \%D \#E$, then which bulb blinks?
- (a) S (b) Q (c) P
(d) Cannot be determined (e) None of these
79. If the two-line string is given as $X - Y$, such that string $X = \%A \%E \#E$, and the string $Y = \#C \%A$, and then which of the following bulbs will blink?
- (a) S (b) Q (c) P
(d) R (e) Either Q or S
80. If the two-line string is given as $X - Y$, such that string $X = \%C \#C \#D \#D \#B$, and the string $Y = \#A \%A \#B \%D$, and then which of the following bulbs will blink?
- (a) P (b) S
(c) Q (d) Cannot be determined
(e) None of these

TYPE 7. Advance Pattern Coding

DIRECTIONS (81–85): Study the following information carefully and answer the questions given below:

In a certain code language

'Biker Plate Hero' is written as '2@18 2#15 2@5'

'Corona Test Lab' is written as '1#20 1@2 3#1'

'Kit Corona Tests' is written as '3#1 1@19 1@20'.

81. What is the code for 'Phone'?
- (a) 1@5 (b) 2@5 (c) 1#5
(d) 2#5 (e) None of these
82. Which of the following may be the code for 'Pencil'?
- (a) 2#12 (b) 2@12 (c) 3@12
(d) 3#12 (e) None of these
83. What is the code for 'Bottle'?
- (a) 1#5 (b) 2@5 (c) 1@5
(d) 2#5 (e) Can't be determined

84. What is the code for 'Hector' in the given code language?
 (a) 2@18 (b) 3#18 (c) 2#18
 (d) 3@18 (e) None of these
85. Which of the following may be the code for 'Fired'?
 (a) 2@5 (b) 2#4 (c) 2#5
 (d) 1#4 (e) 2@4

DIRECTIONS (86–90): Study the following information carefully and answer the questions given below:

In a certain code language

'Fired Boneless plans great' is written as '#L8 @R5 %I5 &O5'

'Bira point good Fuel' is written as '#R4 %L4 @F4 &L5'

'garden biased phone Fern' is written as '&S5 #R6 %Z6 @V4'

'given file bigger plan' is written as '@R4 &O4 %R5 #R6'

86. Which of the following is the code for 'Berries'?
 (a) #V7 (b) @V7 (c) &V7
 (d) %V7 (e) None of these
87. Which of the following is the code for 'Programme'?
 (a) #I9 (b) %I9 (c) @I9
 (d) &I9 (e) None of these
88. In the given code language, which of the following words can be coded as '%Z6'?
 (a) Printer (b) Backup (c) Gadget
 (d) Fantom (e) None of these
89. Which of the following is the code for 'Furniture'?
 (a) &F9 (b) %F9 (c) @F9
 (d) #F9 (e) None of these
90. In the given code language, which of the following words can be coded as '#F7'?
 (a) Goblets (b) Burglar (c) Factual
 (d) Packets (e) None of these

DIRECTIONS (91–95): Study the following information carefully and answer the questions given below.

In a certain language,

"Some pointer memories" is coded as "V&6 IC6 H&12",

"Search all the documents" is coded as "O©2 S&6 H©6 V©2",

"Some files are personal" is coded as "O&6 V&6 V©6 H©6",

"prepare the solution" is coded as "M&12 V©2 V©6"

91. What is the code for "Talented"?
 (a) W&7 (b) X&6 (c) W&6
 (d) Y&7 (e) None of these
92. In the given code language, what does the code 'M&12' mean?
 (a) Premium (b) Pollutant (c) Private
 (d) Protection (e) None of these

93. What is the code of the word "Appreciated"?
 (a) W©10 (b) X©10 (c) W&11
 (d) X©11 (e) None of these

94. What is the code for "Rational"?
 (a) P©12 (b) O©12 (c) P&12
 (d) O&12 (e) None of these

95. Which word is coded as 'H©10'?
 (a) Communicate (b) Disposal (c) Equations
 (d) Screenshots (e) None of these

DIRECTIONS (96–100): Answer the following questions based on the information given below:

In a code language,

"latest data confirm" is coded as "U©20 B@20 N&18".

"the second model" is coded as "M#15 E©19 F%20"

"enter and follow" is coded as "S#20 X©23 E%14".

96. What is the code for 'Simple'?
 (a) F©19 (b) F@19 (c) F#19
 (d) F%19 (e) None of these
97. What is the code for 'Ring'?
 (a) H#18 (b) H©18 (c) H@18
 (d) H%18 (e) None of these
98. What is the code for 'Ample'?
 (a) F#16 (b) F@16 (c) F%16
 (d) F©16 (e) None of these
99. What is the code for 'Mineral'?
 (a) M#18 (b) M©18 (c) M%18
 (d) M&18 (e) None of these
100. What is the code for 'Fun'?
 (a) O&21 (b) O%21 (c) O#21
 (d) O©21 (e) None of these

DIRECTIONS (101–105): Answer the following questions based on the information given below:

In a code language,

"high wireless band" is written as "R12J D24J M12B".

"Intern schools round" is written as "H14D F10P G18O".

"sworn chief Tuesday" is written as "R10I B14V D10X".

101. In the given coding language, which of the following will be the code for "Question"?
 (a) F18V (b) F21V (c) F24V
 (d) F12V (e) None of these
102. In the given coding language, which of the following will be the code for "Mobile"?
 (a) L14P (b) L24P (c) L10P
 (d) L18P (e) None of these
103. Which of the following words could be coded as "L10B"?
 (a) Mango (b) Round (c) Found
 (d) Ranger (e) None of these
104. In the given coding language, which of the following will be the code for "Symbols"?
 (a) C15Z (b) B14Z (c) C14Z
 (d) B15Y (e) None of these

105. In the given coding language, which of the following will be the code for “below”?

- (a) D11F (b) C10F (c) D10F
(d) C11F (e) None of these

DIRECTIONS (106–110): Answer the following questions based on the information given below:

In a code language,

“Death donate advisor over” is coded as “B@B G&P C@W V&W”.

“circuit heart time future” is coded as “C@S N&J B@B I&V”

“the film factory silver” is coded as “A@F O&J B@D V&J”.

106. What is the code for ‘Monitor’?

- (a) C@M (b) C&P (c) C@O
(d) P&C (e) None of these

107. What is the code for ‘Legalise’?

- (a) H@F (b) H&F (c) F@H
(d) F&H (e) None of these

108. What is the code for ‘Amplitude’?

- (a) D@Q (b) D&S (c) D@P
(d) D&N (e) None of these

109. What is the code for ‘Summer’?

- (a) V@V (b) V&W (c) V&V
(d) W@V (e) None of these

110. What is the code for ‘States’?

- (a) V&U (b) U@U (c) V&V
(d) U@V (e) None of these

DIRECTIONS (111–115): Answer the following questions based on the information given below:

In a code language,

“claimed mastery soul” is coded as “N4R H2F B5V”.

“matters political party” is coded as “G5V B4Z G5L”

“picked wrong horse implied” is coded as “H3L K4R K4R D4L”.

111. What is the code for ‘Course’?

- (a) H1F (b) H2F (c) H4F
(d) H3F (e) None of these

112. What is the code for ‘Dialtone’?

- (a) G5L (b) L4G (c) G4L
(d) L5G (e) None of these

113. What is the code for ‘Amplitude’?

- (a) G3F (b) G6F (c) G4F
(d) G5F (e) None of these

114. What is the code for ‘Handkerchief’?

- (a) I6R (b) I7R (c) I9R
(d) I10R (e) I8R

115. What is the code for ‘Bakers’?

- (a) V3H (b) H5V (c) V4H
(d) H3V (e) H4V

DIRECTIONS (116–120): Study the following information carefully and answer the questions given below.

The following symbols represent time in a clock:

& means either hour hand or minute hand is at 4.

€ means either hour hand or minute hand is at 6.

? means either hour hand or minute hand is at 9.

@ means either hour hand or minute hand is at 3.

Ω means either hour hand or minute hand is at 12.

♥ means either hour hand or minute hand is at 8.

% means either hour hand or minute hand is at 2.

NOTE: If two symbols are given then by default the first symbol is considered as an hour hand and the second symbol is considered as the minute hand. And all times are considered as ‘a.m.’. e.g. ‘&Ω’ = 4:00 a.m.

116. In a school, an exam was started at ‘?Ω’. The maximum time for exam was 3 hours. A student ‘D’ submitted his paper 15 minutes before the commencement of the exam, and the student ‘B’ who finished first submitted his paper at 11:40 a.m. Then, what was the absolute difference between the time of submission of paper of D and B?

- (a) 4 min (b) 6 min (c) 5 min
(d) 2 min (e) None of these

117. A train that travels at the uniform speed of 50/3 meters per second leaves city A at ‘€Ω’ to reach city B and another train travels from city B to city A and started the journey at ‘♥Ω’. The second train ran 5/4 times faster than the first train. Then, at what time do both the trains meet if the distance between cities A and B is 255 km?

- (a) @& (b) €@ (c) ?Ω
(d) @Ω (e) Cannot be determined

118. If a train departed from city A at ‘&?’ and it takes 210 minutes to reach the destination then at what time Ram should reach the destination if he wants to reach there before 5 minutes of the train’s scheduled arrival time (destination)?

- (a) &\$ (b) *@ (c) *%
(d) \$♥ (e) None of these

119. Ajay left home to reach the bus stop 20 minutes earlier than usual. It takes him 15 minutes to reach the stop. He reached the bus stop at ‘♥?’’. What time did he leave his home?

- (a) ♥% (b) *@ (c) ♥&
(d) ♥@ (e) None of these

120. A person has to catch a train that is scheduled to depart at ‘?€’. The person takes 4 hours and 15 minutes to reach the railway station from his home. At what time should he leave from his home to arrive at the station at least 30 minutes before the departure time of the train?

- (a) &\$ (b) &? (c) *%
(d) &♥ (e) None of these

DIRECTIONS (121–125): Study the following information carefully and answer the questions given below.

The following symbols represent the hands in a clock:

@ Means either hour hand or minute hand is at 7.

Means either hour hand or minute hand is at 8.

\$ Means either hour hand or minute hand is at 4.

% Means either hour hand or minute hand is at 11.

& Means either hour hand or minute hand is at 5.

£ Means either hour hand or minute hand is at 3.

NOTE: If two symbols are given then by default the first symbol is considered as hour hand and the second one is considered as the minute hand. And all time is considered at p.m. For example, '&\$' = 5:20 p.m.

121. If Suraj takes 30 min to reach the railway station from his home and his train is scheduled at '#@' then at what time should he leave to reach the station 10 minutes earlier?
(a) \$% (b) &\$ (c) @\$(d) £@ (e) @%
122. A car leaves from city A to city B at '&%'. Usually, the car takes $5\frac{2}{3}$ hours to reach city B. Then, at what time does the car reach city B?
(a) %£ (b) \$% (c) %@(d) \$# (e) £%
123. A person has to catch a flight that is scheduled to depart at '#\$' and the boarding starts 30 minutes before that. It takes 4 hours and 15 minutes to reach the airport. At what time should he leave to arrive at the airport just before the boarding starts?
(a) %@ (b) £@ (c) %+(d) £\$ (e) None of these
124. It takes 2 hrs 15 mins for Sima to reach her home from the office. But she got late by 25 mins and reached home at '@%'. At what time did she leave her office?
(a) %@ (b) £\$ (c) &£(d) +@ (e) None of these
125. If a car starts from Greater Noida at '#£' and reaches Delhi at '%£', what is the speed of the car (in km/hr) if the distance between the two stops is 150 km?
(a) 45 km/hr (b) 55 km/hr (c) 35 km/hr(d) 50 km/hr (e) None of these

DIRECTIONS (126–130): Study the following information carefully and answer the questions given below.

The following symbols represent time in a clock:

! means either hour hand or minute hand is at 2.

@ means either hour hand or minute hand is at 4.

means either hour hand or minute hand is at 9.

\$ means either hour hand or minute hand is at 10.

% means either hour hand or minute hand is at 12.

& means either hour hand or minute hand is at 5.

NOTE: If two symbols are given then by default the first symbol is considered as hour hand and the second one is considered as the minute hand, and all time is considered at a.m.. e.g. '&\$' = 5:50 a.m.

126. If a train is running at a speed of $\frac{50}{3}$ meter per second and leaves at '!&', then at what time does it reach its destination if the total distance between the initial and final point is 445 km?

- (a) @@ (b) @! (c) \$\$
(d) #\$ (e) None of these

127. It takes 9 hrs 20 mins for Vinay to reach Delhi from Lucknow by car. But he arrived 15mins earlier. Then at what time did he leave Lucknow if he reaches the destination at '#&'.
(a) %% (b) %@ (c) #@(d) &% (e) None of these
128. Aman booked a cab to attend a friend's marriage ceremony and the cab charged ₹ 7/km. If he boarded the cab at '!#' and reached the ceremony at '@!'. What amount did he pay for the cab (in ₹) if the cab is running at a speed of $\left(\frac{30}{17}\right)$ m/sec?
(a) 63 (b) 56 (c) 70
(d) 140 (e) Can't be determined
129. Arun usually leaves his house at '#!' to reach his office at '\$!', but today he left his house late by 10 mins and also got stuck in traffic for 5mins. At what time will he reach his office today?
(a) && (b) \$% (c) #%(d) \$& (e) None of these
130. Two cars travel from Delhi to Kanpur. If the speed of car A is $\frac{25}{3}$ m/sec and leaves Delhi at '&@' and the speed of car B is $\frac{4}{3}$ times the speed of car A and car A takes 1 hour more than car B. Then, at what time car A reached Kanpur?
(a) \$@ (b) #@ (c) #%(d) #! (e) None of these

DIRECTIONS (131–135): Study the information carefully and answer the questions given below.

α means either hour hand or minute hand is at 5

∞ means either hour hand or minute hand is at 11

© means either hour hand or minute hand is at 6

β means either hour hand or minute hand is at 12

® means either hour hand or minute hand is at 4

μ means either hour hand or minute hand is at 3

NOTE: If two symbols are given then by default the first symbol is considered as hour hand and the second symbol is considered as the minute hand, and all time is considered at p.m. e.g. '®©' = 4:30 p.m.

131. If a car starts from City A at 'α©' and reaches city B at '∞β', what is the speed of the car (in m/sec) if the distance between the two stops is 198 km?
(a) 15 m/sec (b) 12 m/sec (c) 10 m/sec
(d) 5 m/sec (e) None of these
132. A train leaves from Ahmedabad station at '®μ' to reach Mumbai. Usually, it takes 6 hours and 15 minutes to reach Mumbai but it halted at some stations for 50 minutes due to some unknown reason. So, at what time did the train reach Mumbai?
(a) αβ (b) ∞® (c) ®©
(d) ©β (e) ∞β

133. One day Radha and Shobha planned to go shopping at ‘©∞’ and returned to their home after shopping at ‘∞μ’. Then, how much time did they spend shopping?
 (a) 4 hr 20 min (b) 4 hr 40 min (c) 5 hr 20 min
 (d) 4 hr 25 min (e) None of these
134. A person has to catch a train that is scheduled to depart at ‘©∞’. It takes the person 3 hours 250 minutes to reach the railway station. At what time should he leave from his home to arrive at the station at least 10 minutes before the departure of the train?
 (a) μμ (b) ©© (c) ∞∞
 (d) αμ (e) None of these
135. A person reaches home from ‘©©’. On Saturday he left his office at his usual time *i.e.* at ‘αμ’ but on the way to his home, he met his friend and reached home 25 minutes late. Then, at what time did he reach his home?
 (a) μβ (b) ∞β (c) ©∞
 (d) ©β (e) None of these

DIRECTIONS (136–140): Read the information carefully and answer the questions given below.

In a certain code, the symbol for 0 is \$, and that for 1 is @. There are no other symbols for numbers and all numbers greater than 1 are written using these two symbols only as illustrated below:

0 is written as \$
 1 is written as @
 2 is written as @\$
 3 is written as @@
 4 is written as \$\$\$ and so on.

136. Which of the following represent the code for the decimal number 43?
 (a) \$@\$@\$@ (b) @\$@\$@\$ (c) @\$@\$@@
 (d) @\$\$@@@ (e) None of these
137. Which of the following numbers will be represented by ‘@\$\$@\$\$’?
 (a) 24 (b) 36 (c) 25
 (d) 40 (e) None of these
138. What is the difference between the resultant of ‘@@\$@@’ and ‘@@\$@’?
 (a) @@@\$ (b) @\$@@ (c) @@\$@
 (d) @\$\$@ (e) None of these
139. What is the sum of the decimal representations of the codes ‘@\$\$@’ and ‘@\$\$\$\$’?
 (a) @@\$@\$@ (b) @\$@\$@@ (c) @\$@\$@@
 (d) @@\$@@@ (e) None of these
140. What is the product of the decimal representations of the codes ‘@\$\$\$’ and ‘@@\$’?
 (a) @\$\$\$\$@ (b) @@@\$\$\$\$ (c) @\$\$\$\$\$
 (d) @@\$@\$@ (e) @\$\$\$\$@

DIRECTIONS (141–145): Read the information carefully and answer the questions given below.

In a certain code, the symbol for 0 is \$, and that for 1 is @. There are no other symbols for numbers and all numbers greater than 1 are written using these two symbols only as illustrated below:

0 is written as \$
 1 is written as @
 2 is written as @\$
 3 is written as @@
 4 is written as \$\$\$ and so on.

141. Find the resultant of the codes ‘@\$@@\$@@’ ÷ ‘@@\$@’?
 (Codes are converted to decimal numbers before operation)
 (a) @@\$ (b) @\$@ (c) @@@
 (d) @\$ (e) None of these
142. What is the coded value of the given equation
 (‘@@@@’ + 7) – (@\$\$@)?
 (Codes are converted to decimal numbers before operation)
 (a) @@\$@ (b) @@@\$ (c) @\$\$\$
 (d) @@@@ (e) None of these
143. What is the result of the given coded equation
 ‘@@@@@’ + ‘@\$@@\$\$’?
 (Codes are converted to decimal numbers before operation)
 (a) @\$\$\$@\$@ (b) @\$\$\$\$@@ (c) @\$\$\$\$@\$
 (d) @\$\$\$@\$\$@ (e) None of these
144. What is the result of the given coded equation
 ‘@\$\$@\$@@’ – ‘@@@@@’?
 (Codes are converted to decimal numbers before operation)
 (a) @\$\$\$@ (b) @@@@ (c) @@\$@
 (d) @@@@ (e) None of these
145. What is the result of the given coded equation
 ‘@\$@@’ × ‘@@@@’?
 (Codes are converted to decimal numbers before operation)
 (a) @\$\$\$@\$@ (b) @\$\$\$@\$\$@
 (c) @\$\$\$@\$\$@ (d) @\$\$\$@\$\$\$
 (e) None of these

DIRECTIONS (146–150): Read the information carefully and answer the questions given below.

In a certain code, the symbol for 0 is written as ©, 1 as £, and 2 as ¥. There are no other symbols for the number greater than 2. The numbers greater than 2 are to be written only by using the three given symbols as shown below.

In this system,
 0 is coded as ©,
 1 is coded as £,
 2 is coded as ¥,
 3 is coded as £©,
 4 is coded as ££ and so on.

146. What is the code of the resultant of ‘243 + 11 × 4 – 176 ÷ 2’?
 (a) ¥©££© (b) £¥¥©¥ (c) ¥££©
 (d) ¥££©£ (e) None of these
147. Which of the following codes represents the cube of the value of ‘£©¥’?
 (a) ££¥¥©©¥¥ (b) £¥££©¥©© (c) £¥££©¥¥
 (d) £¥£¥©©© (e) None of these

148. Values of which of the following codes does not represent a square number?

- (a) ¥£¢£ (b) £¢¥¢£ (c) ££¢¢
(d) £¥£¢¢ (e) None of these

149. Values of the following options represent the sum of the values of '¥£¢£' and '££¢¢'?

- (a) £¢¥¢£ (b) £¥¢¢£ (c) £¢¥¢¥
(d) ¥¢£¢£ (e) None of these

150. Which of the following codes represents the product of the values of '¥¢£' and '¥¢'?

- (a) £¢¥¢£ (b) ££¢¥¢ (c) ¥¥¢£¢
(d) ££¥£¥ (e) None of these

DIRECTIONS (151–152): Read the information carefully and answer the questions given below.

In a certain code, the symbol for 0 is written as \$, 1 as ¥, and 2 as £. There are no other symbols for the number greater than 2. The numbers greater than 2 are to be written only by using the three given symbols as shown below.

In this system,

- 0 is coded as \$,
1 is coded as ¥,
2 is coded as £,
3 is coded as ¥\$
4 is coded as ¥¥ and so on.

151. Values of which of the following codes lie between the values of '¥¥\$££' and '¥¥¥£¥'?

- (a) ¥\$£¥\$ (b) ¥¥¥\$ (c) ¥¥¥¥
(d) ¥£\$\$\$ (e) Both ¥¥¥¥\$ and ¥¥¥£\$

152. What will be the result of the sum of the values of '£¥\$£' and '£\$\$\$¥'?

- (a) 130 (b) 135 (c) 120
(d) 110 (e) None of these

DIRECTIONS (153–155): Read the information carefully and answer the questions given below.

In a certain code, the symbol for 0 is \$, and that for 1 is ©. There are no other symbols for numbers and all numbers greater than 1 are written using these two symbols only as illustrated below:

- 0 is written as \$
1 is written as ©
2 is written as ©\$
3 is written as ©©
4 is written as ©\$\$ and so on.

153. Which of the following numbers represents the value of ©\$©\$\$\$©?

- (a) 80 (b) 81 (c) 100
(d) 99 (e) None of these

154. Values of which of the following codes represent the resultant of $37 \times 9 \div 6 \times 2 + 13 - 4$?

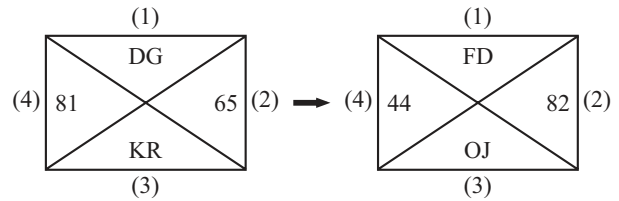
- (a) ©©©©\$\$\$© (b) ©©©©\$\$ (c) ©\$©©\$\$\$©
(d) ©\$\$\$©\$\$ (e) None of these

155. Which of the following numbers represents the sum of the values of '©\$\$\$\$©' and '©\$\$\$\$©\$'?

- (a) 104 (b) 66 (c) 99
(d) 83 (e) None of these

DIRECTIONS (156–160): Read the following information carefully and answer the questions given below:

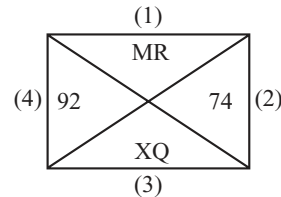
There are four triangles given in the question. Some operations are applied individually on each triangle. You have to answer the questions from the triangle which comes after the operation applied on the given triangle.



- For triangle 1:** if the difference between place values of both letters is less than 6 then replace the first letter with the second successive letter and second letter with the third preceding letter according to the English alphabetical series.
- For triangle 2:** if the difference between the given two digits is less than 6 then add 2 to the first digit and subtract 3 from the second digit.
- For triangle 3:** if the difference between place values of both letters is greater than 5 then replace each letter with the opposite letters after changing the first letter by the succeeding letter and second letter by its preceding letter according to the English alphabetical series.
- For triangle 4:** if the difference between the given two digits is more than 5 then the resultant will be the product of the numbers after adding 3 to each of the digits.

NOTE: If the above conditions are not applied then write the digit and letter as it is in the solution part.

Based on the above operations, solve the given question.



156. How many meaningful words can be formed from the letters of triangle 1 and 3?

- (a) Three (b) Four (c) None
(d) One (e) Two

157. What is the sum of digits obtained in triangle 2 and 4?

- (a) 19 (b) 18 (c) 20
(d) 15 (e) 16

158. How many alphabets are there between the letters obtained in triangle 1?

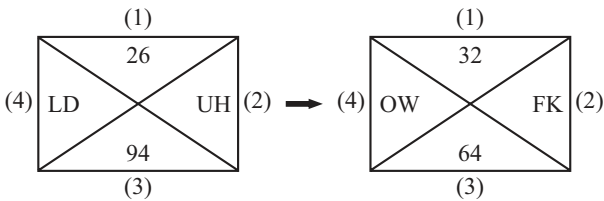
- (a) 0 (b) 2 (c) 4
(d) 3 (e) 5

159. What is the product of numbers in triangle 2 and 4?
 (a) 5480 (b) 5460 (c) 5580
 (d) 5430 (e) 5560

160. Which of the following letters is obtained in triangle 3?
 (a) G, K (b) D, I (c) B, K
 (d) K, I (e) D, B

DIRECTIONS (161–165): Read the following information carefully and answer the questions given below:

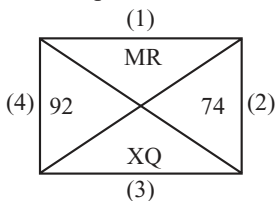
There are four triangles given in the question. Some operations are applied individually on each triangle. You have to answer the questions from the triangle which comes after the operation applied on the given triangle.



- (1) **For triangle 1:** If the sum of the digits of the given number is even then replace the number by the difference between the squares of the digits and if the sum of the digits of the given number is odd then replace the number by the sum of the cubes of the digits.
- (2) **For triangle 2:** If the sum of the place values of both the letters odd then change the vowel with the opposite letter and consonant with the third succeeding letter.
- (3) **For triangle 3:** If the difference between the digits of the given number is even then replace the number with the square of the highest digit of the number and if the difference is odd then replace the number by the cube of the smallest digit of the number.
- (4) **For triangle 4:** If the difference between the place values of both letters is even then replace the consonant with its opposite letter and the vowel with the successive letter according to the English alphabet.

NOTE: If the above condition is not applied then write the digit and letter as it is in the solution part.

Based on the above operations, solve the given question.



161. How many meaningful words can be formed from letters of triangle 2 and 4?
 (a) Four (b) Two (c) Three
 (d) More than four (e) None
162. What is the difference between the numbers obtained in triangle 1 and 3?
 (a) 47 (b) 48 (c) 44
 (d) 42 (e) 46

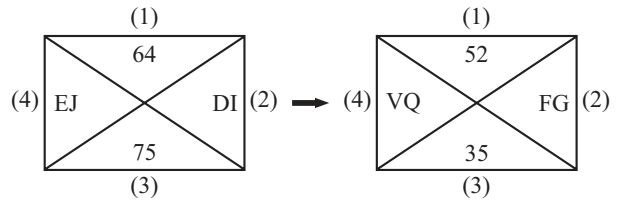
163. How many alphabets are there between the letters obtained in triangle 4?
 (a) 2 (b) 1 (c) 7
 (d) 3 (e) 6

164. What is the product of the digits of the numbers in triangle 1 and 3?
 (a) 324 (b) 362 (c) 378
 (d) 334 (e) 386

165. Which of the following letters are obtained in triangle 2?
 (a) D, E (b) E, N (c) I, E
 (d) D, N (e) P, D

DIRECTIONS (166–170): Read the following information carefully and answer the questions given below:

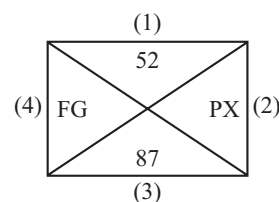
There are four triangles given in the question. Some operations are applied individually on each triangle. You have to answer the questions from the triangle which comes after the operation applied on the given triangle.



- (1) **For triangle 1:** If the difference between the digits of the number is even then replace the number by the sum of the squares of the digits and if the difference is odd then replace the number by the difference of the squares of the odd digit and the cube of the even digit.
- (2) **For triangle 2:** If the number of letters between the two letters is less than 5 then replace the consonant with the second successive letter and vowel with the second preceding letter otherwise replace the consonant with the opposite letter and vowel with the second succeeding letter according to the English alphabet.
- (3) **For triangle 3:** If the sum of the digits of the number is even then replace the number by the product of the digits and if the sum is odd then replace the number by the product of the digits after subtracting 1 from each of the digits.
- (4) **For triangle 4:** If the sum of the place values of the letters is a prime number then change the letters with their 5th successive letters and if the sum is a non prime number then replace the letters by their opposite letters.

NOTE: If the above condition is not applied then write the digit and letter as it is in the solution part.

Based on the above operations, solve the given question.



166. What is the sum of the digits of triangle 1 and 3?
 (a) 18 (b) 12 (c) 14
 (d) 16 (e) None of these
167. Which of the following numbers is obtained in triangle 3?
 (a) 41 (b) 17 (c) 42
 (d) 20 (e) None of these
168. How many alphabets are there between the letters obtained in triangle 2?
 (a) 5 (b) 6 (c) 2
 (d) 7 (e) 8
169. How many meaningful words can be formed from the letters of triangle 1 and 3?
 (a) Three (b) Four (c) None
 (d) One (e) Two
170. Which of the following letters are obtained in triangle 4?
 (a) K, L (b) K, C (c) L, D
 (d) L, I (e) C, K

SOLUTIONS

1. (b) We consider the opposite alphabet series as shown below:

A	B	C	D	E	
↓	↓	↓	↓	↓	
Z	Y	X	W	V	
↓	↓	↓	↓	↓	
26	25	24	23	22	... and so on

Clearly, the code for any letter with position number n is given by $(26 - n + 1)$.

Now, $X \rightarrow (26 - 24 + 1) = 3$

$R \rightarrow (26 - 18 + 1) = 9$

$A \rightarrow (26 - 1 + 1) = 26$

$Y \rightarrow (26 - 25 + 1) = 2$

\therefore X-RAY = $3 + 9 + 26 + 2 = 40$

Similarly,

$W \rightarrow (26 - 23 + 1) = 4$

$H \rightarrow (26 - 8 + 1) = 19$

$A \rightarrow (26 - 1 + 1) = 26$

$T \rightarrow (26 - 20 + 1) = 7$

\therefore WHAT = $4 + 19 + 26 + 7 = 56$.

2. (a) We form the opposite alphabet series as shown below:

A	B	C	D	E	
↓	↓	↓	↓	↓	
Z	Y	X	W	V	
↓	↓	↓	↓	↓	
26	25	24	23	22	... and so on.

Clearly, the code for any letter (alphabet) with position number n is given by $(26 - n + 1)$.

Now, $B = 26 - 2 + 1 = 25$

$E = 26 - 5 + 1 = 22$

$A = 26 - 1 + 1 = 26$

$T = 26 - 20 + 1 = 7$

\therefore BEAT = $25 - 22 - 26 - 7$.

Similarly, $B = 26 - 2 + 1 = 25$

$U = 26 - 21 + 1 = 6$

$R = 26 - 18 + 1 = 9$

$S = 26 - 19 + 1 = 8$

$T = 26 - 20 + 1 = 7$

\therefore BURST = $25 - 6 - 9 - 8 - 7$.

3. (b) S H E

19 8 5

$\Rightarrow (19 + 8 + 5) \times 3 = 96$.

T H E M

20 8 5 13

$\Rightarrow (20 + 8 + 5 + 13) \times 4 = 184$,

Code = Sum of the positional values of letters \times Number of letters

Similarly, M E

13 5

$\Rightarrow (13 + 5) \times 2 = 36$.

4. (a) L A M B

12 1 13 2

$\Rightarrow (12 + 1 + 13 + 2) \div 4 = 7$

C A T

3 1 20

$\Rightarrow (3 + 1 + 20) \div 3 = 8$

Code = Sum of the positional values of letters \div Number of letters

Similarly, H O T E L

8 15 20 5 12

$\Rightarrow (8 + 15 + 20 + 5 + 12) \div 5 = 12$.

5. (b) $\begin{matrix} \text{[T]} \text{[H]} \text{[E]} \text{[M]} \\ \text{W} \text{[H]} \text{[I]} \text{[T]} \text{[E]} \\ \text{[M]} \text{[I]} \text{N} \text{[E]} \\ \text{[H]} \text{[I]} \text{[M]} \end{matrix} = \begin{matrix} \text{[4]} \text{[5]} \text{[8]} \text{[9]} \\ \text{[8]} \text{[2]} \text{[4]} \text{[7]} \text{[5]} \\ \text{[4]} \text{[9]} \text{[1]} \text{[2]} \\ \text{[2]} \text{[8]} \text{[9]} \end{matrix}$

Now, W (7), H (8), E(4), T (5), A (?), So code for A should be different, so all these numbers comes in (b) option.

6. (d) The value of each letter must lie between 0 and 9, and no 2 letters can have the same value.

Now, as the digit '5' is repeated thrice (consecutively) in the given number '1725552' and 2 is repeated twice *i.e.* at 3rd and 7th position from the left.

So, following the same pattern we can say that in 'ABCDDDC' D is repeated thrice and letter 'C' repeated twice at the 3rd and 7th position from the left.

Hence, the number '1725552' represents the letters 'ABCDDDC'.

7. (d) The value of each letter must lie between 0 and 9, and no 2 letters can have the same value.

Now, as the digit '9' is repeated twice (consecutively) at 1st and 2nd position and 5 is repeated twice *i.e.* 3rd and 4th position from the left in the given number '9955123'.

So, following the same pattern we can say that in 'XXYYABC' X is repeated twice (consecutively) and letter 'Y' is repeated twice at the 3rd and 4th position from the left.

Hence, the number '9955123' represents the letters 'XXYYABC'.

8. (c) The value of each symbol must lie between 0 and 9, and no 2 symbols can have the same value.

Now, as the digit '5' is repeated (consecutively) in the given number '55345511' and 1 is repeated twice i.e. at 7th and 8th position from the left.

So, following the same pattern we can say that in '↑↑→↓↑↑ΔΔ' the symbol '↑' is repeated two times and symbol 'Δ' is repeated at the 7th and 8th position from the left.

Hence, the number '55345511' represents the symbols '↑↑→↓↑↑ΔΔ'.

9. (b) The value of each letter must lie between 0 and 9, and no 2 letters can have the same value.

Now, as the digit '6' is repeated twice at the 1st and last position and 4 is repeated twice i.e. 2nd and 4th position from the left in the given number '6424316'.

So, following the same pattern we can say that in 'KLDLBEK' K is repeated twice at the 1st and last position, letter 'L' is repeated twice i.e. 2nd and 4th position from the left.

Hence, the number '6424316' represents the letters 'KLDLBEK'.

10. (a) The value of each letter must lie between 0 and 9, and no 2 letters can have the same value.

Now, as the digit '9' is repeated twice at the 1st and last position and 3 is repeated thrice i.e. 3rd, 4th and 5th position from the left in the given number '9133329'.

So, following the same pattern we can say that in 'MDRRRKM' the letter M is repeated twice at the 1st and last position and letter 'R' is repeated thrice i.e. 3rd, 4th and 5th position from the left.

Hence, the number '9133329' represents the letters 'MDRRRKM'.

11. (a) We have,

L	S	J	X	V	C
+1	+2	+3	+4	+5	+6
↓	↓	↓	↓	↓	↓
M	U	M	B	A	I

Similarly,

C	C	I	D	D
+1	+2	+3	+4	+5
↓	↓	↓	↓	↓
D	E	L	H	I

12. (b) If

M	O	H	A	N
-2	-2	-2	-2	-2
↓	↓	↓	↓	↓
K	M	F	Y	L

Similarly,

C	O	U	N	T
-2	-2	-2	-2	-2
↓	↓	↓	↓	↓
A	M	S	L	R

13. (b)

I	N	D	I	A
+3	+3	+3	+3	+3
↓	↓	↓	↓	↓
L	Q	G	L	D

Similarly,

J	A	P	A	N
+3	+3	+3	+3	+3
↓	↓	↓	↓	↓
M	D	S	D	Q

14. (d)

G	O	P	A	L
+6	-6	+6	-6	+6
↓	↓	↓	↓	↓
M	I	V	U	R

Similarly,

R	A	D	H	A
+6	-6	+6	-6	+6
↓	↓	↓	↓	↓
X	U	J	B	G

15. (a) $\frac{A\ P}{P\ R} \quad \frac{O\ A}{C\ H} \rightarrow \text{CHOAPRAP}$

Similarly,

$\frac{R\ E}{S\ T} \quad \frac{R\ I}{C\ T} \rightarrow \text{CTRISTRE}$

16. (c)

F	R	I	E	N	D
+2	+3	+4	+5	+6	+7
↓	↓	↓	↓	↓	↓
H	U	M	J	T	K

Similarly,

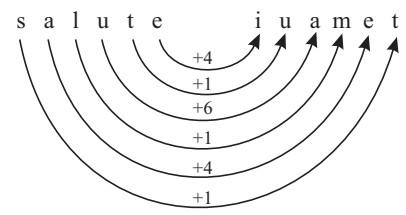
C	A	N	D	L	E
+2	+3	+4	+5	+6	+7
↓	↓	↓	↓	↓	↓
E	D	R	I	R	L

17. (c) $\frac{D\ E\ P\ U}{III} \quad \frac{T\ A}{II} \quad \frac{T\ I}{IV} \quad \frac{O\ N}{I} \rightarrow \text{ONTADEPUTI}$

Similarly,

$\frac{D\ E\ R\ I}{III} \quad \frac{V\ A}{II} \quad \frac{T\ I}{IV} \quad \frac{O\ N}{I} \rightarrow \text{ONVADERITI}$

18. (d) The logic is: Add 1 to the consonants and 4 and 6 to vowels alternatively.



Similarly,

$\frac{m\ a\ n\ g\ o}{u\ h\ o\ e\ n}$

Diagram showing the transformation of 'mango' to 'uhoen' with shifts: m(+1), a(+6), n(+1), g(+4), o(+1).

Hence, uhoen is the correct answer.

19. (a) We have,

S	U	M
-2	-2	-2
↓	↓	↓
K	S	Q

Similarly,

M	I	T
-2	-2	-2
↓	↓	↓
R	G	K

Therefore,

U	M	P
-2	-2	-2
↓	↓	↓
N	K	S

Similarly,

I	R	E
-2	-2	-2
↓	↓	↓
C	P	G

20. (a) We have,

T	O	R	C	H
+1	-1	+1	+1	+1
↓	↓	↓	↓	↓
U	N	P	S	D

Similarly,

B	E	S	T
+1	-1	+1	+1
↓	↓	↓	↓
C	D	F	U

Hence, M A R K S
 +1 -1 +1 +1 +1 +1
 N Z B S L T

21. (b) W I N G T H E N
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 * £ ? = @ \$ © ?
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 N I T E
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 ? £ @ ©

22. (d) α δ γ χ ε σ φ λ π ε
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 A R G U E S O L V E
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 π γ ε σ δ λ
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 V G E S R L

23. (c) φ α δ η ψ κ
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 C A R S I T
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 σ i γ γ μ α β
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 W E L L M A P

φ α γ μ
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 C A L M

24. (b) H E I G H T
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 = ÷ (× = ||

25. (c) A B C M N F G U V H I P R S T O
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 ? ! ; : · © @ > < α β ⊕ × ★ ω η
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 ? ⊕ ⊕ × η ? ; α
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 A P P R O A C H

Words	red	white	blue	green	orange
Codes	white	blue	green	orange	pink

Now, colour of grass is green which is coded as 'orange'.
 So, the colour of grass is orange.

27. (a)

Words	pen	paper	laptop	eraser
Codes	paper	laptop	eraser	bottle

Now, we write on paper which is coded as laptop.
 So, the correct answer is laptop.

28. (b)

Letters	A	C	F	O	E	B
Codes	C	F	O	E	B	G

So, COFFEE will be written as FEOBB.

29. (c)

Words	air	green	blue	sky	yellow	water
Codes	green	blue	sky	yellow	water	pink

Now, colour of clear sky is blue which is coded as 'sky'.
 So, the colour of clear sky is 'sky'.

30. (a) According to question 'Red' means 'White' and colour of milk is white. So, the colour of milk (according to the code language) is 'Red'.

31. (b)

S.No.	Sentence	Code
I	roses are blue	il be pee
II	red flowers	sik hee
III	flowers are vegetables	pee mit hee

From statement II; red = sik

32. (d) From statement I; roses = either il or be
 Hence, cannot be determined is the correct answer.

33. (a) From statement II; red flowers = sik hee
 From statement I and III; are = pee

Therefore, 'vegetables are red flowers' is coded as 'mit pee sik hee'.

34. (b)

S.No.	Word	Code
I	how can you go	ja da ka pa
II	can you come here	na ka sa ja
III	come and go	ra pa sa

From II and III; come = sa

From I and II; can you = ja ka

Now, the only left word in statement II is 'here' and the code for it is 'na'.

35. (d)

S.No.	Word	Code
I	WASP STINGS HARD	@ % Z
II	HARD TO DEAL	Z 6 5
III	HEAL LONG TIME	8 9 6

From I and II; word 'HARD' is common and the code 'Z' is common.
 Hence the code of HARD is Z.

Common Solution (36-40):

S.No.	Words	Codes
I	Easy game to win	ka cu ma te
II	Match of the man	ka te fo
III	Catches win the game	po ma to te
IV	Easy win man	ka te fo

From the above diagram, we can deduce the codes as shown below:

Words	Codes
win	te
game	ma
the	to
man	fo
easy	ka
to	cu
catches	po
of/match	si/he



36. (e) Hence, 'si' means either 'of' or 'match'.
 37. (a) Hence, code of the word game is ma.
 38. (b) 'man of series' is coded as 'fo ef he' and 'match of the man' is coded as 'si fo he to'.
 Now we know that the code of 'man' is 'fo'. So the code of 'of' will be 'he' and the code of 'match' will be 'si'. Hence, from the given table the required code is 'si to te'.
 39. (d) Hence, the code of the word 'catches' is 'po'.
 40. (c) Hence, 'easy' is coded as 'ka'.

Common Solution (41-45):

S.No.	Words	Codes
I	leafy food good for health	fa ka ga ht ma
II	eats food daily health	tp ht ka dl
III	leafy diet and daily	da dt fa dl
IV	good food diet eats	ga ka tp dt

From the above diagram, we can deduce the codes as shown below:

Words	Codes
leafy	fa
eats	tp
good	ga
food	ka
diet	dt
daily	dl
health	ht
add	da

41. (c) Hence, the word health is coded as 'ht'.
 42. (e) Hence, 'da' is the code of the word 'add'.
 43. (a) Hence, 'Sita add diet food' is coded as 'st da dt ka'.
 44. (b) Hence, 'tp' is the code of the word 'eats'.
 45. (d) Hence, 'eats health' can be coded as 'tp ht'.

Common Solution (46-50):

S.No.	Words	Codes
I	petition by the people union	tn po jk fm no
II	people problem face union	lm cd fm no
III	petition attention draw union	no tn dw mn
IV	the problem draw people attention	jk lm dw fm mn

From the above diagram, we can deduce the codes as shown below:

Words	Codes
union	no
people	fm
problem	lm
the	jk
petition	tn
face	cd
draw	dw/mn
attention	dw/mn
by	po

46. (b) Hence, petition can be coded as tn.
 47. (a) Hence, 'jk cd' is the code for 'the face'.
 48. (e) Hence, 'people file attention' can be coded as 'fm mn lf'.
 49. (c) Hence, 'tn jd' can be the code of 'legal petition'.
 50. (e) Hence, either draw or attention can be coded as 'mn'.

Common Solution (51-55):

S.No.	Words	Codes
I	scheme to assess candidates	sm pk ad ct
II	scheme for the candidates marks	ct sm fm tm mk
III	mix internal assess marks	ad mk nl dx
IV	candidates internal exam marks	ct nl mk an

From the above diagram, we can deduce the codes as shown below:

Words	Codes
candidate	ct
scheme	sm
marks	mk
internal	nl
assess	ad
exam	am
mix	dx
to	pk
for	fm/tm
the	fm/tm

51. (e) Hence, 'ad' is the code of the word 'assess'.
52. (a) Hence, 'exam marks' is coded as 'am mk'.
53. (e) Hence, 'internal year exam' can be coded as either 'nl am ac' or 'nl am rs'.
54. (c) Hence, either fm or tm is the code of the word 'the'.
55. (d) Hence, 'internal' is coded as 'nl'.
56. (b) Condition II is applied—The code for '2394587' is '€\$K@ZŪ€'.
57. (d) Condition III is applied—The code for '3721639' is '#Ř€&A\$#'.
 58. (a) Condition I is applied—The code for '7648138' is 'AA@Ū&\$A'.
 59. (b) Condition IV is applied—The code for '6265942' is '%€AZK@%'.
 60. (e) Condition I is applied—The code for '9175926' is '&&ŘZK€&'.
 61. (c) Condition III is applied—The code for 'PEOPLE' is '77&@X@'.
 62. (b) Condition II is applied—The code for 'ITALICA' is '♥α5X4#♥'.
 63. (d) Condition I is applied—The code for 'MOAPIK' is '3DD@DZ'.
 64. (e) Condition IV is applied—The code for 'ETANIS' is 'Ra5Ř4R'.
 65. (c) Condition I is applied—The code for 'COLNPS' is '#DXŘ@2'.
 66. (c) Row 1:
 An odd number is followed by a prime number = $3 + 2 = 5$.
 Then, an odd number is followed by an even number = $5 \times 4 = 20$.
 Then, an even number is followed by a prime number
 = $20 + 3 = 23$.
 The resultant of the 1st row = 23
 Row 2:
 An even number is followed by an even composite number
 = $6 \div 2 = 3$.
 Then, an odd number is followed by an odd number (non-prime)
 = $9 - 3 = 6$.
 Then, an even number is followed by an odd number (non-prime)
 = $15 - 6 = 9$
 The resultant of the 2nd row = 9.
 The difference between the two resultants = $23 - 9 = 14$.
 Hence, the difference between the resultant of the two rows is '14'.
 67. (a) Row 1:
 An even number is followed by a prime number = $8 + 5 = 13$.
 Then, an odd number is followed by an even number = $13 \times 4 = 52$.
 Then, an even number is followed by an even composite number
 = $52 \div 4 = 13$
 The resultant of the 1st row = 13.
 Row 2: Now, $z = 13$.
 An odd number is followed by a prime number = $5 + 13 = 18$.
 Then, an odd number is followed by an even number = $18 - 9 = 9$.
 Then, an odd number is followed by an odd number (non-prime)
 = $21 - 9 = 12$
 The resultant of the 2nd row = 12.
 The product of the two resultants = $13 \times 12 = 156$.
 68. (d) Row 1: An odd number is followed by an even number
 = $7 \times 8 = 56$.
 Then, an even number is followed by an even composite number
 = $56 \div 14 = 4$.
 Then, an even number is followed by a prime number
 = $4 + 23 = 27$.

- The resultant of the 1st row = 27.
 Row 2: An odd number is followed by an odd number (non-prime)
 = $25 - 11 = 14$.
 Then, an even number is followed by a prime number
 = $14 + 19 = 33$.
 Then, an odd number is followed by an odd number (non-prime)
 = $33 - 15 = 18$.
 The resultant of the 2nd row = 18.
 Sum of the two rows = $27 + 18 = 45$.
 Hence, the sum of the two rows is 45.
 69. (e) Row 1: An even number is followed by a prime number
 = $4 + 7 = 11$.
 Then, an odd number is followed by an even number
 = $11 + 11 = 22$.
 Then, an even number is followed by an odd number (non-prime)
 = $22 - 9 = 13$.
 The resultant of the 1st row = 13.
 Row 2: Now, $b = 13$
 $\Rightarrow b - a = 4$. So, $a = 9$.
 An even number is followed by an even composite number
 = $16 \div 4 = 4$.
 Then, an even number is followed by an odd (non-prime) number
 = $9 - 4 = 5$.
 Then, an odd number is followed by a prime number = $13 + 5 = 18$.
 The resultant of the 2nd row = 18.
 70. (a) Row 1: An odd number is followed by an odd non-prime number
 = $21 - 7 = 14$.
 Then, an even number is followed by an even composite number
 = $14 \div 14 = 1$.
 Then, an odd number is followed by an even number = $26 \times 1 = 26$.
 The resultant of the 1st row = 26.
 Row 2: An even number is followed by an even composite number
 = $8 \div 2 = 4$.
 Then, an even number is followed by an odd number(non-prime)
 = $15 - 4 = 11$.
 Then, an odd number is followed by an odd number (non-prime)
 = $11 - 9 = 2$.
 The resultant of the 2nd row = 2.
 The product of two rows = $26 \times 2 = 52$.
 Hence, the required product of both the resultant is 52.

Common Solution (71-75):

The number assigned to each consonant,

Numbers	1	2	3	4	5	6
Consonants	B	C	D	F	G	H
	J	K	L	M	N	P
	Q	R	S	T	V	W
	X	Y	Z			

On solving the coded words for vowel:

“Leave The Ground” is coded as: ‘52♥@53 3\$&5\$ 46\$’.

“Big On fine You” is coded as: ‘4%5\$ ♥5 2♥@ 1%5’.

Codes	&	\$	%	♥	@
Vowels	a	e	i	o	u

71. (b) The code of the word ‘Assigned’ as condition I is applied = ‘333%55\$&’.

The code of the word ‘Number’ as condition III is applied = ‘2@41\$2’.

Hence, the code of the words ‘Assigned Number’ is ‘333%55\$& 2@41\$2’.

72. (a) The code of the word ‘White’ as no condition is applied = ‘66%4\$’.

The code of the word ‘Envelope’ as condition II is applied = ‘\$55\$3♥6\$’.

Hence, the code of the words ‘White Envelope’ is ‘66%4\$ \$55\$3♥6\$’.

73. (e) The code of the word ‘World’ as condition III is applied = ‘3♥233’

The code of the word ‘United’ as condition I is applied = ‘35%4\$@’.

Hence, the code of the words ‘World United’ is ‘3♥233 35%4\$@’.

74. (c) The code of the word ‘Butter’ as condition III is applied = ‘2@44\$2’.

The code of the word ‘Flow’ as no condition is applied = ‘63♥6’.

Hence, the code of the words ‘Butter Flow’ is ‘2@44\$2 63♥6’.

75. (e) The code of the word ‘Aqua’ as condition I is applied = ‘&1@&’.

The code of the word ‘Eagle’ as condition III is applied = ‘\$&53\$’.

Hence, the code of the words ‘Aqua Eagle’ is ‘&1@& \$&53\$’.

Common Solution (76–80):

Using the given condition the matrix will be:

	A	B	C	D	E
%	11	22	33	44	55
@	14	28	42	56	70
#	19	38	57	76	95

76. (b) String $X = \%C \#A \%A$

So, $X = 33 19 11$

As condition (1) is applied in the above String X.

So, the outcome will be:

$$(3 + 3) \times (1 + 9) \times (1 + 1) = 120$$

As the outcome is in the range 111-176. So clearly bulb R will blink.

77. (e) String $X = \%A @C \#A \%A$

So, $X = 11 42 19 11$

As condition (3) is applied in the above String X.

So, the outcome will be:

$$(19 + 19 + 11) - 42 = 7$$

String $Y = \%E \#C @B \%A$

So, $Y = 55 57 28 11$

As condition (2) is applied in the above String Y.

So, the outcome will be:

$$(5 \times 7 \times 8 \times 1) = 280$$

$$\text{Now, } Y - X = (280 - 7) = 273$$

As the outcome is in the range greater than 176, so clearly bulb S will blink.

78. (c) String $(3/7)Y = \#A @B \%D @E$

So, $(3/7)Y = 19 28 44 70$

As condition (4) is applied in the above String Y.

So, the outcome will be:

$$(3/7) \times (19 + 28 + 44 + 70) = (3/7) \times 161 = 69.$$

As the outcome is in the range below 80, So clearly bulb P will blink.

79. (d) String $X = \%A \%E \#E$

So, $X = 11 55 95$

As condition (1) is applied in the above String X.

So, the outcome will be:

$$(1 + 1) \times (5 + 5) \times (9 + 5) = 280$$

String $Y = \#C \%A$

So, $Y = 57 11$

As condition (1) is applied in the above String Y.

So, the outcome will be:

$$(5 + 7) \times (1 + 1) = 24$$

$$\text{Now, } X - Y = 280 - 24 = 256$$

As the outcome is in the range 111-176, So clearly bulb R will blink.

80. (b) String $X = \%C @C @D \#D \#B$

So, $X = 33 42 56 76 38$

As condition (4) is applied in the above String X.

So, the outcome will be:

$$(33 + 42 + 56 + 76 + 38) = 245$$

String $Y = \#A \%A @B \%D$

So, $Y = 19 11 28 44$

As condition (3) is applied in the above String Y.

So, the outcome will be:

$$(28 + 44) - (19 + 11) = 42$$

$$\text{Now, } X - Y = 245 - 42 = 203$$

As the outcome is in the range greater than 176, So clearly bulb S will blink.

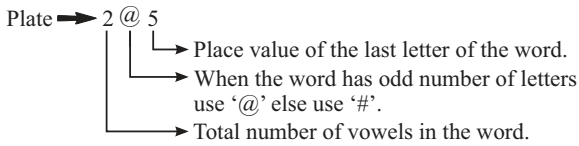
Common Solution (81–85):

Let us understand the logic behind the given codes:



Codes	Logic
Number on the left	Total number of vowels in the word <i>i.e.</i> in the word ‘Plate’ there are two vowels.
Symbols	If the word has an odd number of letters: ‘@’. If the word has an even number of letters: ‘#’. For example, in the word ‘Plate’ there are five letters.
Number on the right	Positional value of the last letter of the word (according to the English Alphabet) <i>i.e.</i> in the word ‘Plate’, the last letter is E and its positional value is 5.

The code of the word 'Plate' is '2@5'.



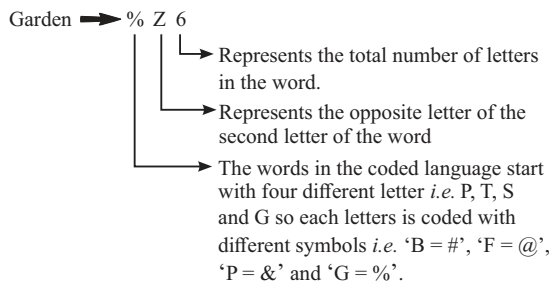
81. (b) Given word: 'Phone'
Total number of vowels is 2 and the word has 5 letters. Last letter of the word is E and its positional value is 5. Hence, the code is 2@5.
82. (a) Given word: Pencil
Total number of vowels is 2 and the word has 6 letters. Last letter of the word is L and its positional value is 12. Hence, the code is 2#12
83. (d) Given word: Bottle
Total number of vowels is 2 and the word has 6 letters. Last letter of the word is E and its positional value is 5. Hence, the code is 2#5.
84. (c) Given word: Hector
Total number of vowels is 2 and the word has 6 letters. Last letter of the word is R and its positional value is 18. Hence, the code is 2#18.
85. (e) Given word: Fired
Total number of vowels is 2 and the word has 5 letters. Last letter of the word is D and its positional value is 4. Hence, the code is 2@4.

Common Solution (86–90):

Let us understand the logic behind the given codes:

Codes	Logic
Number	Represents the total number of letters in the word. For example: The word 'great' has '5' letters. So the code is 5.
Symbols	Represents first letter of the word <i>i.e.</i> 'B = #', 'F = @', 'P = &' and 'G = %'. For example: The word 'great' starts with the letter G. So the code is %.
Letters	The opposite letter of the second letter of the word. For example: in the word 'great', opposite letter to the second letter <i>i.e.</i> 'E' is 'V'. So the code is V.

i.e. the code for the word 'great' in the coded language is '%15'.



86. (a) Given word: Berries
The word starts with B so the code is #. Opposite letter to the second letter *i.e.* E is V. The word has 7 letters. So the code is #V7.

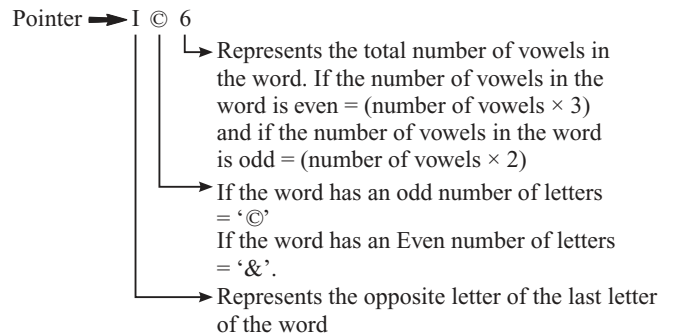
87. (d) Given word: Programme
The word starts with P so the code is &. Opposite letter to the second letter *i.e.* R is I. The word has 9 letters. So the code is &I9.
88. (c) Given code: %Z6
The word should start with G and the second letter of the word must be A. Total number of letters in the word is 6. Hence, the correct answer is Gadget.
89. (e) Given word: Furniture
The word starts with F so the code is @. Opposite letter to the second letter *i.e.* U is F. The word has 9 letters. So the code is @F9.
90. (b) Given code: #F7
The word should start with B and the second letter of the word must be U. Total number of letters in the word is 7. Hence, the correct answer is Burglar.

Common Solution (91–95):

Let us understand the logic behind the given codes:

Codes	Logic
Number	If the total number of vowels in the word is even: (number of vowels × 3) If the number of vowels in the word is odd: (number of vowels × 2). For example, there are 3 vowels in the word 'pointer', So the number code is 6.
Symbols	If the word has an odd number of letters: '©'. If the word has an Even number of letters: '&'. For example, the word 'pointer' has 7 letters. So the symbol code is ©.
Letters	The opposite letter of the last letter of the word. For example, in the word 'pointer' the opposite letter of last letter <i>i.e.</i> 'R' is 'I'. So the letter code is I.

The code for the word 'pointer' in the coded language is 'I©6'.



91. (c) Given word: Talented
Opposite letter of the last letter *i.e.* D is W. The word has 8 letters so the symbol code is &. Total number of vowels is 3, so the code is (3 × 2) *i.e.* 6. Hence, the correct answer is W&6.
92. (d) Given code: M&12
The last letter of the word must be N. The word must have an even number of letters and either 4 or 6 vowels. Hence the correct answer is Protection.

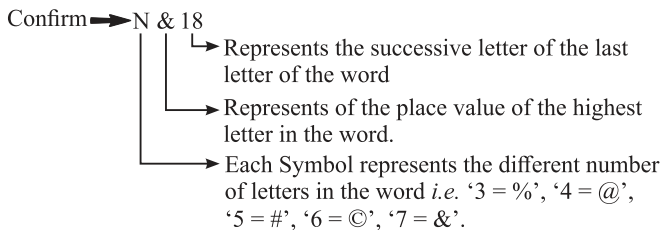
93. (a) Given word: Appreciated
Opposite letter of the last letter *i.e.* D is W. The word has 11 letters so the symbol code is ©. Total number of vowels is 5, so the code is (5 × 2) *i.e.* 10. Hence, the correct answer is W©10.
94. (d) Given word: Rational
Opposite letter of the last letter *i.e.* L is O. The word has 8 letters so the symbol code is &. Total number of vowels is 4, so the code is (4 × 3) *i.e.* 12. Hence, the correct answer is O&12.
95. (e) Given code: H©10
The last letter of the word must be S. The word must have an odd number of letters and 5 vowels. Hence the correct answer is Equations.

Common Solution (96–100):

Let us understand the logic behind the given codes:

Codes	Logic
Number	The positional value of the highest letter in the word. For example, The word 'Confirm' has the highest letter 'O' and it's positional value is '15'.
Letters	The successive letter of the last letter of the word For example, The last letter of the word 'Confirm' is M and it's successive letter is N.
Symbol	Each symbol represents the different number of letters in the word <i>i.e.</i> '3 = %', '4 = @', '5 = #', '6 = ©', '7 = &' For example, in the word 'Confirm' there are 7 letters. So the code is &.

The code for the word 'Confirm' is 'N&18'.



96. (a) Given word: Simple
The positional value of the highest letter in the word *i.e.* S is 19. Successive letter of the last letter *i.e.* E is F. The word has 6 letters so the code is ©. Hence, the correct answer is F©19.
97. (e) Given word: Ring
The positional value of the highest letter in the word *i.e.* R is 18. Successive letter of the last letter *i.e.* G is H. The word has 4 letters so the code is @. Hence, the correct answer is H@18.
98. (a) Given word: Ample
The positional value of the highest letter in the word *i.e.* P is 16. Successive letter of the last letter *i.e.* E is F. The word has 5 letters so the code is #. Hence, the correct answer is F#16.
99. (d) Given word: Mineral
The positional value of the highest letter in the word *i.e.* R is 18. Successive letter of the last letter *i.e.* L is M. The word has 7 letters so the code is &. Hence, the correct answer is M&18.

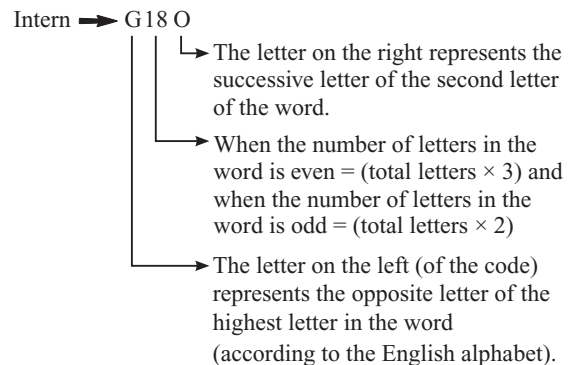
100. (b) Given word: Fun
The positional value of the highest letter in the word *i.e.* U is 21. Successive letter of the last letter *i.e.* N is O. The word has 3 letters so the code is %. Hence, the correct answer is O%21.

Common Solution (101–105):

Let us understand the logic behind the given codes:

Codes	Logic
Letter on the left	The opposite letter of the highest letter in the word (according to the English alphabet). For example, the word 'Intern' has 'T' as the highest letter in the word. 'G' is the opposite letter of 'T'.
Number	If the number of letters in the word is even: (total letters × 3) If the number of letters in the word is odd: (total letters × 2) For example, in the word 'Intern' there are 6 letters so 6 × 3 = 18.
Letter on the right	The letter on the right represents the successive letter of the second letter of the word For example, in the word 'Intern' 'O' is the successive letter of 'N'.

The code for the word 'Intern' is 'I18O'.



101. (c) Given word: Question
The opposite letter to the highest letter *i.e.* U is F. The word has 8 letters, so the code is (8 × 3) *i.e.* 24. Successive letter of the second letter *i.e.* U is V. Hence, the correct answer is F24V.
102. (d) Given word: Mobile
The opposite letter to the highest letter *i.e.* O is L. The word has 6 letters, so the code is (6 × 3) *i.e.* 18. Successive letter of the second letter *i.e.* O is P. Hence, the correct answer is L18P.
103. (a) Given code: L10B
Highest letter of the word should be opposite to L *i.e.* O. The word must have 5 letters and A should be the second letter of the word. Hence, the correct answer is Mango.
104. (b) Given word: Symbols
The opposite letter to the highest letter *i.e.* Y is B. The word has 7 letters, so the code is (7 × 2) *i.e.* 14. Successive letter of the second letter *i.e.* Y is B. Hence, the correct answer is B14Z.

105. (c) Given word: Below

The opposite letter to the highest letter *i.e.* W is D. The word has 5 letters, so the code is (5×2) *i.e.* 10. Successive letter of the second letter *i.e.* E is F. Hence, the correct answer is D10F.

Common Solution (106–110):

Let us understand the logic behind the given codes:

1. When the word has an even number of letters:

Codes	Logic
Letter on the left	The opposite letter of the second last letter of the word. For example, Opposite letter of the second last letter of the word 'Future', <i>i.e.</i> 'R' is 'I'.
For Symbol	If the word has an even number of letters: '&' <i>i.e.</i> the word 'Future' has 6 letters.
Letter on the right	The successive letter of the second letter of the word For example, in the word 'Future', the successive letter of 'U' is 'V'.

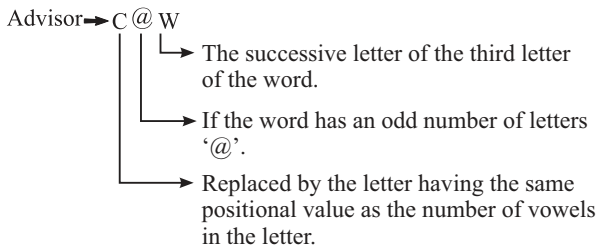
2. When the word has an odd number of letters:

Codes	Logic
Letter on the left	Letter with the same positional value as the number of vowels in the letter. For example, The word 'Advisor' has 3 vowels. So, the code is 'C'.
For Symbol	If the word has an odd number of letters: '@' For example, The word 'Advisor' has 7 letters.
Letter on the right	The successive letter of the third letter of the word. For example, in the word 'Advisor' the successive letter of 'V' is 'W'.

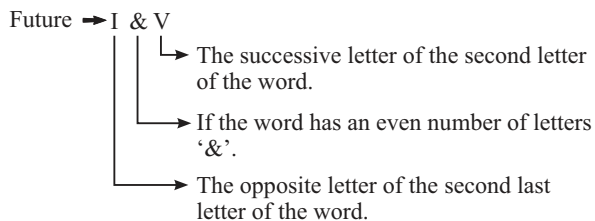
The code for the word 'Advisor' (as the word has an odd number of letters) in the coded language is 'C@W'.

And, the code for the word 'Future' (as the word has an even number of letters) in the coded language is 'I&V'.

1. When the word has an odd number of letters.



2. When the word has an even number of letters.



106. (c) Given word: Monitor

The word has 7 letters so the symbol code is @. Number of vowels is 3 so the letter on the left will be C. Successive letter of third letter *i.e.* N is O. Hence, the correct answer is C@O.

107. (b) Given word: Legalise

The word has 8 letters so the symbol code is &. Opposite letter to the second last letter *i.e.* S is H. Successive letter of second letter *i.e.* E is F. Hence, the correct answer is H&F.

108. (a) Given word: Amplitude

The word has 9 letters so the symbol code is @. Number of vowels is 4 so the letter on the left will be D. Successive letter of third letter *i.e.* P is Q. Hence, the correct answer is D@Q.

109. (c) Given word: Summer

The word has 6 letters so the symbol code is &. Opposite letter to the second last letter *i.e.* E is V. Successive letter of second letter *i.e.* U is V. Hence, the correct answer is V&V.

110. (a) Given word: States

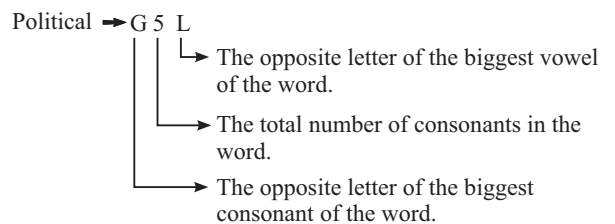
The word has 6 letters so the symbol code is &. Opposite letter to the second last letter *i.e.* E is V. Successive letter of second letter *i.e.* T is U. Hence, the correct answer is V&U.

Common Solution (111–115):

Let us understand the logic behind the given codes:

Codes	Logic
Letter on the left	The opposite letter of the highest consonant of the word For example, in the word 'Political', the opposite letter of highest consonant <i>i.e.</i> 'T' is 'G'.
For number	Total number of consonants in the word. For example, the word 'Political' has 5 consonants.
Letter on the right	The opposite letter to the highest vowel of the word For example, in the word 'Political' the opposite letter of highest vowel <i>i.e.</i> 'O' is 'L'.

The code for the word 'Political' in the coded language is 'G5L'.



111. (d) Given word: Course

Opposite letter to the highest consonant of the word *i.e.* S is H. Total number of consonants in the word is 3. Opposite letter to the highest vowel of the word *i.e.* U is F. Hence, the correct answer is H3F.

112. (c) Given word: Dialtone

Opposite letter to the highest consonant of the word *i.e.* T is G. Total number of consonants in the word is 4. Opposite letter to the highest vowel of the word *i.e.* O is L. Hence, the correct answer is G4L.

113. (d) Given word: Amplitude

Opposite letter to the highest consonant of the word *i.e.* T is G. Total number of consonants in the word is 5. Opposite letter to the

highest vowel of the word *i.e.* U is F. Hence, the correct answer is G5F.

114. (e) Given word: Handkerchief

Opposite letter to the highest consonant of the word *i.e.* R is I. Total number of consonants in the word is 8. Opposite letter to the highest vowel of the word *i.e.* I is R. Hence, the correct answer is I8R.

115. (e) Given word: Bakers

Opposite letter to the highest consonant of the word *i.e.* S is H. Total number of consonants in the word is 4. Opposite letter to the highest vowel of the word *i.e.* E is V. Hence, the correct answer is H4V.

116. (c) The given codes,

Code	&	€	?	@	Ω	♥	%
Number	4	6	9	3	12	8	2

The exam was started at ‘?Ω’ *i.e.* 9:00 a.m.

The total timing of the exam was 3 hours.

A student ‘D’ submitted his paper 15 minutes before *i.e.* at 11:45 a.m.

Then ‘B’ submitted his paper at 11:40 a.m.

Hence, the difference between the time of submission of paper of D and B is 5 minutes.

117. (c) The given codes,

Code	&	€	?	@	Ω	♥	%
Number	4	6	9	3	12	8	2

The speed of the first train = $\frac{50}{3}$ m/sec = $\left(\frac{50}{3}\right) \times \left(\frac{18}{5}\right)$ km/hr
= 60 km/hr.

The speed of the second train = $\left(\frac{5}{4}\right) \times 60$ km/hr = 75 km/hr.

The first train leaves from city A at ‘€Ω’ a.m. *i.e.* 6:00 a.m. and the second train leaves from city B at ‘♥Ω’ *i.e.* 8:00 a.m.

Distance travelled by the first train in two hours is 120 km.

Now, the distance between the two trains = 135 km.

The relative speed of two trains = (60 + 75) km/hr = 135 km/hr.

Time after which both trains meet = $\left(\frac{135}{135}\right)$ hour = 1 hour.

Hence, both trains meet at 9:00 a.m. *i.e.* ‘?Ω’.

118. (e) The given codes,

Code	&	€	?	@	Ω	♥	%
Number	4	6	9	3	12	8	2

The train departed from city A at ‘&?’ *i.e.* 4:45 a.m.

Time taken by the train is 210 *i.e.* 3 hours 30 min to reach the destination.

So, the train reaches the destination at 8:15 a.m. *i.e.* ‘♥@’.

Hence, the time at which Ram should reach the destination is ‘♥%’ *i.e.* 8:10 min.

119. (a) The given codes,

Code	&	€	?	@	Ω	♥	%
Number	4	6	9	3	12	8	2

Ajay reached the bus stop at ‘♥?’ a.m. *i.e.* 8:45 a.m.

The time at which he usually leaves his home (as he takes 15 minutes to reach the stop) is 8:30 a.m.

But he left his house 20 minutes early.

Hence, he left his home at 8:10 a.m. *i.e.* ‘♥%’.

120. (b) The given codes,

Code	&	€	?	@	Ω	♥	%
Number	4	6	9	3	12	8	2

The scheduled departure of the train is ‘?€’ *i.e.* 9:30 a.m.

The person takes 4 hours and 15 minutes to reach the railway station.

The person has to reach 30 minutes before the scheduled departure.

So, the total time = 4 hours 45 min.

Hence, the person has to leave his home at 4:45 a.m. *i.e.* ‘&?’.

121. (e) The given codes,

Code	@	#	\$	%	&	£
Number	7	8	4	11	5	3

The scheduled departure time of the train is ‘#@’ *i.e.* 8:35 p.m.

The total time to reach the station from Suraj’s home as he has to reach the station 10 min earlier = 30 + 10 = 40 min.

∴ He should reach the station at 7:55 p.m. *i.e.* ‘@%’.

122. (c) The given codes,

Code	@	#	\$	%	&	£
Number	7	8	4	11	5	3

The car departs from city A at ‘&%’ *i.e.* ‘5:55’ p.m.

The total time taken by the car to reach city B is ‘&#’ hours *i.e.* 5:40 hours.

Hence, the car reaches the destination at 11:35 p.m. *i.e.* ‘%@’ p.m.

123. (b) The given codes,

Code	@	#	\$	%	&	£
Number	7	8	4	11	5	3

The scheduled departure time of the flight is ‘#\$’ *i.e.* 8:20 p.m.

The total time to reach the airport as the boarding starts 30 min earlier = 4 hours and 10 min + 30 min = 4 hours and 45 min

Hence, the person has to leave at 3:35 p.m. *i.e.* ‘£@’.

124. (c) The given codes,

Code	@	#	\$	%	&	£
Number	7	8	4	11	5	3

Sima reached her home at ‘@%’ p.m. *i.e.* 7:55 p.m.

The time required to reach home from her office is 2 hours 15 min. And she also got late by 25 min.

The total time to reach her home is 2 hours 40 min.

Hence, she left her office at 5:15 p.m. *i.e.* ‘&£’.

125. (d) The given codes,

Code	@	#	\$	%	&	£
Number	7	8	4	11	5	3

The car starts from Greater Noida at '#£' i.e. 8:15 p.m. and reaches Delhi at '%£' i.e. '11:15' p.m. So, it takes a total of three hours.

The speed of the car = $\left(\frac{150}{3}\right)$ km/hr = 50km/hr

126. (d) The given codes,

Code	!	@	#	\$	%	&
Number	2	4	9	10	12	5

The train's departure time is '!&' i.e. 2:25 a.m. The total distance between the starting and ending point is 445 km.

Speed of the train = $\left(\frac{50}{3}\right) \times \left(\frac{18}{3}\right)$ km/hr = 60 km/hr.

So, the total time to cover the distance

$$= \frac{445}{60} \text{ hours} = 7 \text{ hours } 25 \text{ min.}$$

Hence, the time at which the train reaches the destination is 9:50 a.m. i.e. '#\$'.

127. (b) The given codes,

Code	!	@	#	\$	%	&
Number	2	4	9	10	12	5

Vinay reaches Delhi at '#&' a.m. i.e. 9:25 a.m.

The total time taken by Vinay to reach Delhi is 9 hours 5 min as he reaches 15 min early.

Hence, he left for Delhi from Lucknow at 12:20 a.m. i.e. '%@'.

128. (a) The given codes,

Code	!	@	#	\$	%	&
Number	2	4	9	10	12	5

Time at which Aman boarded the cab is '!#' am i.e. 2:45 a.m. Time at which Aman reached the destination is '@!' i.e. 4:10 a.m. So, the total time taken is 85 minutes.

So, the total distance travelled = $\frac{85}{60} \times \left(\frac{30}{17}\right) \times \left(\frac{18}{5}\right)$ km = 9 km

Now, the total amount paid = ₹ 9 × 7 = ₹ 63.

129. (d) The given codes,

Code	!	@	#	\$	%	&
Number	2	4	9	10	12	5

Arun leaves his house at '#!' i.e. '9:10' a.m. And reaches his office at '\$!' i.e. 10:10 a.m.

But, he got late by = (10 + 5) minutes = 15 minutes.

Hence, he reaches the office at 10:25 a.m. i.e. '\$&'.

130. (b) The given codes,

Code	!	@	#	\$	%	&
Number	2	4	9	10	12	5

Time at which car A leaves Delhi is '&@' am i.e. 5:20 am.

Let the distance between Delhi and Kanpur be 'x' km.

Speed of car A = $\frac{25}{3} \times \frac{18}{5}$ km/hr = 30 km/hr.

Speed of car B = $30 \times \frac{4}{3}$ km/hr = 40 km/hr.

Now, Time = $\frac{\text{Distance}}{\text{Speed}}$

According to the question,

$$\Rightarrow \frac{x}{30} - \frac{x}{40} = 1$$

$$\Rightarrow x = 120 \text{ km.}$$

The total distance between Delhi and Kanpur = 120 km

So, the time taken by car A = $\frac{120}{30}$ hours = 4 hours.

Hence, car A reached Kanpur at 9:20 a.m. i.e. '#@'.

131. (c) The given codes,

Code	α	∞	©	β	®	μ
Number	5	11	6	12	4	3

The car starts from City A at 'α©' i.e. 5:30 p.m.

The car reaches City B at '∞β' i.e. 11:00 p.m.

Total time = 5 hours 30 minutes i.e. $\frac{11}{2}$ hour.

Total distance = 198 km.

Speed of the car in m/sec = $198 \times \frac{2}{11} \times \frac{5}{18}$ m/sec = 10 m/sec.

132. (b) The given codes,

Code	α	∞	©	β	®	μ
Number	5	11	6	12	4	3

The train leaves from Ahmedabad at '®μ' i.e. 4:15 p.m.

Time taken by the train to cover the distance between the two cities is '©μ' i.e. 6:15 p.m.

The total time taken by the train to cover the distance

$$= (6:15) + (00:50) \text{ hours} = 7:05 \text{ hours.}$$

Hence, the time at which the train reaches Mumbai is 11:20 p.m. i.e. '∞®'.

133. (a) The given codes,

Code	α	∞	©	β	®	μ
Number	5	11	6	12	4	3

The time at which they went shopping is '©∞' i.e. 6:55 p.m. The

time at which they returned to their home is '∞μ' i.e. '11:15' p.m.

The total time they spent shopping is 4hours 20 minutes i.e. '®®'.

134. (e) The given codes,

Code	α	∞	©	β	®	μ
Number	5	11	6	12	4	3

The scheduled departure time of the train is '©∞' i.e. 6:55 p.m. Time required to reach the station from his home is 3 hours 25 minutes. But he has to reach the station 10 min earlier.

Hence, the person has to leave his house at 3:15 p.m. i.e. 'μ®'.

135. (c) The given codes,

Code	α	∞	©	β	®	μ
Number	5	11	6	12	4	3

The person reaches his home usually at '©©' i.e. 6:30 p.m. But on Saturday he got late by 25 min as he met his friend.

Hence, the time at which he reaches his home is 6:55 p.m. i.e. '©∞'.

136. (c) The binary representation of 43 is:

$$43 = 1 \times 2^5 + 0 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = (101011)_2$$

Hence, the code for 43 is '@\$\$@\$\$@'.

2	43 - 1
2	21 - 1
2	10 - 0
2	5 - 1
2	2 - 0
	1

137. (b) The given code is: '@\$\$@\$\$'

In the binary system, the given code '@\$\$@\$\$' can be written as (100100)₂

On converting the given binary codes into a decimal system, we get:

$$= 1 \times 2^5 + 0 \times 2^4 + 0 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 0 \times 2^0 = 32 + 0 + 0 + 4 + 0 + 0 = 36.$$

Hence, the decimal number for the given code '@\$\$@\$\$' is 36.

138. (a) The decimal number for the given codes:

$$\begin{aligned} '@@\$@\$@' &= (11011)_2 \\ &= 1 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = 27 \end{aligned}$$

$$\begin{aligned} '@@\$@' &= (1101)_2 \\ &= 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = 13 \end{aligned}$$

So, the difference = 27 - 13 = 14.

The binary representation of 14 is:

$$14 = 1 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 0 \times 2^0 = (1110)_2$$

Hence, the correct answer is '@@@@\\$'.

2	14 - 0
2	7 - 1
2	3 - 1
	1

139. (d) The decimal number for the given codes:

$$\begin{aligned} '@\$\$@\$@' &= (10011)_2 \\ &= 1 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = 19 \end{aligned}$$

$$\begin{aligned} '@\$\$\$\$\$' &= (100000)_2 \\ &= 1 \times 2^5 + 0 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 0 \times 2^0 = 32 \end{aligned}$$

So, the sum = 32 + 19 = 51.

The binary representation of '51' is:

$$51 = 1 \times 2^5 + 1 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = (110011)_2$$

Hence, the correct answer is '@@@\\$\\$@\\$@'.

2	51 - 1
2	25 - 1
2	12 - 0
2	6 - 0
2	3 - 1
	1

140. (c) The decimal number for the given codes:

$$'@@\$\$' = (1000)_2 = 1 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 0 \times 2^0 = 8$$

$$'@@\$\$' = (1100)_2 = 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 0 \times 2^0 = 12$$

So, the product = 12 × 8 = 96

The binary representation of '96' is:

$$96 = 1 \times 2^6 + 1 \times 2^5 + 0 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 0 \times 2^0 = (1100000)_2$$

Hence, the correct answer is '@@@\\$\\$\\$\\$\\$'.

2	96 - 0
2	48 - 0
2	24 - 0
2	12 - 0
2	6 - 0
2	3 - 1
	1

141. (c) The decimal number for the given codes:

$$\begin{aligned} '@\$@@\$@\$@' &= (1011011)_2 \\ &= 1 \times 2^6 + 0 \times 2^5 + 1 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = 91 \end{aligned}$$

$$\begin{aligned} '@@\$@\$@' &= (1101)_2 = 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = 13 \end{aligned}$$

So, the required resultant = 91 ÷ 13 = 7

The binary representation of '7' is:

$$7 = 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = (111)_2$$

Hence, the correct answer is '@@@@'.

2	7 - 1
2	3 - 1
	1

142. (a) The decimal number for the given codes:

$$\begin{aligned} '@@@@\$@' &= (1111)_2 = 1 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = 15 \end{aligned}$$

$$\begin{aligned} '@\$\$@' &= (1001)_2 = 1 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = 9 \end{aligned}$$

So, the required resultant = (15 + 7) - 9 = 13

The binary representation of '13' is:

$$13 = 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = (1101)_2$$

Hence, the correct answer is '@@\\$@\\$@'.

2	13 - 1
2	6 - 0
2	3 - 1
	1

143. (d) The decimal number for the given codes:

$$\begin{aligned} '@@@@\$@\$@' &= (11111)_2 = 1 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = 31. \end{aligned}$$

$$\begin{aligned} '@\$@@\$\$' &= (101100)_2 \\ &= 1 \times 2^5 + 0 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 0 \times 2^0 = 44. \end{aligned}$$

So, the required resultant = (31 + 44) = 75

The binary representation of '75' is:

$$\begin{aligned} 75 &= 1 \times 2^6 + 0 \times 2^5 + 0 \times 2^4 + 1 \times 2^3 \\ &\quad + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 \\ &= (1001011)_2 \end{aligned}$$

Hence, the correct answer is '@\\$\\$@\\$@\\$@'.

2	75 - 1
2	37 - 1
2	18 - 0
2	9 - 1
2	4 - 0
2	2 - 0
	1

144. (b) The decimal number for the given codes:

$$\begin{aligned} '@\$\$@\$@\$@' &= (1001011)_2 \\ &= 1 \times 2^6 + 0 \times 2^5 + 0 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = 75 \end{aligned}$$

$$\begin{aligned} '@@@@\$\$' &= (111100)_2 \\ &= 1 \times 2^5 + 1 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 0 \times 2^0 = 60 \end{aligned}$$

So, the required resultant = (75 - 60) = 15

The binary representation of '15' is:

$$\begin{aligned} 15 &= 1 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 \\ &= (1111)_2 \end{aligned}$$

Hence, the required result is '@@@@'.

2	15 - 1
2	7 - 1
2	3 - 1
	1

145. (c) The decimal number for the given codes:

$$'@\$@@\$@' = (1011)_2 = 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = 11$$

$$'@@@\$@' = (1110)_2 = 1 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 0 \times 2^0 = 14$$

So, the required resultant = (11 × 14) = 154

The binary representation of '154' is:

$$\begin{aligned} 154 &= 1 \times 2^7 + 0 \times 2^6 + 0 \times 2^5 + 1 \times 2^4 + 1 \\ &\quad \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 0 \times 2^0 \\ &= (10011010)_2 \end{aligned}$$

Hence, the correct answer is '@\\$\\$@@\\$@\\$@'.

2	154 - 0
2	77 - 1
2	38 - 0
2	19 - 1
2	9 - 1
2	4 - 0
2	2 - 0
	1

146. (d) On solving,

$$243 + 11 \times 4 - 176 \div 2 = 199$$

The ternary representation of 199 is:

$$199 = 2 \times 3^4 + 1 \times 3^3 + 1 \times 3^2 + 0 \times 3^1 + 1 \times 3^0$$

$$= (21101)_3$$

Hence, the code for 199 is '¥££©£'.

3	199 - 1
3	66 - 0
3	22 - 1
3	7 - 1
	2

147. (c) The ternary code for the given code '£©¥' = '102'.

The decimal conversion of '102' is:

$$= 1 \times 3^2 + 0 \times 3^1 + 2 \times 3^0 = 11.$$

Cube of 11 = 1331

The ternary representation of 1331 is:

$$1331 = 1 \times 3^6 + 2 \times 3^5 + 1 \times 3^4 + 1 \times 3^3 + 0 \times 3^2 + 2 \times 3^1 + 2 \times 3^0$$

$$= (1211022)_3$$

1211022 will be coded as '£¥££©¥¥'

Hence, the cube of '£©¥' is '£¥££©¥¥'.

3	1331 - 2
3	443 - 2
3	147 - 0
3	49 - 1
3	16 - 1
3	5 - 2
	1

148. (e) Option (a)

The ternary code for the given code '¥£©£' = '2101'.

The decimal conversion of '2101' is:

$$= 2 \times 3^3 + 1 \times 3^2 + 0 \times 3^1 + 1 \times 3^0 = 64.$$

Option (b)

The ternary code for the given code '£©¥©£' = '10201'.

The decimal conversion of '10201' is:

$$= 1 \times 3^4 + 0 \times 3^3 + 2 \times 3^2 + 0 \times 3^1 + 1 \times 3^0 = 100.$$

Option (c)

The ternary code for the given code '££©©' = '1100'.

The decimal conversion of '1100' is:

$$= 1 \times 3^3 + 1 \times 3^2 + 0 \times 3^1 + 0 \times 3^0 = 36.$$

Option (d)

The ternary code for the given code '£¥£©©' = '12100'.

The decimal conversion of '12100' is:

$$= 1 \times 3^4 + 2 \times 3^3 + 1 \times 3^2 + 0 \times 3^1 + 0 \times 3^0 = 144.$$

149. (a) The decimal number for the given codes:

$$'¥£©£' = (2101)_3 = 2 \times 3^3 + 1 \times 3^2 + 0 \times 3^1 + 1 \times 3^0 = 64$$

$$'££©©' = (1100)_3 = 1 \times 3^3 + 1 \times 3^2 + 0 \times 3^1 + 0 \times 3^0 = 36$$

So, the required sum = 64 + 36 = 100

Ternary representation of 100 is:

$$100 = 1 \times 3^4 + 0 \times 3^3 + 2 \times 3^2 + 0 \times 3^1 + 1 \times 3^0$$

$$= (10201)_3$$

10201 will be coded as '£©¥©£'

Hence, the correct answer is: '£©¥©£'.

3	100 - 1
3	33 - 0
3	11 - 2
3	3 - 0
	1

150. (b) The decimal number for the given codes:

$$'¥©£' = (201)_3 = 2 \times 3^2 + 0 \times 3^1 + 1 \times 3^0 = 19$$

$$'¥©' = (20)_3 = 2 \times 3^1 + 0 \times 3^0 = 6$$

So, the required product = 19 × 6 = 114

The code representation of '114'.

$$114 = 1 \times 3^4 + 1 \times 3^3 + 0 \times 3^2 + 2 \times 3^1 + 0 \times 3^0 = (11020)_3$$

Hence, the correct answer is '££©¥©'.

3	114 - 0
3	38 - 2
3	12 - 0
3	4 - 1
	1

151. (e) The ternary code for the given code '¥¥\$££' = '11022'.

The decimal conversion of '11022' is:

$$= 1 \times 3^4 + 1 \times 3^3 + 0 \times 3^2 + 2 \times 3^1 + 2 \times 3^0 = 116.$$

The ternary code for the given code '¥¥¥£¥' = '11121'.

The decimal conversion of '11121' is:

$$= 1 \times 3^4 + 1 \times 3^3 + 1 \times 3^2 + 2 \times 3^1 + 1 \times 3^0 = 124.$$

We have to find a number that lies between 116 and 124.

Option (a)

The ternary code for the given code '¥\$£¥\$' = '10210'.

The decimal conversion of '10210' is:

$$= 1 \times 3^4 + 0 \times 3^3 + 2 \times 3^2 + 1 \times 3^1 + 0 \times 3^0 = 102.$$

Option (b)

The ternary code for the given code '¥¥¥£\$' = '11120'.

The decimal conversion of '11120' is:

$$= 1 \times 3^4 + 1 \times 3^3 + 1 \times 3^2 + 2 \times 3^1 + 0 \times 3^0 = 123.$$

Option (c)

The ternary code for the given code '¥¥¥¥\$' = '11110'.

The decimal conversion of '11110' is:

$$= 1 \times 3^4 + 1 \times 3^3 + 1 \times 3^2 + 1 \times 3^1 + 0 \times 3^0 = 120.$$

Option (d)

The ternary code for the given code '¥£\$\$\$' = '12000'.

The decimal conversion of '12000' is:

$$= 1 \times 3^4 + 2 \times 3^3 + 0 \times 3^2 + 0 \times 3^1 + 0 \times 3^0 = 135.$$

Both 120 and 123 lie between 116 and 124.

Hence, the correct answer is: Both ¥¥¥\$ and ¥¥¥£\$.

152. (c) The ternary code for the given code '£¥££' = '2102'.

The decimal conversion of '2102' is:

$$= 2 \times 3^3 + 1 \times 3^2 + 0 \times 3^1 + 2 \times 3^0 = 65.$$

The ternary code for the given code '£\$£¥' = '2001'.

The decimal conversion of '2001' is:

$$= 2 \times 3^3 + 0 \times 3^2 + 0 \times 3^1 + 1 \times 3^0 = 55.$$

Sum of 55 and 65 is 120.

Hence, the correct answer is 120.

153. (b) The decimal number for the codes '©\$©\$\$\$©' = (1010001)₂

$$= 1 \times 2^6 + 0 \times 2^5 + 1 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = 81$$

Hence, 81 is the correct answer.

154. (e) 37 × 9 ÷ 6 × 2 + 13 - 4 = 120

(Using BODMAS)

Binary representation of 120 is:

$$120 = 1 \times 2^6 + 1 \times 2^5 + 1 \times 2^4 + 1 \times 2^3 + 0 \times 2^2$$

$$+ 0 \times 2^1 + 0 \times 2^0$$

$$= (1111000)_2$$

Hence, the correct answer is ©©©©\$\$\$.

2	120 - 0
2	60 - 0
2	30 - 0
2	15 - 1
2	7 - 1
2	3 - 1
	1

155. (c) The decimal number for the code '©\$\$\$\$©' = (100001)₂

$$= 1 \times 2^5 + 0 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = 33$$

The decimal number for the code '©\$\$\$\$©\$' = (1000010)₂

$$= 1 \times 2^6 + 0 \times 2^5 + 0 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 0 \times 2^0$$

$$= 66$$

Required sum = 33 + 66 = 99

Hence, 99 is the correct answer.

Common Solution (156-160):

For triangle 1: The difference between the place values of M(13) and R(18) is 5 *i.e.* less than 6.

So, both the letters are replaced by 'O'.

For triangle 2: The difference between the digits of '74' is '3' *i.e.* less than 6.

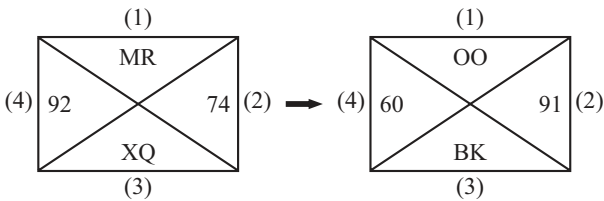
So, the number is replaced by '91'.

For triangle 3: The difference between the place value of X(24) and Q(17) is 7 *i.e.* greater than 6.

So, the letters are replaced by 'B' and 'K' respectively.

For triangle 4: The difference between the digits of '92' is '7' *i.e.* greater than 6.

So, the resultant = $(9 + 3) \times (2 + 3) = 60$.



156. (d) Using the letters 'O, O, B, and K' one meaningful word *i.e.* 'BOOK' can be formed.

157. (e) The sum of the digits of the number in triangles 2 and 4 is:
 $6 + 0 + 9 + 1 = 16$.

158. (a) The number of letters between 'O' and 'O' is zero in the alphabetical series.

159. (b) The required product = $60 \times 91 = 5460$

160. (c) Hence, B and K are obtained in triangle 3.

Common Solution (161-165):

For triangle 1: The sum of the digits of '43' is odd *i.e.* 7. So, the required sum is:

$$4^3 + 3^3 = 91.$$

For triangle 2: The sum of the place value of B(2) and K(11) is 13 *i.e.* odd.

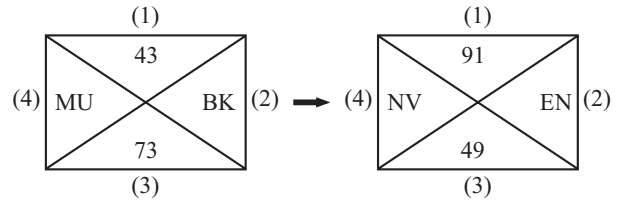
So, the letters are replaced by 'E' and 'K' respectively.

For triangle 3: The difference between the digits of '73' is '4' *i.e.* even. So, the required result is:

$$7^2 = 49.$$

For triangle 4: The difference between the place values of M(13) and U(21) is '8' *i.e.* even.

So, the letters are replaced by 'N' and 'V' respectively.



161. (e) Using letters 'N, V, E, and N' no meaningful word can be formed.

162. (d) The required difference = $91 - 49 = 42$

163. (c) Total letters between 'N' and 'V' are: 'O, P, Q, R, S, T, U'.

Hence, there are 7 letters between 'N' and 'V'.

164. (a) The required product is:

$$(9 \times 1 \times 4 \times 9) = 324$$

165. (b) Hence, E and N are obtained in triangle 2.

Common Solution (166-170):

For triangle 1: The difference between the digits of the number 52 is 3 *i.e.* odd. So the required sum is:

$$5^2 + 2^2 = 17$$

For triangle 2: The number of letters between P and X is 7 *i.e.* greater than 7.

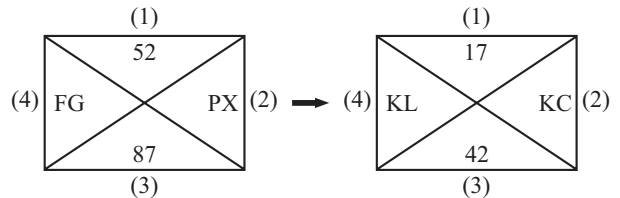
So, the letters are replaced by 'K' and 'C' respectively.

For triangle 3: The sum of the digits of the number 87 is 15 *i.e.* odd. So, the product is:

$$7 \times 6 = 42.$$

For triangle 4: The sum of the place values of the letters F(6) and G(7) is '13' *i.e.* prime number.

So, the letters are replaced by 'K' and 'L' respectively.



166. (c) The sum of the digits = $1 + 7 + 4 + 2 = 14$

167. (c) The number obtained in triangle 3 is '42'.

168. (d) The number of letters between 'C' and 'K' is 7 *i.e.* 'D, E, F, G, H, I, J' in the alphabetical series.

169. (c) Hence, no meaningful word can be formed using the letters 'K, L, K, C'.

170. (a) Hence, K and L are obtained in triangle 4.



2 CHAPTER

ARRANGEMENT AND PATTERN

In this chapter, various types of questions related to letters, numbers and symbols are asked in the examinations. Now, we are going to discuss all the types one by one:

TYPE 1. Pair Formation



Example 1. How many pairs of letters are there in the word “SABERTOOTH” which have as many letters between them in the word as in the alphabet series?

- (a) One (b) Two (c) Three (d) Four

Solution. (b)



Pair in forward direction: A & B have no letter between them in the given word as well as in the English alphabet series.

Pair in backward direction: R & O have 2 letters between them in the given word as well as in the English alphabet series.

Example 2. How many pairs of letters are there in the word “ACHIEVEMENTS” which have as many letters between them in the word as in the alphabet series?

- (a) One (b) Two (c) Three (d) Four

Solution. (c)



Pair in forward direction: H & I and A & E have 0 and 3 letters respectively between them in the given word as well as in the English alphabet series.

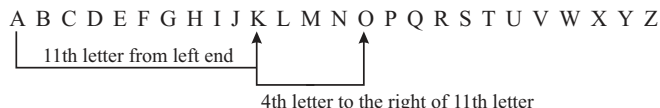
Pair in backward direction: T & S have no letter between them in the given word as well as in the English alphabet series.

TYPE 2. Positions of Letters in a Word

Many different types of questions can be formed (and are asked in competitive examination), related to the positions of letters in the given word and in the English alphabet series. You shall get a fair idea of how to attempt such questions from the following examples:

Example 3. In English alphabet, which letter will be 4th to the right of the 11th letter from left end?

Solution.

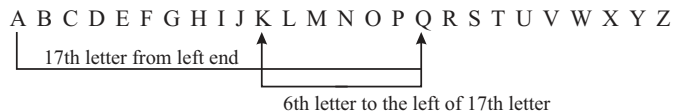


Short Trick: If we have to find the letter which is at x th position to the right of a letter which is at y th position from the left, then the letter is at $(x + y)$ th position from the left *i.e.* we will add.

Thus, 4th to the right of 11th letter from left = $11 + 4 = 15$ th
Now, 15th letter from left end is O.

Example 4. In english alphabet, which letter will be 6th to the left of the 17th letter from left end?

Solution.

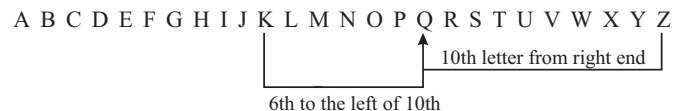


Short Trick: If we have to find the letter which is at x th position to the left of a letter which is at y th position from the left then the required letter is at $(x - y)$ th position from the left *i.e.* we will subtract.

Thus, 6th to the left of 17th letter from left = $17 - 6 = 11$ th
Now, 11th letter from left end is K.

Example 5. In english alphabet, which letter will be 6th to the left of the 10th letter from right end?

Solution.



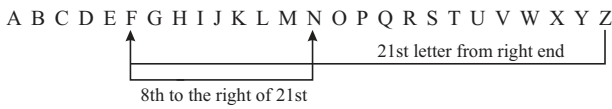
Short Trick: If we have to find the letter which is at x th position to the left of a letter which is at y th position from the right, then the required letter is at $(x + y)$ th position from the right *i.e.* $\{27 - (x + y)\}$ th position from the left.

Thus, 6th to the left of 10th letter from right end = $10 + 6 = 16$ th from right

Now, 16th letter from right = $27 - 16 = 11$ th from left
Hence, K will be the answer.

Example 6. In english alphabet, which letter will be 8th to the right of 21st letter from right end?

Solution.



Short Trick: If we have to find the letter which is at x th position to the right of the letter which is at y th position from the right, then the required letter will be at $(y - x)$ th position from the right i.e. $\{27 - (y - x)\}$ th position from the left.

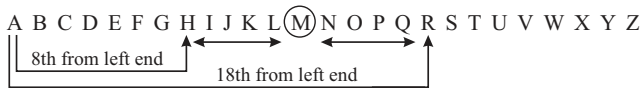
Thus, 8th to the right of 21st letter from right end = $21 - 8 = 13$ th from right

Now, 13th letter from right = $27 - 13 = 14$ th from left

Hence, N will be the answer.

Example 7. In english alphabet, which letter will be exactly between 8th and 18th letter from left end?

Solution.



Short Trick: To find mid letter, we add positions of letters and then divide the result by 2. This gives the position of the required letter.

$$\text{Here, Mid letter} = \frac{8 + 18}{2} = \frac{26}{2} = 13\text{th}$$

Now, 13th letter from left is M.

Example 8. In english alphabet, which letter will be exactly between 9th and 21st letter from right end?

Solution. Mid letter = $\frac{9 + 21}{2} = \frac{30}{2} = 15$ th from right

Now, 15th letter from right = $27 - 15 = 12$ th from left

Hence, L will be the answer.

Example 9. In english alphabet, which letter will be exactly between 4th letter from left and 5th letter from right?

Solution. 5th letter from right = $27 - 5 = 22$ nd from left

$$\text{So, mid letter} = \frac{4 + 22}{2} = \frac{26}{2} = 13\text{th from left}$$

Hence, M will be answer.

Example 10. If the position of the letters in the word 'LEADERSHIP' are re-arranged in such a way that the position of the 1st and 2nd letters is interchanged, similarly the position of the 3rd and 4th letters are interchanged and so on. Which of the following will be the 5th from the left end after the rearrangement?

- (a) D (b) E (c) H (d) R

Solution. (d) Given word is: 'LEADERSHIP'.

After Rearrangement: 'ELDAREHSPI'

The 5th letter from the left end after the rearrangement is 'R'.

Example 11. If the position of the letters in the word 'CYTOSKELETON' is re-arranged in such a way that the

position of the 1st and 12th letters are interchanged, similarly the position of the 3rd and 11th letters are interchanged and so on. Which of the following will be the 7th from the right end after the rearrangement?

- (a) O (b) K (c) E (d) L

Solution. (c) Given word: 'CYTOSKELETON'.

After Rearrangement: 'NOTELEKSOTYC'

The 7th letter from the right end after the rearrangement is 'E'.

Example 12. If the position of the letters in the word 'PACEMAKING' are re-arranged in such a way that the position of the 1st and 6th letters are interchanged, similarly the position of the 2nd and 7th letters are interchanged and so on. Which of the following will be the 5th from the left end after the rearrangement?

- (a) G (b) P (c) N (d) None of these

Solution. (a) Given word: 'PACEMAKING'.

After Rearrangement: 'AKINGPACEM'

The 5th letter from the left end after the rearrangement is 'G'.

TYPE 3. Position of Digits in Number

In this topic, two types of questions are asked.

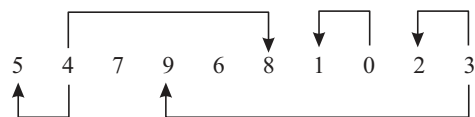
- I. In this type, a number is given and the students are asked to find the number of pairs of digits which have same number of digits between them in the number as in the number series.
- II. In this type, a number is given and the student is asked to change the positions of digits according to the given conditions and then find the digit at a particular position after the rearrangement.

I. PAIR OF DIGITS IN A NUMBER

Example 13. How many such pairs of numbers are there in the number '5479681023', each of which has as many numbers between them in the number, as they have in the numeric series?

- (a) Two (b) One (c) Three (d) None of these

Solution. (d) Given Number: '5479681023'



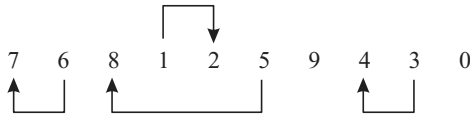
Pair in forward direction: 2 & 3 and 4 & 8 have 0 and 3 digits between them in the given number as well as in the numeric series.

Pair in backward direction: 5 & 4 and 1 & 0 have no digit and 9 & 3 have 5 digits between them in the given number as well as in the numeric series.

Example 14. How many such pair of numbers are there in the number '7681259430', each of which has as many numbers between them in the number, as they have in the numeric series?

- (a) Two (b) One (c) Four (d) None of these

Solution. (c) Given Number: '7681259430'



Pair in forward direction: 1 & 2 have no digit between them in the given number as well as in the numeric series.

Pair in backward direction: 7 & 6 and 4 & 3 have no digit and 8 & 5 have 2 digits between them in the given number as well as in the numeric series.

II. POSITION OF A DIGIT AFTER REARRANGEMENT

Example 15. The position of how many digits in the number '47982531' will remain unchanged if the digits within the number are written in ascending order from left to right?

- (a) One (b) Two (c) Three (d) None

Solution. (d) Given number: '47982531'

After rearrangement: '12345789'

Hence, the position of no digit in the number remains unchanged.

Example 16. The position of first and eighth digits in the number '57623948' are interchanged. Similarly, the position of the second and the seventh digits are interchanged and so on. Which of the following will be the sixth from the right end after the rearrangement?

- (a) 9 (b) 2 (c) 7 (d) 6

Solution. (a) Given number: '57623948'.

After rearrangement: '84932675'.

The digit which is sixth from the right end after the rearrangement is '9'.

TYPE 4. Meaningful Words

In this type, students have to choose the option according to the number of meaningful words that can be formed by using some of the letters of the word mentioned in the question.

Example 17. If it is possible to make a meaningful word with the first, third, fourth, and fifth letters of the word LOGICAL, which of the following will be the second letter of that word, if no such word can be formed, give X as the answer and if more than one such words can be formed, give Z as the answer?

- (a) R (b) W (c) Z
- (d) L (e) X

Solution. (e) Given word: 'LOGICAL'.

L	O	G	I	C	A	L
1	2	3	4	5	6	7

The first, third, fourth, and fifth letters of the word are 'L, G, I, and C'.

No meaningful words can be formed.

TYPE 5. Alphabetical Series



In this type, questions are asked either based on the group of words or based on the letter series.

5.1. TYPE 5.1

The following questions are based on the five three letter words given below.

DIM TIM COT PET SAT

Example 18. If the 3rd letter of each word is replaced by its 2nd next letter in the English alphabetical series, then how many words have more than one vowel?

- (a) Two (b) Four (c) Three (d) One

Solution. (a) Given Series:

DIM TIM COT PET SAT

After performing the given operations:

DIO TIO COV PEV SAV

Hence, there are 2 words which have more than one vowel.

5.2. TYPE 5.2

Example 19. Which of the following letters is fifth to the left of the tenth letter from the left end in the given arrangement?

M N A P U S E D C Z N Q U J L K E L T S Y A F

- (a) A (b) C (c) U (d) D

Solution. (c) Given Series:

M N A P U S E D C Z N Q U J L K E L T S Y A F

The fifth letter to the left of the tenth letter from the left end = (10 - 5)th from the left = 5th from left end

Hence, the 5th letter from the left end is 'U'.

TYPE 6. Number Series



In this type, questions are asked either based on the group of numbers or based on the number series.

6.1. TYPE 6.1

Example 20. If all the digits are arranged in ascending order within the number, then which of the following is the third lowest?

543 375 298 919 821

- (a) 821 (b) 543 (c) 298 (d) 375

Solution. (c) Given series: 543 375 298 919 821.

After arranging all the digits in ascending order within the number, we get:

345 357 289 199 128

Arranged in ascending order;

128 199 289 345 357

Thus, the third lowest number is 289 i.e. 298.

6.2. TYPE 6.2

Example 21. How many 3s are there in the series which are immediately followed and preceded by a perfect square number?

5 3 9 0 4 4 2 9 3 4 8 3 7 0 9 2 1 4 7 0 4 5 4 3 1 4 1 9 4 3
9 0 1 7 5 2

- (a) One (b) Two (c) Three
(d) None (e) More than three

Solution. (e) Given series:

5 3 9 0 4 4 2 9 3 4 8 3 7 0 9 2 1 4 7 0 4 5 4 3 1 4 1 9 4 3
9 0 1 7 5 2

3s which are immediately followed and preceded by a perfect square number are: 934, 431, & 439.

Hence, three is the correct answer.

TYPE 7. Alphanumeric Series

It is a sequence which consists of alphabets, numbers and symbols.



ELEMENT AT A PARTICULAR POSITION FROM EITHER LEFT OR RIGHT END

Short Trick or Formulas to Solve Questions

1. Left end – Left = Left end

Example: 3rd to the left of 4th element from left end = $4 - 3 = 1$ i.e. 1st element from the left end.

2. Right end + Left = Right end

Example: 3rd to the left of 4th element from the right end = $4 + 3 = 7$ i.e. 7th element from the right end.

3. Right end – Right = Right end

Example: 3rd to the right of 4th element from the right end = $4 - 3 = 1$ i.e. 1st element from the right end.

4. Right + Left end = Left end

Example: 3rd to the right of 4th element from the left end = $4 + 3 = 7$ i.e. 7th element from the left end.

Example 22. Which element is 4th to the right of 6th from left in the given series?

AH©YTOP72\$DGT5 & L17@%K+SI

- (a) \$ (b) D (c) 2
(d) G (e) None of these

Solution. (a) The given series 'AH©YTOP72\$DGT5 & L17@%K+SI'.

The element which is 4th to the right of 6th from left end = $(4 + 6)$ from left = 10th from left.

Hence, the element which is 10th from left end is '\$'.

Example 23. In the alphanumeric series given below, which element is 3rd to the right of 16th from right in the given series?

\$9VRB#Y5M©P8*K92£E13N5IT@3ARC

- (a) 2 (b) E (c) 9
(d) £ (e) None of these

Solution. (d) The given series '\$9VRB#Y5M©P8*K92£E13N5IT@3ARC'.

The element which is 3rd to the right of 16th from right

$$= (16 - 3) \text{ from right}$$

$$= 13\text{th from right.}$$

Hence, the element which is 13th from right end is '£'.

SOME IMPORTANT WORDS AND THEIR MEANINGS TO SOLVE QUESTIONS

- Followed by:** A followed by B will be written as **AB**
- Preceded by:** A preceded by B will be written as **BA**.
- Follows:** A follows B will be written as **BA**.
- Precedes:** A precedes B will be written as **AB**.
- Succeeded by:** A succeeded by B will be written as **AB**.
- Succeeds:** A succeeds B will be written as **BA**.

Example 24. In the given series how many such letters are there which are immediately followed by symbol?

μ I©FDQS1B π YO¥H0C β 9DC8LKD2FMP\$7

- (a) Five (b) Three (c) Four
(d) Six (e) None of these

Solution. (a) The given series ' μ I©FDQS1B π YO¥H0C β 9DC8LKD2FMP\$7'.

Number of such letters which are immediately followed by symbol are 'I©, B π , O¥, C β , P\$'.

Hence, there are five such letters.

Example 25. How many such symbols are there in the given arrangement which are immediately preceded by an alphabet?

RZ%G7DQKI5Y&T9@64V&L38E#6Z\$U¥K

- (a) Five (b) Two (c) Six
(d) None (e) None of these

Solution. (c) The given series 'RZ%G7DQKI5Y&T9@64V&L38E#6Z\$U¥K'.

Number of such symbols which are immediately preceded by an alphabet are 'Z%, Y&, V&, E#, Z\$, U¥'.

Hence, there are six such symbols.

TYPE 8. Condition-Based Series

In this type, a mixed series/letter series/number series is given and some conditions are provided. Students have to determine the step after applying conditions and answer the questions based on each step.

DIRECTIONS: Study the following alphanumeric series carefully and answer the questions given below:

@ 5 \$ 7 D F * 1 Q U ! A Ω Y > 8 H Z & 7 T J O 9 # V 6 P S 2 N % L 9 ? 5

Step I: The letters which are immediately preceded by a digit are arranged at the end of the series in alphabetical order from left to right.

Step II: The symbols which are immediately preceded by a letter and followed by a number are arranged at the beginning of the series as they appear in the series.

Step III: The letters which are immediately succeeded by a number, interchange their positions with the number succeeding it.

(Step II is applied after Step I and Step III is applied after Step II)

Example 26. Which of the following elements is 7th to the left of D in Step-II?

- (a) A (b) S (c) 7
- (d) 5 (e) None of these

Solution. (b) Given series:

@ 5 \$ 7 D F * 1 Q U ! A Ω Y > 8 H Z & 7 T J O 9 # V 6 P S 2 N % L 9 ? 5

Step I: @ 5 \$ 7 F * 1 U ! A Ω Y > 8 Z & 7 J O 9 # V 6 S 2 % L 9 ? 5 D H N P Q T

Step II: * > & @ 5 \$ 7 F 1 U ! A Ω Y 8 Z 7 J O 9 # V 6 S 2 % L 9 ? 5 D H N P Q T

Step III: * > & @ 5 \$ 7 1 F U ! A Ω 8 Y 7 Z J 9 O # 6 V 2 S % 9 L ? 5 D H N P Q T

Hence, the 7th element to the left of D is S.

QUESTIONS

TYPE 1. Pair Formation

1. How many such pairs of letters are there in the word ENGLISH, each of which has as many letters between its two letters as there are between them in the English alphabet?
(a) 1 (b) 2 (c) 3
(d) More than three (e) None of these
2. How many such pairs of letters are there in the word SENDING, each of which has as many letters between its two letters as there are between them in the English alphabet?
(a) 1 (b) 2 (c) 3
(d) More than three (e) None of these
3. How many such pairs of letters are there in the word CHANNEL, each of which has as many letters between

its two letters as there are between them in the English alphabet?

- (a) 1 (b) 2 (c) 3
- (d) More than three (e) None of these

4. How many such pairs of letters are there in the word OVERWHELM each of which has as many letters between its two letters as there are between them in the English alphabet?

- (a) 1 (b) 2 (c) 3
- (d) More than three (e) None of these

5. How many such pairs of letters are there in the word COMPUTER, each of which has as many letters between its two letters as there are between them in the English alphabet?

- (a) 1 (b) 2 (c) 3
- (d) More than three (e) None of these

6. How many such pairs of letters are there in the word HORIZONTAL, each of which has as many letters between its two letters as there are between them in the English alphabet?

- (a) 1 (b) 2 (c) 3
- (d) More than three (e) None of these

7. How many such pairs of letters are there in the word DUPLICATE, each of which has as many letters between its two letters as there are between them in the English alphabet?

- (a) 1 (b) 2 (c) 3
- (d) More than three (e) None of these

8. How many such pairs of letters are there in the word PERISHED, each of which has as many letters between its two letters as there are between them in the English alphabet?

- (a) 1 (b) 2 (c) 3
- (d) More than three (e) None of these

9. How many such pairs of letters are there in the word STREAMING each of which has as many letters between its two letters as there are between them in the English alphabet?

- (a) 1 (b) 2 (c) 3
- (d) More than three (e) None of these

10. How many such pairs of letters are there in the word DAREDEVIL, each of which has as many letters between its two letters as there are between them in the English alphabet?

- (a) 1 (b) 2 (c) 3
- (d) More than three (e) None of these

TYPE 2. Positions of Letters in a Word

11. In english alphabet which letter will be 8th to the left of the 25th letter from left end?

- (a) P (b) Q (c) R
- (d) S (e) None of these

12. In english alphabet which letter will be 6th to the left of the 17th letter from right end?
 (a) B (b) C (c) D
 (d) E (e) None of these
13. In english alphabet, which letter will be exactly between 8th letter from left and 3rd letter from right?
 (a) N (b) O (c) P
 (d) Q (e) None of these
14. If each of the vowels in the word GOLIATHS is changed to the next letter in the English alphabetical series and each consonant is changed to the previous letter in the English alphabetical series, and then the alphabets so formed are arranged in alphabetical order from left to right, which of the following will be sixth from the left of the new arrangement thus formed?
 (a) F (b) G (c) J
 (d) P (e) None of these
15. If it is possible to make only one meaningful word with the first, second, fifth and sixth letters of the word PYGMALION, which of the following would be the second letter of that word from the right end? If no such word can be made, give 'X' as your answer and if more than one such word can be formed, give your answer as 'Z'
 (a) P (b) A (c) X
 (d) Z (e) None of these
16. If the positions of letters in the word 'GOVERNMENT' are re-arranged in such a way that the position of 1st and 2nd letters are interchanged, similarly the position of the 3rd and 4th letters are interchanged and so on. Which of the following will be the 5th letter from the left end after the rearrangement?
 (a) V (b) E (c) N
 (d) R (e) None of these
17. If positions of the letters in the word 'REPUBLICAN' are re-arranged in such a way that the position of the 1st and 10th letters are interchanged, similarly the position of the 2nd and 9th letters are interchanged and so on. Which of the following will be the 4th from the right end after the rearrangement?
 (a) U (b) P (c) B
 (d) L (e) None of these
18. If positions of letters in the word 'FARSIGHTED' are re-arranged in such a way that the position of 1st and 2nd letters are interchanged, similarly the position of 3rd and 4th letters are interchanged and so on. Which of the following will be the 4th letter from the left end after the rearrangement?
 (a) S (b) G (c) I
 (d) H (e) None of these
19. If positions of the letters in the word 'BLASTODERMIC' are re-arranged in such a way that the position of 1st and 12th letters are interchanged, similarly the position of 2nd and 11th letters are interchanged and so on. Which of the following will be the 7th letter from the left end after the rearrangement?
 (a) O (b) D (c) E
 (d) R (e) None of these
20. If positions of the letters in the word 'HETEROGRAM' are re-arranged in such a way that the position of 1st and 6th letters are interchanged, similarly the position of the 2nd and 7th letters are interchanged and so on. Which of the following will be the 5th letter from the left end after the rearrangement?
 (a) A (b) R (c) M
 (d) O (e) None of these
21. If positions of letters in the word 'STRAWBERRY' are re-arranged in such a way that the position of 1st and 2nd letters are interchanged, similarly the position of the 3rd and 4th letters are interchanged and so on. Which of the following will be the 7th letter from the right end after the rearrangement?
 (a) R (b) E (c) A
 (d) W (e) None of these
22. If positions of letters in the word 'ABERRATION' are re-arranged in such a way that the position of the 1st and 6th letters are interchanged, similarly the position of the 2nd and 7th letters are interchanged and so on. Which of the following will be the 8th letter from the left end after the rearrangement?
 (a) R (b) A (c) E
 (d) T (e) None of these
23. If all the letters of the word 'IMAGINARY' are arranged in alphabetical order from the right end, then position of how many letters remains unchanged?
 (a) Three (b) One (c) Two
 (d) Four (e) None of these
24. How many alphabets are there in the English alphabetical series which appear in the mirror as it is?
 (a) Nine (b) Eight (c) Ten
 (d) Eleven (e) None of these
25. How many alphabets in the English alphabetical series are there which appear in the water as it is?
 (a) Eight (b) Seven (c) Nine
 (d) Six (e) None of these

TYPE 3. Position of Digits in Number

26. Unscramble the following letters to frame a meaningful word. Then find out the correct numerical position of the letters.

O	T	Y	S	R	H	I
1	2	3	4	5	6	7

- (a) 6742153 (b) 6241375 (c) 6452173
 (d) 6347125 (e) None of these

27. Find the hidden meaningful word from the coded alphabets if the alphabets are in reverse order.
 (a) 11, 15, 26, 13, 22 (b) 15, 11, 22, 26, 13
 (c) 11, 22, 15, 13, 26 (d) 26, 22, 15, 13, 11
 (e) None of these
28. Given below are the jumbled letters of a word and their corresponding numbers. Select the combination of number that makes a meaningful word.
- | | | | | | | |
|---|---|---|---|---|---|---|
| C | N | A | S | P | H | I |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
- (a) 4572316 (b) 7234516 (c) 5742613
 (d) 2375416 (e) None of these
29. If the letters of the English alphabet are numbered serially, one of the answers given below has a meaningful word hidden in it. Identify that word.
 (a) 8, 15, 14, 5, 20, 19, 25 (b) 1, 12, 7, 5, 2, 18, 1
 (c) 5, 14, 7, 9, 13, 5 (d) 16, 18, 15, 2, 11, 5, 13
 (e) None of these
30. Each letter given below is assigned a number. These have to be unscrambled into a meaningful word and the correct order of letters may be indicated from the given responses
- | | | | | | |
|---|---|---|---|---|---|
| T | M | H | R | E | O |
| 5 | 4 | 3 | 2 | 1 | 0 |
- (a) 405312 (b) 504231 (c) 025314
 (d) 315402 (e) None of these
31. If the digits in the number 86435192 are arranged in ascending order, what will be the difference between the digits which are second from the right and fourth from the left in the new arrangement?
 (a) 1 (b) 2 (c) 3
 (d) 4 (e) None of these
32. If the digits in the number 25673948 are arranged in ascending order from left to right, what will be the sum of the digits which are fourth from the right and third from the left in the new arrangement?
 (a) 4 (b) 6 (c) 8
 (d) 10 (e) None of these
33. Position of how many digits in the number 9824753 will remain unchanged if the digits within the number are written in ascending order from left to right?
 (a) One (b) Two (c) Three
 (d) None (e) None of these
34. Position of first and eighth digits in the number 85629721 are interchanged. Similarly, the position of the second and the seventh digits are interchanged and so on. Which of the following will be the sixth digit from the right end after the rearrangement?
 (a) 9 (b) 2 (c) 7
 (d) 6 (e) None of these
35. If all the digits in the number '62748593' are written in ascending order from left to right, then which of the following digit is 5th from the left end?
 (a) 4 (b) 7 (c) 5
 (d) 6 (e) None of these
36. Position of first and sixth digits in the number '2972485762' are interchanged and similarly, the position of the second and the seventh digits are interchanged and so on. Which of the following will be the fifth digit from the left end after the rearrangement?
 (a) 2 (b) 6 (c) 5
 (d) 4 (e) None of these
37. Position of how many digits in the number '91538247' will remain unchanged if the digits within the number are written in ascending order from right to left (excluding 9)?
 (a) One (b) Two (c) Three
 (d) None (e) More than three
38. Position of how many digits in the number '38462915' will remain unchanged if the digits within the number are written in ascending order from left to right?
 (a) One (b) Two (c) Three
 (d) None (e) More than three
39. Position of first and tenth digits in the number '8526297143' are interchanged. Similarly, the position of the second and ninth digits are interchanged and so on. Which of the following will be the 7th digit from right end after the rearrangement?
 (a) 1 (b) 7 (c) 9
 (d) 5 (e) None of these
40. How many such pairs of numbers are there in the number '6581606243', each of which has as many numbers between them in the number, as they have in the numeric series?
 (a) Two (b) One (c) More than three
 (d) Three (e) None of these

TYPE 4. Meaningful Words

41. If it is possible to make only one meaningful word with the Third, Seventh, Eighth and Tenth letter of the word COMPATIBILITY, which of the following would be the last letter of that word? If no such word can be made, give 'X' as your answer and if more than one such word can be formed, give your answer as 'Y'.
 (a) B (b) I (c) Y
 (d) X (e) L
42. If it is possible to make only one meaningful word with the first, fourth, fifth and tenth letters of the word TELEVISION, which of the following would be the second letter of that word from the right end? If no such word can be made, give 'X' as your answer and if more than one such word can be formed, give your answer as 'Y'.
 (a) E (b) N (c) Y
 (d) X (e) V

43. If it is possible to make only one meaningful word with the first, fourth, fifth and sixth letters of the word PYGMALION, which of the following would be the second letter of that word from the right end? If no such word can be made, give 'X' as your answer and if more than one such word can be formed, give your answer as 'Z'
- (a) P (b) A (c) X
(d) Z (e) M
44. How many meaningful English words starting with S, can be formed, with the second, the fourth, the fifth and the eighth letters of the word PERISHED, using each letter only once in each word? (to be counted from left).
- (a) 1 (b) 2 (c) 3
(d) 4 (e) None
45. If it is possible to make a meaningful word with the first, third, fifth, and seventh letters of the word RENEWAL, which of the following will be the second letter of that word, if no such word can be formed, give X as the answer and if more than one such words can be formed, give Z as the answer?
- (a) R (b) W (c) Z
(d) L (e) X
46. If it is possible to make a meaningful word with the second, fourth, sixth, and seventh letters of the word CRITICAL, which of the following will be the third letter of that word, if no such word can be formed, give X as the answer and if more than one such words can be formed, give Z as the answer?
- (a) R (b) C (c) Z
(d) T (e) X
47. If it is possible to make a meaningful word with the second, seventh and eighth letters of the word RADIANCE, which of the following will be the third letter of that word, if no such word can be formed, give X as the answer and if more than one such words can be formed, give Z as the answer?
- (a) R (b) W (c) Z
(d) E (e) X
48. If it is possible to make a meaningful word with the second, sixth, seventh and ninth letters of the word TRANSFORM, which of the following will be the second letter of that word, if no such word can be formed, give X as the answer and if more than one such words can be formed, give Y as the answer?
- (a) R (b) O (c) Y
(d) M (e) X
49. If it is possible to make a meaningful word with the third, fourth, sixth, and ninth letters of the word REASONING, which of the following will be the last letter of that word, if no such word can be formed, give X as the answer and if more than one such words can be formed, give M as the answer?
- (a) A (b) N (c) G
(d) M (e) X
50. If it is possible to make a meaningful word with the second, fourth, eighth, and ninth letters of the word STRUCTURE, which of the following will be the first letter of that word, if no such word can be formed, give X as the answer and if more than one such words can be formed, give N as the answer?
- (a) E (b) T (c) R
(d) N (e) X
51. If it is possible to make a meaningful word with the first, second, third, sixth, and tenth letters of the word DEFINITION, which of the following will be the first letter of that word, if no such word can be formed, give X as the answer and if more than one such words can be formed, give Y as the answer?
- (a) E (b) N (c) D
(d) Y (e) X
52. If it is possible to make a meaningful word with the third, fifth, sixth, and seventh letters of the word SEPARATION, which of the following will be the second letter of that word, if no such word can be formed, give X as the answer and if more than one such words can be formed, give Z as the answer?
- (a) R (b) Z (c) T
(d) A (e) X
53. If it is possible to form a meaningful word from the first, third, sixth, eighth, and ninth letters of the word UNDERNEATH, then which will be the third letter of that word? Mark the answer X if no such word can be formed and mark your answer as M if more than one such word can be formed.
- (a) U (b) A (c) N
(d) M (e) X
54. If it is possible to form a meaningful word with the first, third, fifth, seventh and tenth letters of the word 'ARMAGEDDON', which of the following would be the second letter of that word from the right end? If no such word can be formed, give 'X' as your answer and if more than one such word can be formed, give your answer as 'Z'.
- (a) Z (b) N (c) A
(d) G (e) X
55. If it possible to form a meaningful English word with the first, third, fifth, seventh and the tenth letters of the word 'SUBSTANTIAL', which of the following will be the second letter of that word, if no such word can be formed, mark your answer as '@' and if more than one such words can be formed, give '\$' as the answer.
- (a) S (b) N (c) @
(d) T (e) \$

TYPE 5. Alphabetical Series

DIRECTIONS (56–60): The following questions are based on the five three-digit letter words given below.

MAN HAT GOT RUB MOD

56. If the 2nd letter is replaced by the 3rd letter in each word and the 3rd letter is replaced by the next letter in the English alphabetical series, then how many words have at least one vowel?
- (a) Two (b) Four (c) Three
(d) One (e) None of these

57. If the second letter in each of the given words is replaced by the second next letter according to the alphabetical series, then how many words will have at least one vowel?
 (a) None (b) Five (c) Two
 (d) One (e) None of these
58. If the positions of the first and second letters of all the words are interchanged then how many meaningful English words will be formed?
 (a) None (b) Three (c) One
 (d) Two (e) None of these
59. If all the letters in each of the words are arranged in alphabetical order (within the word), how many words will remain unchanged?
 (a) Two (b) Three (c) One
 (d) None (e) None of these
60. If all the letters of each word is changed to the next letter according to English alphabetical series then how many words end with a consonant?
 (a) None (b) Three (c) Two
 (d) One (e) None of these

DIRECTIONS (61–65): Study the following arrangement carefully and answer the questions given below:

TER LOW ARE SIN TUE KOP

61. If one prefix 'AL' is added in each word, then how many meaningful English words will be formed?
 (a) One (b) Two (c) Three
 (d) Four (e) None of these
62. If all the letters are arranged as per alphabetical order (within the word) then how many letters (according to the English alphabet series) are there between the middle letters of the third word from the right end and second word from the left end?
 (a) 0 (b) 6 (c) 4
 (d) 7 (e) None of these
63. If the suffix 'ER' is added to each word, then how many meaningful English words can be formed?
 (a) One (b) Two (c) Three
 (d) Four (e) None of these
64. Which word will be third from right if the given words are arranged in dictionary order after interchanging the first and third letters of each word?
 (a) SIN (b) KOP (c) LOW
 (d) ARE (e) None of these
65. Which of the following will be the last letter of the fourth word from the left end after changing all the vowels to the succeeding letter and consonants to the preceding letter in the English alphabet series?
 (a) F (b) K (c) J
 (d) M (e) None of these
- DIRECTIONS (66–70): Study the following arrangement carefully and answer the questions given below:**
- DAM RAM ROM JAM ROP
66. If all the consonants are changed to the next letter of the English alphabetical series then how many words will start with different letters?
 (a) One (b) None (c) Three
 (d) Two (e) None of these
67. If all the letters are arranged in alphabetical order (within the word) then how many letters (in the English alphabet series) are there between the 1st letters of the third word from the left end and the second word from the right end?
 (a) 15 (b) 12 (c) 11
 (d) 10 (e) None of these
68. If all the letters of the words are arranged in the ascending order as one series of words as per the English alphabetical order. Which of the following letters is sixth to the right of the second letter from the left end?
 (a) A (b) D (c) M
 (d) R (e) None of these
69. How many meaningful English words will be formed if the first and last letter of each word are interchanged (within the word)?
 (a) None (b) One (c) Two
 (d) Three (e) None of these
70. After changing all the vowels to the immediate preceding letter and all the consonants to the second succeeding letter in English alphabetical series, all the words thus formed are arranged in descending order according to the English alphabet series, then which of the following will be the fourth word from right end?
 (a) LZ0 (b) FZO (c) TNO
 (d) TNR (e) None of these
- DIRECTIONS (71–75): Study the following arrangement carefully and answer the questions given below:**
- I C A B B R C D E Z F E I B U C A F E C B B A C A O B N U V W M K C V D
71. How many C's are there in the given series which are immediately preceded by an alphabet and followed by a vowel?
 (a) One (b) Two (c) Three
 (d) More than three (e) None of these
72. How many vowels are there in the given series which are immediately followed and preceded by a consonant?
 (a) One (b) Two (c) Four
 (d) More than Five (e) None
73. If all the vowels are removed from the given series, then which of the following letters will be exactly between the fourth letter from left end and fifth letter from right end?
 (a) C (b) F (c) B
 (d) A (e) None of these

74. If the positions of 1st and 36th letters, 2nd and 35th letters and so on from the left end are interchanged, then which letter will be 17th to the left of the 28th letter from the left end?
 (a) O (b) A (c) C
 (d) B (e) None of these
75. How many B's are there in the alphabetical series which are immediately preceded by an alphabet and immediately followed by B?
 (a) One (b) Two (c) None
 (d) Three (e) None of these
- DIRECTIONS (76–80): These questions are based on the following alphabet series.**
**ADDFUUAADFFAUCDDAFDFKFLFCCBCB
 DECACAUUAADCCUFFCAUCKLCC**
76. How many D are there in the given series which are immediately followed by an alphabet but not preceded by D?
 (a) Four (b) Three (c) Two
 (d) Five (e) More than 5
77. How many F are there in the above arrangement which is immediately followed by a vowel?
 (a) Three (b) Two (c) One
 (d) Five (e) Four
78. If all the F and D are deleted from the above arrangement, then which of the following letters is the 12th to right of the 5th letter from the left end?
 (a) B (b) U (c) C
 (d) A (e) None of these
79. How many letters are there between the 7th letter from the right end and the 11th letter from the left end, when all the 'B' and 'K' are removed?
 (a) 27 (b) 30 (c) 28
 (d) 32 (e) 25
80. How many A are there in the above arrangement which are immediately preceded by a vowel and followed by a consonant?
 (a) Two (b) One (c) None
 (d) Three (e) More than three
83. If in each number, first and second digit are added and third digit is subtracted from the resultant, then how many numbers obtained after performing the given operations will be greater than 6?
 (a) One (b) Two (c) Three
 (d) Four (e) None of these
84. If the third digit of the 2nd highest number is divided by the second digit of the highest number, then what will be the result?
 (a) 4 (b) 3 (c) 2
 (d) $\frac{2}{3}$ (e) None of these
85. If all the digits are arranged in ascending order within the number, then which number will be the highest?
 (a) 935 (b) 347 (c) 652
 (d) 286 (e) None of these

DIRECTIONS (86–90): Study the set of numbers given below and answer the questions which follow.

938 598 742 518 256

86. If the first and the second digits of each number are interchanged, which will be the second lowest number?
 (a) 742 (b) 518 (c) 938
 (d) 256 (e) None of these
87. If the first and the last digits of each number are interchanged, which among the following will be the third highest number?
 (a) 742 (b) 518 (c) 938
 (d) 256 (e) None of these
88. If two is subtracted from the first digit of each number and then the second and the third digits are interchanged, which of the following will be the lowest?
 (a) 742 (b) 518 (c) 938
 (d) 256 (e) None of these
89. If in each number, all the three digits are arranged in ascending order within itself, which of the following will be the third lowest number?
 (a) 742 (b) 518 (c) 938
 (d) 256 (e) None of these
90. If the first, second and third digits are changed with third, first and second digit respectively in each number, then which of the following numbers is lowest?
 (a) 598 (b) 742 (c) 256
 (d) 938 (e) None of these

DIRECTIONS (91–95): Study the set of numbers given below and answer the questions which follow.

3759 2849 5217 6825 4956

91. If the first and the last digits of each number are interchanged within the number, which will be the second-lowest number?
 (a) 4956 (b) 5217 (c) 6825
 (d) 3759 (e) 2849

TYPE 6. Number Series

DIRECTIONS (81–85): Study the following series of five three-digit numbers and answer the questions.

935 273 347 652 286

81. If all the numbers are arranged in ascending order, then which number will come in the center of the series?
 (a) 652 (b) 347 (c) 935
 (d) 286 (e) None of these
82. If all the digits are arranged in descending order within the number, then which number will be the lowest number?
 (a) 652 (b) 347 (c) 935
 (d) 286 (e) None of these

92. If the first digit with the second digit and third digit with the fourth digit are interchanged within the number, which among the following will be the third-highest number?
 (a) 4956 (b) 5217 (c) 6825
 (d) 3759 (e) 2849
93. If first & the third and the second & the last digits are interchanged within the number, which will be the second highest number?
 (a) 4956 (b) 5217 (c) 6825
 (d) 3759 (e) 2849
94. If two is subtracted from the last digit of each number and then the first and the third digits are interchanged, which of the following will be the lowest?
 (a) 3759 (b) 5217 (c) 6825
 (d) 4956 (e) 2849
95. If all the four digits of each number are arranged in ascending order within itself from left to right, which of the following will be the third lowest number?
 (a) 3759 (b) 5217 (c) 6825
 (d) 4956 (e) 2849

DIRECTIONS (96–100): Study the following arrangement carefully and answer the questions given below:

1 0 9 8 3 4 2 6 1 2 8 3 7 0 9 2 1 4 7 0 4 5 2 3 0 9 7 4 8 3 9 0 1 7 5 2

96. Which of the following digits will be the ninth to the right of the seventh digit from the left end?
 (a) 4 (b) 3 (c) 5
 (d) 2 (e) 0
97. How many 0 are there in the series which are immediately followed and preceded by a perfect square number?
 (a) One (b) Two (c) Three
 (d) None (e) More than three
98. What will be the difference between the eleventh digit from the right end and the thirteenth digit from the left end?
 (a) 1 (b) 2 (c) 3
 (d) 4 (e) None of these
99. If all the prime numbers are removed from the series, then which of the following will be eighth to the left of the sixth digit from the right end?
 (a) 4 (b) 9 (c) 8
 (d) 6 (e) None of these
100. How many perfect square numbers are there in the given series which are immediately preceded by an odd number?
 (a) Four (b) Two (c) Three
 (d) Five (e) None of these

DIRECTIONS (101–105): Study the following arrangement carefully and answer the questions given below:

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

101. Which of the following digit will be sixth to the left of tenth from the right end?

- (a) 6 (b) 9 (c) 5
 (d) 2 (e) None of these
102. How many 2's are there in the given series which are followed by a number less than 6?
 (a) One (b) None (c) Three
 (d) Two (e) None of these
103. What will be the sum of the fifth, seventh and tenth digit from the left end?
 (a) 13 (b) 10 (c) 11
 (d) 15 (e) None of these
104. If all the perfect square digits are removed from the given series, then which of the following will be the fifth digit to the right of the sixth digit from the left end?
 (a) 2 (b) 5 (c) 6
 (d) 7 (e) None of these
105. How many odd numbers are there in the given series which are immediately followed by a perfect square?
 (a) One (b) None (c) Three
 (d) Two (e) More than six

TYPE 7. Alphanumeric Series

DIRECTIONS (106–110): Study the following arrangement carefully and answer the questions given beside.

@ E 2 > I O 9 % G & 6 K A 3 * 4 X # 7 V ^ 5 P \$ U 8 F # 1 0 T

106. How many numbers are there in the given series which are immediately preceded by a symbol and immediately followed by an alphabet?
 (a) One (b) Four (c) Three
 (d) Two (e) None of these
107. How many vowels are there in the given series that are immediately preceded by a symbol and immediately followed by a number?
 (a) Two (b) Four (c) None
 (d) One (e) Three
108. How many consonants are there in the given series that are immediately followed by a symbol but not preceded by vowel?
 (a) Two (b) Four (c) One
 (d) Three (e) Five
109. How many symbols are there in the given series that are immediately preceded by an alphabet and immediately followed by a number?
 (a) Two (b) Four (c) None
 (d) One (e) Three
110. How many symbols are there in the given series that are immediately followed by a vowel and immediately preceded by a number or a consonant?
 (a) Four (b) Two (c) Three
 (d) One (e) None

DIRECTIONS (111–115): Study the given alphanumeric symbol series carefully and answer the questions based on it.

6 P \$ 7 W F Ω 1 N L 4 ? 3 > J H 8 & 5 T O C Q N ! I 2 9 * U ! A V # H 4 Q D

111. If all the even numbers are removed from the series then find the product of the numbers that come between second vowel from right end and Ω?
 (a) 138 (b) 145 (c) 135
 (d) 130 (e) None of these
112. How many symbols in the given series are immediately preceded by a number but not followed by a letter?
 (a) One (b) More than four
 (c) Two (d) Four (e) None of these
113. If all the symbols are removed from the series then which of the following element will be the seventh to the right of second highest number in the series?
 (a) I (b) 9 (c) 2
 (d) N (e) None of these
114. Four of the following five are alike in a certain way and thus form a group. Which of the following does not belong to the group?
 (a) \$WF (b) 85T (c) 1L4
 (d) V#H (e) 9U!
115. How many numbers are immediately followed by a symbol but not immediately preceded by a letter?
 (a) None (b) More than three
 (c) One (d) Three (e) None of these

DIRECTIONS (116–120): Study the given alphanumeric symbol series carefully and answer the questions below.

2 I B 2 U & E N M \$ 8 & 6 L D S ♠ 9 8 6 Q 4 Y Z 1 7 % R O G ♦ A @ 3 %

116. How many such symbols are there in the above alphanumeric series which are followed by a number and preceded by an alphabet?
 (a) Three (b) One (c) Four
 (d) Two (e) None of these
117. When all the symbols are removed from the given series, then how many vowels are there in the series which are immediately followed by vowels?
 (a) One (b) None (c) Two
 (d) Four (e) None of these
118. How many such numbers are there in the given series which are immediately preceded by a symbol and followed by a letter or a number?
 (a) None (b) One (c) Two
 (d) Three (e) Four
119. Four of the following five are alike in a certain way and form a group. Find the one that does not belong to that group?

- (a) N\$E (b) A3♦ (c) %O7
 (d) ♠8S (e) UE&

120. What should come in place of question mark (?) in the following series based on the above arrangement?
 2B2, &NM, &LD, 8Q4 ?
 (a) RO% (b) ♠ 86 (c) %OG
 (d) 7RG (e) G♦A

DIRECTIONS (121–125): Study the following arrangement carefully and answer the questions given below:

J 5 ? 3 F H © K Q # 8 U B 6 @ M % T A P \$ * 2 W L 7 N I E D 1

121. How many such symbols are there in the above arrangement, each of which is immediately preceded by a consonant but not immediately followed by a number?
 (a) None (b) One (c) Three
 (d) Two (e) More than three
122. Four of the following five are alike in a certain way based on their positions in the above arrangement and so form a group. Which among the following does not belong to that group?
 (a) 8U# (b) 5?J (c) P\$A
 (d) M%T (e) NI7
123. How many consonants are there between the 7th element from the right and 6th element from the left?
 (a) Seven (b) Three (c) Five
 (d) Six (e) None of these
124. If the last twelve elements in the above arrangement are written in the reverse order, then which of the following will be the 24th element from the left end?
 (a) L (b) W (c) 2
 (d) K (e) None of these
125. How many such consonants are there in the above arrangement, each of which is immediately preceded by a number and immediately followed by a vowel?
 (a) Three (b) One (c) Two
 (d) None (e) More than three

DIRECTIONS (126–130): Study the following arrangement carefully and answer the questions given below:

K * M A © L N 5 P 1 8 U \$ E 2 D C 6 # 9 Z N 4 7 T Q 8 U J K 3 % F @ Y

126. How many such numbers are there in the given arrangement each of which is immediately preceded by a consonant but not immediately followed by a letter?
 (a) One (b) None (c) Three
 (d) Two (e) Four
127. How many such symbols are there in the arrangement, each of which is immediately followed by a letter but not immediately preceded by a number?
 (a) One (b) Three (c) None
 (d) Two (e) More than three

128. Four of the following five follow a common pattern and thus belong to a group, find the one that does not belong to that group?
 (a) Z47 (b) 51U (c) QUK
 (d) M©N (e) 9N7
129. When all the digits are removed then how many symbols are there between the second element from the right and the third element from the left end?
 (a) 3 (b) 4 (c) 5
 (d) 2 (e) 1
130. Which of the following is eighth to the right of the tenth from the left end after removing all the symbols in the given arrangement?
 (a) N (b) 4 (c) 7
 (d) Z (e) None of these

TYPE 8. Condition-Based Series

DIRECTIONS (131–135): Study the following alphanumeric series carefully and answer the questions given below:

M 2 E Q % R T & 6 Z * N S \$ 7 A O 8 F # R 4 @ 1 L # 3 D Ω 9 A θ D Z X Y Φ W

- Step I:** Arrange the symbols which are immediately preceded and followed by a letter between & and 6 in the same order as they appear in the sequence.
- Step II:** The numbers which are immediately preceded by a symbol are arranged at the end of the series in descending order.
- Step III:** The letters which are immediately preceded by a symbol are arranged between M and 2 in reverse alphabetical order from left to right.

(Step II is applied after Step I and Step III is applied after Step II)

131. Four of the following five are alike in some way and thus form a group. Which of the following does not belong to the group in step III?
 (a) LDA (b) #θN (c) @#Ω
 (d) W97 (e) 631
132. How many symbols are there between the 6th letter from the left and the 10th element from the right end in the sequence obtained in step II?
 (a) None (b) One (c) Two
 (d) Three (e) More than three
133. How many consonants are there between '2' and '4' in the sequence obtained in step I?
 (a) Five (b) Six (c) Four
 (d) More than Six (e) None of these
134. How many digits are there which are immediately preceded and followed by a letter in the sequence in step III?
 (a) One (b) Two (c) Three
 (d) None (e) None of these
135. How many letters are there which is/are immediately

- preceded by a number and immediately followed by a symbol in step I?
 (a) Four (b) One (c) Two
 (d) None (e) None of these

DIRECTIONS (136–140): Study the following alphanumeric series carefully and answer the questions given below:

% J 8 ^ L E K # 2 U P 5 * T R \$ 4 % Y Q A & 6 D 9 R © W 7 @ F 9 S I O P &

- Step I:** The letters which are immediately preceded by a symbol and followed by a number are arranged at the end of the series in alphabetical order.
- Step II:** The symbols which are immediately preceded by a letter and followed by a number are arranged between 2 and U in the sequence in which they appear in the series.
- Step III:** The letters which are immediately followed by a number, interchange their positions with the following number.

(Step II is applied after Step I and Step III is applied after Step II)

136. How many symbols immediately precede a number in step III?
 (a) One (b) Three (c) Five
 (d) Four (e) Two
137. Which among the following element of the series is the fourth from the left end and the element which is ninth position from the right end respectively in Step III?
 (a) E, S (b) L, 9 (c) ^, 9
 (d) E, @ (e) None of these
138. How many elements are arranged to the right of @ in the series in step II?
 (a) Five (b) Three (c) Four
 (d) More than five (e) None of these
139. Which of the following alphabet is 8th to the right of 2 in Step II?
 (a) D (b) A (c) R
 (d) Q (e) None of these
140. How many letters are there between the 6th element from left and the 8th element from right in Step II?
 (a) 11 (b) 10 (c) 9
 (d) 8 (e) None of these

DIRECTIONS (141–145): Study the following alphanumeric series carefully and answer the questions given below:

@ L 4 \$ N 5 3 H 8 J + A 9 # K Y B G & % X 1 ÷ 2 V > T O

- Step I:** The letters which are followed by a symbol are arranged in alphabetical order between T and O.
- Step II:** The digits which are preceded by a consonant will be arranged at the beginning of the sequence in descending order from left to right.
- Step III:** The letters which are preceded by a symbol and followed by a digit are arranged at the end of the sequence in alphabetical order.

141. How many symbols are followed by a letter and preceded by a number in step III?
 (a) Two (b) Three (c) One
 (d) Four (e) None
142. What is the sum of the numbers between @ and & in the sequence in Step I?
 (a) 26 (b) 28 (c) 30
 (d) 29 (e) 27
143. Which of the following elements is the 6th to the right of the 18th element from the right end in Step III?
 (a) B (b) A (c) Y
 (d) & (e) None of these
144. How many consonants are there between the 7th element from the left end and 8th element from the right end in step I?
 (a) 6 (b) 5 (c) 4
 (d) 3 (e) None of these
145. Which of the following letters is the 11th from the right end in Step III?
 (a) A (b) N (c) K
 (d) H (e) None of these

DIRECTIONS (146–150): Study the following alphanumeric series carefully and answer the questions given below:
\$ 7 W F * 1 Q U ! A Ω C > 8 H Z & 5 T J O 9 # V 6 P S 2 N L 4 ? 3

- Step I:** The letters which are immediately preceded by a digit and followed by a consonant are arranged at the end of the series in alphabetical order.
- Step II:** The symbols which are immediately preceded by a letter and followed by a number are arranged at the beginning of the series as they appear in the series.
- Step III:** The letters which are immediately preceded by a number, interchange their positions with the following number followed.

(Step II is applied after Step I and Step III is applied after Step II)

146. Which of the following elements is the 8th to the right of 2 in Step II?
 (a) N (b) P (c) T
 (d) W (e) None of these
147. Which among the following is the fifth letter from the left end and sixth letter from the right end respectively in Step III?
 (a) E, S (b) C, L (c) A, H
 (d) F, N (e) None of these
148. How many letters are arranged between '1' and '?' in Step II?
 (a) Five (b) Seven (c) Four
 (d) None (e) More than Seven
149. How many symbols are immediately followed by a digit in step I?
 (a) One (b) Three (c) Five
 (d) Four (e) Two

150. How many elements are there between the 8th element from left and 10th element from the right end after removing all the symbols in Step-II?
 (a) Seven (b) Six (c) Five
 (d) Four (e) None of these

DIRECTIONS (151–155): Study the following alphanumeric series carefully and answer the questions given below:

@ E 6 K P \$ U 8 F # X € 7 V Φ 5 > I 2 R O 9 Z % G & A 3 * 4 1 M

- Step I:** The digits which are immediately preceded by a vowel and followed by a consonant are arranged between @ and E in the same order as they appear in the sequence.
- Step II:** The vowels which are immediately followed by a consonant are arranged at the end of the series in reverse alphabetical order from left to right.
- Step III:** The letters which are immediately preceded and followed by a symbol are arranged between 6 and 8 in the series in alphabetical order from left to right.

(Step II is applied after Step I and Step III is applied after Step II)

151. How many letters are there which follow a number and precedes a symbol in step II?
 (a) Four (b) One (c) Two
 (d) None (e) None of these
152. How many symbols are there between the 3rd letter from the left and 7th letter from the right end in step III?
 (a) None (b) One (c) Two
 (d) Three (e) More than three
153. How many vowels are there to the right of % in step II?
 (a) Five (b) Six (c) Four
 (d) More than Six (e) None of these
154. How many digits are there which precedes a digit in step I?
 (a) Three (b) Two (c) One
 (d) Four (e) None of these
155. How many elements are there between the 13th element from the left and 9th letter from the right end in step III?
 (a) Two (b) Three (c) One
 (d) None (e) None of these

DIRECTIONS (156–160): Study the following arrangement carefully and answer the questions given below:

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

- Step I:** The digits which are immediately followed by a perfect square are arranged at the end of the series in ascending order (except 1).
- Step II:** The odd digits which are immediately followed by an even number, interchange their positions.
- Step III:** The digits which are immediately preceded by an odd number and followed by a number that is greater than 2 are arranged at the starting of the series in descending order.

(Step II is applied after Step I and Step III is applied after Step II)