Chapter 5 Coding-Decoding

CODING

The word 'coding' stands for converting a **word from English language** into a certain pattern or expression.

Therefore, **code** is a sequence of letters/numbers, which is used in place of the original **word/series of numbers** that is coded.

Coding can be done for a group of letters (a word), a series of numbers or an **alphanumeric series** (*i.e.,* a series having both alphabets as well as numerals).

There are 4 types of coding methods :

I. Simple Arrangement.

II. Direct Substitution.

III. Pattern Substitution.

IV. Alphanumeric coding.

I. Simple Arrangement Method : This is the most common & the simplest kind of coding. These codes are generally obtained by simply re-aligning the given alphabets in a word.

ILLUSTRATION 1 :

In a code language, if TRAINS is coded as RTIASN, how will FLOWER be coded in the same language ?

(1) LFOWER (2) LFWORE

(3) WORELF (4) ERFLOW

Sol. (2) TRAINS ⟶ RTIASN

In the above code, we can clearly observe that the code is obtained simply by interchanging the positions of 2 **consecutive alphabets** *i.e.,* TR becomes RT, AI becomes IA and NS becomes SN similarly,

FLOWER will be coded as (FL becomes LF, OW becomes WO and ER becomes RE) LFWORE.

FLOWER ⟶ LFWORE

Therefore, correct answer is option (b).

ILLUSTRATION 2 :

If the word 'MECHANIC' is coded as 'EMHCNACI' in a certain code language, then how will 'WESTSIDE' be coded in the same language ?

(1) EWTSISED (2) EWTSSIED

(3) EWTSISDE (4) WETSSIED

Sol. (1) MECHANIC ⟶ EMHCNACI

Similar to example 1, in the word MECHANIC also we have done the same thing. ME becomes EM, CH becomes HC, AN becomes NA & IC becomes C I.

Similarly, in the word 'WESTSIDE', WE becomes EW, ST becomes TS, SI becomes IS and DE becomes ED.

So, WESTSIDE ⟶ EWTSISED

Hence, correct answer is option (a).

ILLUSTRATION 3 :

In a certain code language, the word 'PARTNER' is coded as 'TRAPREN', how will 'FOUNDER' be coded in the same language.

(1) NUOFDER (2) NUOFRED

(3) FOUNRED (4) OFNUEDR

Sol. (2) When we divide letters of the word 'PARTNER' in two group.

First group of first 4 letters and second group of last 3 letters, *i.e.,* PART and NER and then reverse the order of the letters in these two groups.

$$\left.\begin{array}{l}\text{PART} \longrightarrow \text{TRAP} \\ \text{NER} \longrightarrow \text{REN}\end{array}\right] \Rightarrow \text{TRAPREN}$$

Similarly, we divide the letters of the word 'FOUNDER' in two group.

First group with first 4 letters (FOUN) and second group with last 3 letters (DER) & then reverse the order of the letters in the 2 groups.

FOUN ⟶ NUOF DER ⟶ RED

∴ the code for FOUNDER is NUOFRED

Therefore, correct answer is option (c).

Quick Tips

Notes for simple arrangement :

(i) Number of characters (letters / numbers / symbols) in the code should be same as that of the original word, otherwise coding is not possible.

(ii) Pay attention to the alignment of the word, *i.e,* if the letter/ number has changed its position from first to last & vice versa, a swap coding is possible.

For e.g. : in ***e.g.* 3**, first group had 4 letters — 'FOUN' & there was a swap between letters at first & last position.

Swap coding

II. Direct Substitution Method : When the characters, *i.e.,* letters of a word or numberals of a series are substituted by a coded character, *i.e.,* an alphabet, a numeral or a symbol & are placed in the coded word at similar positions as in the given / original word, it is known as direct substitution method.

These codes (substitutions) may either be in a direct fashion or in a jumbled fashion in order to make the questions tricky.

ILLUSTRATION 4 :

In a code language, if SUGAR is coded as ZN and TEA is coded as FLD, how would you code GRATE in the same code language.

(1) BNDFL (2) MBDFL
(3) LDZMN (4) FLDZB

Sol. (2) Original word : S U G A R T E A

Coded word : Z N M D B F L D

First we write the original words SUGAR & TEA and is corresponding alignment to these, we write down their codes respectively.

Therefore, we see that Z is coded for S, N for U, M for G, D for A and B for R, in the word SUGAR. While in the word TEA, F is substituted for T, L for E & D for A.

This implies that this code is in direct fashion as in both the words 'D' is coded for A.

Therefore, code for GRATE will be MBDFL.

G R A T E

M B D F L

So, correct answer option is (c).

ILLUSTRATION 5 :

If in a certain code language, TWENTY is coded as 863985 and ELEVEN is coded as 323039, how will TWELVE be coded?

(1) 863903 (2) 86365
(3) 863203 (4) 683583

Sol. (2) Original words : T W E N T Y E L E V E N

Coded words : 8 6 3 9 8 5 3 2 3 0 3 9

Therefore, in the word TWELVE, 8 will be the code for T, 6 will be the code for W, 3 for E, 2 for L, and 0 for V.

So, T W E L V E

8 6 3 2 0 3

Hence, answer option (b) is the correct answer.

Shortcut : Code for T is 8, so the code cannot start with '6'. So option (d) is ruled out, option (c) has only 5 numbers while the word has 6 alphabets, therefore, option (c) is also ruled out. Code for L is '2', so option (b) is the correct answer.

Quick Tips

Notes for direct substitution :

(i) If there are 2 words in the question for which codes are given and these 2 words have 1 or more same alphabets, then the codes for these alphabets will be the same as well.

(ii) In case of confusion, note (a), *i.e.*, same codes in both the words for same alphabet, will help us identify that the question belongs to the category of **direct substitution.**

III. Pattern Substitution Method : This method involves the use of the alphabet series (A B C D E F .....X Y Z). A certain word will be coded as certain other letters from the alphabet series following a certain pattern. It is further explained by examples.

ILLUSTRATION 6 :

In a certain code language, the word 'RECTANGLE' is coded as TGEVCPING, then how is the word 'RHOMBUS' coded ?

(1) TJOQDWV (2) UVWTJQN
(3) TJQODWU (4) JTQOEWN

Sol. (3) Each letter of the word RECTANGLE is moved two steps forward to obtain the corresponding letters of the code, *i.e.,*

R E C T A N G L E

+2 +2 +2 +2 +2 +2 +2 +2 +2

T G E V C P I N G

Similarly, we have :

R H O M B U S

+2 +2 +2 +2 +2 +2 +2

T J Q O D W U

So, the desired code is 'TJQODWU'. So, option (c) is the correct answer.

Shortcut : After we obtain the pattern of substitution, *i.e.,* after the step.

R E C T A N G L E

+2 +2 +2 +2 +2 +2 +2 +2 +2 &

T G E V C P I N G

Since we know that the word to be coded 'RHOMBUS' starts with the same alphabets as 'RECTANGLE', *i.e.,* both start with R therefore the code for both will be the same *i.e.,* T. So, options (b) & (d) are ruled out.

Since in options (a) & (c), the starting alphabet is the same but the last alphabet is different, we directly check for the last alphabet of the word 'RHOMBUS', *i.e.,* S.

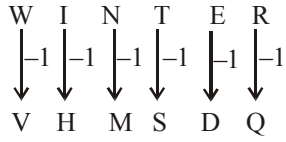
$S \xrightarrow{+2} U.$ Hence option (c) is the correct answer.

ILLUSTRATION 7 :

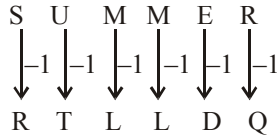
If in a certain language WINTER is coded as VHMSDQ, then how will SUMMER be coded in the same language ?

(1) RTLLPR (2) RTLLDQ
(3) RTLLDS (4) RTLMDQ

Sol. (2) Clearly, each letter of the word WINTER is moved one step behind too obtain the given code, *i.e.,*



Similarly, the word SUMMER is coded as



Hence the code is RTLLDQ, *i.e.,* option (3).

Shortcut : As all the options start with same alphabets but ends at different alphabets, we check options from the end.

As the word WINTER & SUMMER have last two alphabets (ER) common, therefore, we can see the code for 'ER' from the question itself, which is 'DQ'.

So, options (1) & (2) are ruled out.

Also, since the code for both the Ms in SUMMER should be the same, thus option (d) is also ruled out. Hence, correct answer is option (3).

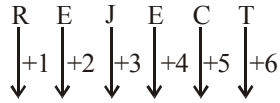
ILLUSTRATION 8 :

In a certain language, the word 'REJECT' is written as SGMIHZ'. How will the word 'ACCEPT' be written ?

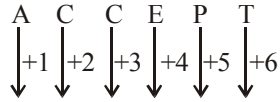
(1) BEFIUV (2) BEFMUZ

(3) BEEIUZ (4) BEFIUZ

Sol. (4) Clearly, the pattern followed by the code is moving up in an increasing order.



Similarly, code for the word 'ACCEPT' will be



Shortcut : Both words 'REJECT' as well as 'ACCEPT' contain 6 alphabets, where the position of the second E and T in REJECT are same as the E and T in 'ACCEPT' *i.e.,* positions 4 & 6 respectively.

So, the code should have I and Z at positions 4 & 6 respectively. Thus options (1) and (3) are ruled out. Also, since the code has alphabets moved up in an increasing order. Therefore, option (2) is invalid.

Hence option (4) is the correct answer.

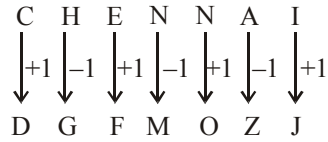
ILLUSTRATION 9 :

It in a certain language CHENNAI is coded as 'DGFMOZJ' how is MUMBAI coded in the same language?

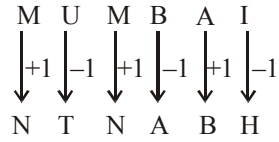
(1) NTNABH (2) LVLCZJ

(3) LTLCBH (4) NVNCBJ

Sol. (1) It can be clearly seen that the original word is moved 1 letter forward and backward alternately, such that



Similarly, in case of the word MUMBAI, the alphabets will also be moved 1 letter forward & backward alternately therefore, options (2) & (3) are ruled out.



Hence, option (a) is the correct answer.

IV. Alpha-Numeric Series Coding: Out of the entire alphabet series numbered 1 to 26, *i.e.,*

A	B	C	D	E	F	G	H	I	J	K
1	2	3	4	5	6	7	8	9	10	11

L	M	N	O	P	Q	R	S	T	U
12	13	14	15	16	17	18	19	20	21

V	W	X	Y	Z
22	23	24	25	26

it is difficult to remember each and every alphabets' numeric value, therefore, we just have to remember.

E = 5, J = 10, O = 15, T = 20 and Y = 25 which are multiples of 5.

In alphanumeric coding, the alphabets of the word are given and we code them in terms of their numeric value or some pattern according to their numeric values.

ILLUSTRATION 10 :

If in a certain code language, 'MIRROR' is coded as '139181815', how will 'APPLE' be coded in the same language ?

(1) 11616125 (2) 3984145

(3) 1162254 (4) 11213147

Sol. (1) As we can see from the alphabet series, numeric values for the alphabets M is 13, I is 9, R is 18 and O is 15.

Similarly, for the word APPLE, A = 1, P = 16, P = 16, L = 12 & E = 5. So, the code is 11616125. Therefore, option (1) is the correct answer.

ILLUSTRATION 11 :

If EAT is 26, ZEAL is 44 and AROMA is 48.

(A) How is 'HELMET' written in the same language ?

(1) 23 (2) 63

(3) 83 (4) 53

(B) How is 'MANAGER' written in the same language ?

(1) 89 (2) 59

(3) 79 (4) 39

Sol. As we can see from the alphabet series, the words

EAT $\longrightarrow$ E = 5, A = 1, T = 20

5 + 1 + 20 = 26

ZEAL $\longrightarrow$ Z = 26, E = 5, A = 1, L = 12

$26 + 5 + 1 + 12 = 44$

AROMA $\longrightarrow$ A = 1, R = 18, O = 15, M = 13, A = 1

$1 + 18 + 15 + 13 + 1 = 48$

(A) (2) similarly, HELMET is written as

HELMET $\rightarrow$ H = 8, E = 5, L = 12, M = 13, E = 5, T = 20

$8 + 5 + 12 + 13 + 5 + 20 = 63$

Hence, the code for 'HELMET' is 63.

option (3) is the correct answer.

(B) (2) similarly the word 'MANAGER' can be written as

MANAGER $\rightarrow$ M = 13, A = 1, N = 14, A = 1, G = 7,

E = 5, R = 18

$13 + 1 + 14 + 1 + 7 + 5 + 18 = 59$

so, the code for the word 'MANAGER' is 59.

option (3) is the correct answer.

ILLUSTRATION 12 :

If in a certain language, 'IMAGE' is written as '571319', then 'SMALL' will be written as

(1) 212113191 (2) 211211391

(3) 191311212 (4) 39421919

Sol. **(1)** The code for 'IMAGE', according to the alphabet series is '913175'. When we reverse the order of this code, it is written as '571319' which is the given code.

Similarly, for the word 'SMALL', the code according to the alphabet series is '191311212'. When we reverse the order of this code, we obtain '212113191', which is the required code.

Thus, option (1) is the correct answer.

DECODING

The word decoding stands for converting a certain pattern or expressions, *i.e.,* the code, to a word from English language or a certain series of numbers.

In other words, decoding refers to the process of converting the code back to the original word.

Similar to coding, there are 4 types of Decoding Methods :

I. Simple Arrangement

II. Direct Substitution

III. Pattern Substitution

IV. Alphanumeric Decoding

We would first like you to go back and revise the four types of CODING methods before we move on.

I. Simple Arrangement Method : Under this, the code will be obtained simply by re-arrangement of the alphabets of the word.

The questions will test you on decoding these codes.

ILLUSTRATION 1 :

In a certain language, 'SIMPLE' is written as 'ISPMEL' and 'CHAPTER' is written as 'HCPARET'. Then 'LFWORE' stands for which word ?

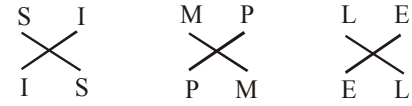
(1) LOWFER (2) FLOREW

(3) FLOWER (4) WORFEL

Sol. **(3)** SIMPLE $\longrightarrow$ ISPMEL

The word 'SIMPLE' is of 6 letters and so is the code given in the question. Therefore, we have to follow the pattern of the word 'SIMPLE'.

In the above code, we can clearly observe that the code is obtained simply by inter changing the positions of consecutive alphabets, *i.e.*,



Similarly,

Hence, option (3) is the correct answer. 'FLOWER' is the word for which the code is given.

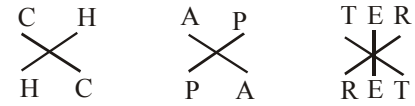
ILLUSTRATION 2 :

Using the data from example 1, which word is coded 'ETCAREH' ?

(1) TEACHER (2) TEACREH

(3) EACHTER (4) TECAREH

Sol. (1) The word 'CHAPTER' is of 7 letters & so is the code given in the question. Therefore, we have to follow the pattern of the word 'CHAPTER'.



Similarly,

Hence, option (1) is the correct answer. 'TEACHER' is the word for which the code is given.

ILLUSTRATION 3 :

In a certain language, if 'CARROM' is written as 'MORRAC', then what is the word coded as 'TIBBAR'.

(1) RIBBAT (2) RABBIT

(3) BARTIB (4) BITRAB

Sol. (2) The code for the word 'CARROM', is obtained by reversing the order of the alphabets of the word *i.e.,*

C A R R O M

$\longleftarrow$ reverse the order

M O R R A C

Similarly, the word for code 'TIBBAR' will be an outcome of the same pattern as followed for the word 'CARROM', *i.e.,* the code TIBBAR will also be written in reverse order.

T I B B A R

$\longleftarrow$ reverse the order

R A B B I T

Hence, 'RABBIT' is the word, making option (2) the correct answer.

Note for Decoding **:** Solve by options, *i.e.,* by taking one option at a time into consideration.

ILLUSTRATION 4 :

Using the data of eg. 3, which word would be coded as ELYTSEFIL?

(1) LIFESTYLE (2) LIFEELYTS
(3) LIFESTYEL (4) EFILSTYLE

Sol. (1) Since, the code for 'CARROM' was obtained by writing the letters in the reverse order,

C A R R O M

⟵ reverse the order

M O R R A C

Similarly, the code when written in the reverse order will give us the original word, i.e.,

E L Y T S E F I L

⟵ reverse the order

L I F E S T Y L E

Hence, the word for which the code is given is LIFESTYLE. Thus option (1) is the correct answer.

II. Direct Substitution Method : In these kind of questions, there will be one or more words given in the question for which codes will be given either in direct fashion or in jumbled up fashion. We'll discuss both.
We will be asked to find out the original word (s) for the given code(s).

Command data for Illustration 5 to Illustration 8 :
In a certain code language, if P O U R I N G is written as x f n p l o m, S A M P L E is written as z e h x c j and W H I T E N E R is written as a t l k j o j p.

ILLUSTRATION 5 :

Then which word is written as 'hjecz' ?

(1) LEAMS (2) SMEAL
(3) MEALS (4) MALES

Sol. **(3)** The codes for the three words are direct substitution of the small alphabets for the capital ones, because 'N' & 'I' are codes as 'o' & 'l' respectively in both POURING as well as WHITENER, while 'E' is written as 'j' both the times in the word WHITENER and also in the word SAMPLE.

Words	P	O	U	R	I	N	G	S	A	M	P	L	E	W	H	I	T	E	N	E	R
Codes	x	f	n	p	l	o	m	z	e	h	x	c	j	a	t	l	k	j	o	j	p

Letter	P	O	U	R	I	N	G	S	A	M	L	E	W	H	T
Codes :	x	f	n	p	l	o	m	z	e	h	c	j	a	t	k

Therefore, the code 'h j e c z' stands for MEALS.

M E A L S
↑ ↑ ↑ ↑ ↑
h j e c z

deriving the word from the code (see arrows)
Hence, option (3) is the correct answer.

ILLUSTRATION 6 :

Which word is coded as 'ajlmtk' ?

(1) WAISTE (2) WEIGHT
(3) WASTES (4) HEIGHT

Sol. (2) Following the same concept as in example 5, the code 'ajlmtk' represents

W E I G H T
↑ ↑ ↑ ↑ ↑ ↑
a j l m t k

deriving the word from the code.
Hence, option (2) 'WEIGHT' is the correct answer.

ILLUSTRATION 7 :

Which word is coded as 'znhhjp'?

(1) SUMMER (2) WINTER
(3) WHITER (4) POORER

Sol. (1) Since, all the words in the options start with different letters, therefore, their codes also start with different letters. Thus we can see that the first letter of the code 'z' is the code for letter 'S'. Therefore, the given code stands for the word 'SUMMER'.
Hence, option (1) is the answer.

ILLUSTRATION 8 :

Which word is coded as 'pjexlom' ?

(1) PEERING (2) REEPING
(3) PEARING (4) REAPING

Sol. **(4)** Similar to example 7's solution, we check for the first letter, where the code 'p' stands for the alphabet 'R'. Therefore, options (1) & (3) are ruled out and the answer has to be either option (2) or option (4). Since, the code has no repetition of alphabets, so option (2) is also invalid.
Thus the correct answer is option (4) REAPING.

Common Data for Example 9 to Example12

In a certain code, "WOMAN" is coded as "DPCZR", "MASTER" is coded as "PCMEGX", "FLOWER" is coded as "BIGXDZ" and "FLOAT" is coded as "DCIEB", then in that language find the word for the following codes :

ILLUSTRATION 9 :

IBDZ :

(1) FLOW (2) BLOW
(3) WARE (4) WORE

Sol. Since, the letter 'O' seems to have different codes at its positions in the three words WOMAN, FLOWER and FLOAT, therefore, is not a case of direct substitution but of jumbled substitution (the question becomes tricky).

WORD		**CODE**
W O M A N	⟶	D P C Z R
M A S T E R	⟶	P C M E G X
L O W E R	⟶	B G X D Z
F L O A T	⟶	D C I E B

There are 3 words – WOMAN, LOWER & FLOAT that have 1 same letter, *i.e.,* 'O' for which they have one common code letter, *i.e.,* 'D'. Similarly the words - WOMAN & LOWER have 1 more common 'W', for which they have one more common code letter 'Z'.

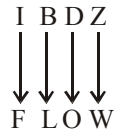
Similarly, the words – WOMAN, MASTER & FLOAT have a letter 'A' common in all these words for which the common code is 'C'.

Following the same trend

Letter	W	O	M	A	N	S	T	E	R	F	L
Code	Z	D	P	C	R	M	E	G/X	X/G	I	B

In the above table, the codes for the letters 'E' & 'R' cannot be found distinctly.

From the table, the code IBDZ stands for the word FLOW.



Hence, option (1) is the correct answer.

Quick Tips

(i) Spot out the common letters in the wrds and try to find the code for the common letters first.

(ii) As soon as you find the codes for some letters, tick those letters as well as codes so you don't keep checking them again & again. This will save your time & save you from any kind of confusion while solving the questions.

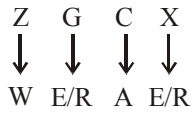
ILLUSTRATION 10 :

ZGCX :

(1) WORE (2) WEAR

(3) MERE (4) WERE

Sol. (2) For the code letters Z, G, C, X the alphabets are



Therefore, the word from the given options is 'WEAR'. Correct option is (2).

ILLUSTRATION 11 :

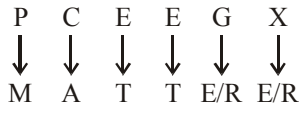
PCEEGX :

(1) FARMER (2) WELLER

(3) FAMMER (4) MATTER

Sol. (4) For the code letters PCEEG,X, there has to be one alphabet in the word that is repeatedly used, thus option (1) is ruled out.

Now, the letters of the code stand for :



Hence, the word is 'MATTER', option (4).

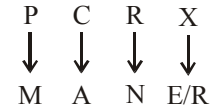
ILLUSTRATION 12 :

PCRX :

(1) MANE (2) MEAN

(3) MARN (4) Cannot be determined.

Sol. (4) For the code alphabets, the representation is



Since, it is not clear whether 'X' stands for 'E' or 'R', we cannot say clearly which word is correct. Hence, answer is option (4).

III. Pattern Substitution Method

Under this method, a code will be given to you, you will have to recognize the pattern the code is following.

The pattern may be moving a few alphabets forward, a few alphabets backward or alternate forward & backward.

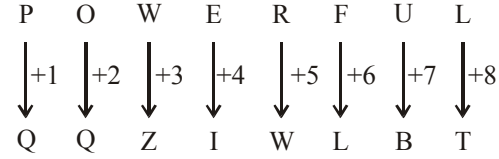
ILLUSTRATION 13 :

If, in a certain language, POWERFUL is coded as QQZIWLBT, then which word is coded as ECQGJXZ ?

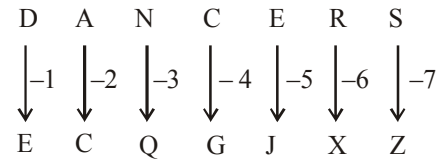
(1) DANCERS (2) HARMLESS

(3) PRACTISE (4) DANGERS

Sol. (1) The pattern followed by the code is moving up in an increasing order.



First method : similarly, the code given will also follow the same pattern. Therefore, we subtract or move the alphabets of the code backwards to form the word.



Second method : We can also go by the options, *i.e.,* check each option one by one and see if it forms the code given in the questions using the same pattern as coded in the word 'POWERFUL'.

IV. Alpha-Numeric Decoding

This is similar to alpha-numeric coding, with the only difference that we have to derive the code from a given word in case of alpha- numeric coding. While in decoding, we have to derive the word from the code following the alphabet series (ABCDEFG ..... PQRSTUVWXYZ).

ILLUSTRATION 14 :

If the code in a certain language, for PAPER = 56 and SHEET = 57, then for which of the following words is the code 88 ?

(1) IRON (2) PUPPET

(3) HELMETS (4) PARROT

Sol. (4) As we know the values of each alphabet in the alphabet series, so we can unlock the codes.

PAPER ⟶ P = 16, A = 1, P = 16, E = 5, R = 18

16 + 1 + 16 + 5 + 18 = 54

SHEET ⟶ S = 19, H = 8, E = 5, E = 5, T = 20

19 + 8 + 5 + 5 + 20 = 57

Now, to find the word for the code 88, we have to check all the options.

Option (1)

IRON ⟶ I = 9, R = 18, O = 15, N = 14

9 + 18 + 15 + 14 = 56

Option (2)

PUPPET → P = 16, U = 21, P = 16, P = 16, E = 5, T = 20,

16 + 21 + 16 + 16 + 5 + 20 = 94

Option (3)

HELMETS → H = 8, E = 5, L = 12, M = 13, E = 5, T = 20, S = 19

8 + 5 + 12 + 13 + 5 + 20 + 19 = 82

Option (4)

PARROT → P = 16, A = 1, R = 18, R = 18, O = 15, T = 20

16 + 1 + 18 + 18 + 15 + 20 = 88

The required word.

Therefore, option (4) PARROT is the answer.

Miscellaneous Solved Examples

Direction : Given below are two matrices containing two classes of letters. The rows and columns of Matrix I are numbered from 0 to 4 and that of Matrix II from 5 to 9. A letter from these matrices can be represented first by its row number and next by its column number. eg: 'S' can be represented by 24, 31, etc.

	0	1	2	3	4
O	S	P	K	R	O
1	R	O	S	P	K
2	P	K	R	O	S
3	O	S	P	K	R
4	K	R	O	S	P

Matix I

	5	6	7	8	9
5	H	W	D	G	I
6	G	I	H	W	D
7	W	D	G	I	H
8	I	H	W	D	G
9	D	G	I	H	W

Matrix II

1. Which sets of numbers will represent the word "SHOW" ?

(1) 12, 67, 42, 56 (2) 24, 55, 30, 55

(3) 31, 79, 22, 75 (4) 43, 56, 11, 99

2. Which set of numbers will represent the word "SHIP" ?

(1) 00, 56, 66, 04 (2) 24, 86, 59, 43

(3) 31, 86, 66, 44 (4) 12, 98, 59, 67

3. Which set of numbers will represent the word "GROW" ?

(1) 65, 22, 04, 57 (2) 77, 22, 42, 97

(3) 58, 10, 11, 88 (4) 96, 34, 23, 68

4. Which set of numbers will represent the word "GRID" ?

(1) 65, 41, 85, 96 (2) 58, 41, 97, 88

(4) 65, 41, 95, 85 (4) 77, 22, 23, 85

Solutions from Q. 1 to Q. 4

As Matrix I has letters S, P, K, R & O and Matrix II has letters H, W, D, G & I, and as given in the example representation (coding) of each letter can be done in 5 ways, *i.e.,*

Matrix I

S ⟶ 00, 12, 24, 31, 43,

P ⟶ 01, 13, 20, 32, 44,

K ⟶ 02, 14, 21, 33, 44,

R ⟶ 03, 10, 22, 34,

O ⟶ 04, 1, 2, 30, 42

Matrix II

H ⟶ 55, 67, 79, 86, 98,

W ⟶ 56, 68, 75, 87, 99,

D ⟶ 57, 69, 76, 88, 95,

G ⟶ 58, 65, 77, 89, 96

I ⟶ 59, 66, 78, 85, 97

1. (1) 12, 67, 42, 56 **2.** (3) 31, 86, 66, 44

3. (4) 96, 34, 23, 68 **4.** (2) 58, 41, 97, 88

Directions (Q. 5 to Q.7) : Letters A to Z are coded using the following cells in diagram I and sectors in diagram II. The first letter in each cell is coded by its shape while the second letter includes a dot in it. for example.

A is coded as  ; M is coded as 

K is coded as  ; P is coded as 

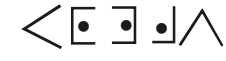
Diagram I

AM	NF	CO
BU	TV	DG
EW	IZ	XY

Diagram II

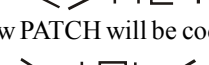
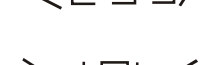
5. How SUGAR will be coded?

(1)  (2) 

(3)  (4) 

6. How SPICE will be coded?

(1)  (2) 

(3)  (4) 

7. How PATCH will be coded?

(1)  (2) 

(3)  (4) 

Solutions for Q. 5 to Q.7 :

5. **(3)** Following the examples given, the code for SUGAR should be a combination of the following symbols  ,  ,  ,  and  either in the same order or jumbled up.

As S =  , U =  , G =  , A =  and R =  .

6. **(1)** Similarly, S P I C E is coded as 

7. **(2)** Similarly PATCH is coded as 

Directions for (Q. 8 to Q.12) : Letters A to Z are coded using the following cells in diagram I and sectors in diagram II. The first letter in each cell is coded by its shape while the second letter includes a dot in it.

Diagram I

KL	TW	CH
OE	AM	JX
GQ	BD	UV

Diagram II

8. How will STEAM be coded?

(1)  (2) 

(3)  (4) 

9. How will DELHI be coded?

(1)  (2) 

(3)  (4) 

10. How will WATCH be coded?

(1)  (2) 

(3)  (4) 

11. How will REPEAT be coded?

(1) 

(2) 

(3) 

(4) 

12. How will BOX be coded?

(1)  (2) 

(3)  (4) 

Solutions for Q. 8 to Q.12 :

The representations of the various alphabets is similar to that of the previous set of questions, i.e., Q 1 to 3. So, in the similar way:

8. (1) S T E A M → 

9. (2) D E L H I → 

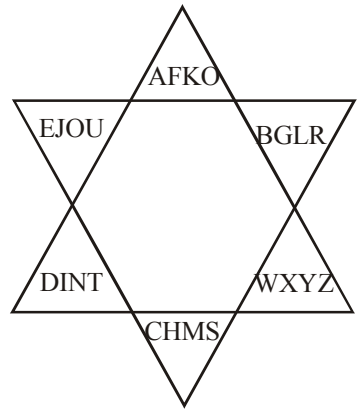
10. (2) W A T C H → 

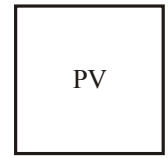
11. (4) R E P E A T → 

12. (3) B O X → 

Directions for (Q. 13 to Q.17) :

Diagram I **Diagram II**





Letters from A to Z are coded using the above shapes. The first letter in each section of the star is coded by its shape, the second includes a dot in it, the third includes a questions mark in it while the fourth includes and exclamatory mark in it.

But in the box, the first is written as it is inside the box while the second includes a dot.

For example.

E is coded as  ; J is coded as 

O is coded as  ; U is coded as 

Therefore, how are the following coded?

13. P E A R L

(1)  (2) 

(3)  (4) 

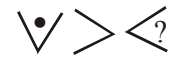
14. C H A M P

(1)  (2)

(3)  (4) 

15. F A R

(1)  (2) 

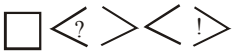
(3)  (4) 

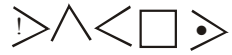
16. P O W E R

(1)  (2) 

(3)  (4) 

17. L A S E R

(1)  (2) 

(3)  (4) 

Solutions for Q. 13 to Q. 17:

In this set of questions, each of the 6 parts of the star has 4 alphabets. The first alphabet is represented by the shape of the part it belongs to, the second includes a dot, the third includes a question mark (?) and the fourth includes an exclamatory mark (!). While P is represented as the box and V includes a dot.

13. (1) PEARL→ 

14. (3) CHAMP→ 

15. (2) FAR→ 

16. (3) POWER→ 

17. (4) LASER→ 

Directions for questions (Q. 18 to Q. 26) : Letters A to Z are coded using the following cells in diagram II and sectors in diagram I. The first letter in each cell is coded by its shape while the second letter includes a dot in it.

Diagram I

Diagram II

DI	VR	PH
TK	XZ	AN
QE	LU	GC

Find the codes for the following:

18. BOYS

(1)  (2) 

(3)  (4) 

19. LIFE

(1)  (2) 

(3)  (4) 

20. LUCK

(1)  (2) 

(3)  (4) 

21. GIFT

(1)  (2) 

(3)  (4) 

22. JEANS

(1)  (2) 

(3)  (4) 

23. CROSS

(1)  (2) 

(3)  (4) 

24. ROAD

(1)  (2) 

(3)  (4) 

25. GENES

(1)  (2) 

(3)  (4) 

26. Code for F I X is

(1)  (2) 

(3)  (4) 

Solutions for Q. 18 to Q. 26 :

Similar to the first and second set of questions.

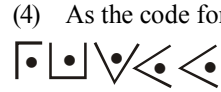
18. (2) BOYS→ 

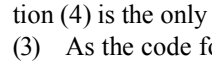
19. (1) LIFE→ 

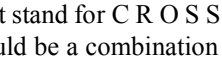
20. (1) LUCK→ 

21. (4) GIFT→ 

22. (1) JEANS→ 

23. (4) As the code for C R O S S has to be a combination of  in sequence or jumbled form, thus option (4) is the only code that cannot stand for C R O S S.

24. (3) As the code for R O A D should be a combination of  , thus option (3) cannot stand for ROAD.

25. (2) As the code for G E N E S should be  in a sequence or jumbled fore, therefore option (2) cannot stand for the word G E N E S. Hence, the correct answer is option (2).

26. (3) FIX→

Exercise 1 CODING

1. If in a certain code, HAT is 782, RABBIT is 681192. Then how will HABIT be coded as ?
   (1) 78139 (2) 78192
   (3) 68192 (4) 78129
2. In a certain code, ELEPHANT is written as TNPEAHLE, the CROCODILE will be written as ?
   (1) RCCOOIDEL (2) ELCOOIDRC
   (3) ELCIOODRC (4) ELCOIODRC

Common Data for Q. 3 & Q. 4 :

In a certain code language, '782' means 'Flowers are beautiful', '692' means 'Roses are red', '628' means 'Roses are beautiful'.

3. Which number denotes 'Flowers' ?
   (1) 8 (2) 7 (3) 2 (4) 6
4. What does number '9' denote ?
   (1) Roses (2) Flowers
   (3) Red (4) are
5. If CAT is 48, Z is 52. Then what is TEA equal to ?
   (1) 48 (2) 52 (3) 60 (4) 50
6. If HELMET is written as IFMNFU. Then how will CHOCOLATE be written as ?
   (1) DIDPMPBUF (2) EIDPMPBUF
   (3) DIPDPMBFU (4) DIPDPMBUF
7. If DRINK = 6, POLLUTION = 10, then GOVERNMENT is equal to ?
   (1) 8 (2) 10 (3) 12 (4) 11
8. If FAIR is written as IENX. Then TAPE will be written as ?
   (1) WEVL (2) WEUK
   (3) WFUK (4) XEUK
9. If DELHI is coded as 73541 and CALCUTTA coded as 82589662, how can CALICUT be written ?
   (1) 5279431 (2) 5978213
   (3) 5473628 (4) 8251896
10. In a certain language '+ ÷ ?' means 'where are you', '@ – ÷' means 'we are here', and '+ @ ×' means 'you come here'. What is the code for 'where' ?
    (1) + (2) ÷ (3) ? (4) @
11. If VISHAL is coded as 22102111517, then what will be the code for SACHIN ?
    (1) 1925311191 (2) 1295111319
    (3) 1925111319 (4) 1952111319
12. In a certain code, 3456 is coded as ROPE, 15526 is coded as APPLE. Then how is 54613 coded as ?
    (1) POEAR (2) PROEA
    (3) PEORA (4) RPOEA
13. In a certain code if FRIEND is written as DNEIRF. Then, what will be the code for DESERT ?
    (1) TRESED (2) DSERET
    (3) TRSEED (4) TESERD
14. In a certain code, if AFFAIR is FAAFRI, then FERRARIS is coded as ?
    (1) EFRRARIS (2) EFRRRASI
    (3) EFRRRAIS (4) EFRRARSI
15. In a certain code, APPLE is XNNZM and BAT is HXC, then BATTLE will be coded as ?
    (1) XHCCZH (2) HXCCZM
    (3) HXCCMZ (4) HXMCCZ
16. In a certain code, RADIO is XZOPL and SHEET is NBGGI, then HEATER is coded as ?
    (1) BNGZIX (2) BGZGIX
    (3) BGZIGX (4) GZBIXZ
17. In a certain code, if BLACK is KCALB then THEFT is ?
    (1) TFEHT (2) FHETT
    (3) TEHFT (4) TFHET
18. In a certain code BOOK is TLLC and TRICK is NAGDC, then BRICK is coded as -
    (1) NAGDC (2) TAGLC
    (3) TALCD (4) TAGDC
19. If COME is code as BNLD then DANGER will be coded as
    (1) EBOHIS (2) CZMGER
    (3) CZMFDQ (4) DANFDQ

Common Data for Qs. 20 to 22 :

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

20. How is 'red written in that code ?
    (1) hee (b) silk
    (3) be (d) cannot be determined
21. How is 'roses' written in that code ?
    (1) il (2) pee
    (3) be (d) cannot be determined
22. How is 'vegetables are red flowers' written in this code ?
    (1) pee silk mit hee (2) silk peehee be
    (3) il silk mit hee (4) none

Exercise 2 DECODING

Common Data for Q.1 to Q.6 :

DELHI is coded as WVOSR, choose the right code for the following :

1. ORNRG
   (1) LIMIT (2) PEARL
   (3) BEARS (3) LAPEL
2. NZCRNFN
   (1) NININUM (2) MAXIMUM
   (3) MINIMAL (4) MINUTES
3. NRMRNFN
   (1) MINIMUM (2) MAXIMUM
   (3) MINIMAL (4) MINUTES

4. XSZKVO
   (1) CHAPTS (2) CHITES
   (3) CHORES (4) CHAPEL
5. LNVTZ
   (1) OMANA (2) KNELT
   (3) OMEGA (4) KNEEL
6. KOZMV
   (1) PLAIN (2) PLANS
   (3) PLANE (4) PLATE
7. If in a certain language, SHIFT is coded as RFFBO, which word would be coded as LKUMB ?
   (1) MMXQG (2) MLVNC
   (3) KJVLS (4) MJVLC
8. If in a certain code, 'COVET is written as 'FRYHW', which word should be written as 'SHDUO' ?
   (1) QUAKE (2) REPAY
   (3) VKGXR (4) REARL
9. If the for TOWN is 'UQZR', then what will be the code for 'WKOPFML' ?
   (1) OWKPFML (2) VILLAGE
   (3) FASTEST (4) DEVELOP
10. If in a code, ALTERED is written as ZOGVIVW, then in the same code, how is IVOZGVW written as ?
    (1) FEATHER (2) DEARST
    (3) RELATED (4) BELATED
11. If in a certain language, POPULAR is coded as QPQVMBS, which word would be coded as GBNPVT ?
    (1) FARMER (2) FAMOUS
    (3) FRAMES (4) FAMOTH
12. If in a certain language, GRASP is coded as BMVNK, which word would be coded as CRANE ?
    (1) EUDQH (2) HWFSJ
    (3) GVERI (4) XMVIZ
13. If SIMPLE is coded as TJNQMF, then SJQQMF stands for ?
    (1) PIPPLE (2) RIPPLE
    (3) DIMPLE (4) PIMPLE
14. What does the code RGMARAM stands for ?
    (1) DRUMMER (2) GRAMMAR
    (3) REPAIRS (4) PRIMARY
15. What is the original word for the code UMBMIA?
    (1) UMBRELLA (2) BOMBAY
    (3) MAMMIA (4) MUMBAI
16. In the same language, IMRRSRO's code for ?
    (1) MIRRORS (2) MRRRSIO
    (3) MANAGER (4) METALLIC

Common Data for Q. 17 to Q. 21 :
SIMPLE is coded as PSTXOM.
DIRECT is coded as LSQMRC.

17. Then which word would be coded as 'TSOM'
    (1) LIME (2) MILE
    (3) TIME (4) DIME
18. Which word would be coded as LQ300?
    (1) DRILL (2) SMELL
    (3) DWELL (4) SPELL
19. Which word is coded as XMMQP ?
    (1) TREES (2) DEERS
    (3) TEEM (4) PEERS
20. Which word is coded as LQSXP ?
    (1) TRIPS (2) DRIPS
    (3) SMILE (4) SLEPT
21. Which word is coded as PCSQ ?
    (1) DIRT (b) SPIT
    (3) STIR (4) MILE
22. In a certain code, RABBIT is RBDEMY, then HBRSISY is the code for :
    (1) HAPPENS (2) HATTERS
    (3) HAPPINESS (4) HAMBUGS

Exercise 3 MISCELLANEOUS

Directions for Q. 1 to Q. 6 :

Code :	Z	A	X	B	Y	O	T	W	C	M	I
Original alphabet	B	U	E	T	F	A	I	R	V	L	D

1. BEAUTIFUL.
   (1) ZXOABTYAM (2) ZXOBATYAM
   (3) ZXOBYAMAT (4) ZXOBYATAM
2. FLAIR
   (1) YMOTW (2) YMUTW
   (3) YMIOW (4) YMOIW
3. BUILT
   (1) ZABMT (2) ZATMB
   (3) ZATBM (4) ZTABM
4. VALID
   (1) CITMO (2) CIMTO
   (3) COMTI (4) COMIT
5. AFRAID
   (1) OYTWOI (2) OYWTOI
   (3) OWYOTI (4) OYWOTI
6. BULLET
   (1) BAMMXZ (2) ZAMMXB
   (3) OWYOTI (4) OYWOTI

Directions for Q. 7 to Q. 14 :
Given below are two matrices containing two classes of letters. The rows and columns of matrix I are numbered from 0 to 4 and that of Matrix II from 5 to 9. A letter from these matrices can be represented first by its row number and next by its column number.

	0	1	2	3	4
O	T	N	D	R	I
1	R	I	T	N	D
2	N	D	R	I	T
3	I	T	N	D	R
4	D	R	I	T	N

Matix I

	5	6	7	8	9
5	M	W	O	F	E
6	F	E	M	W	O
7	W	O	F	E	M
8	E	M	W	O	F
9	O	F	E	M	W

Matrix II

7. Which set of numbers will represent the word "TIME" ?
   (1) 23, 66, 01, 02 (2) 43, 11, 55, 66
   (3) 44, 32, 61, 72 (4) 51, 63, 70, 90

8. Which set of numbers will represent the word "ERODE"?
(1) 66, 10, 76, 02, 66 (2) 22, 55, 41, 62, 21
(3) 23, 01, 65, 10, 03 (4) 65, 11, 01, 76, 44

9. Which set of numbers will represent the word "FINE"?
(1) 00, 21, 33, 59 (2) 34, 69, 75, 89
(3) 22, 33, 44, 55 (4) 65, 11, 20, 66

10. Which set of numbers will represent the word "DINNER"?
(1) 99, 44, 52, 69, 75, 14 (2) 75, 42, 03, 96, 43, 86
(3) 02, 11, 13, 01, 66, 10 (4) 02, 01, 10, 22, 95, 40

11. Which set of numbers will represent the word "FEMINE"?
(1) 02, 11, 13, 02, 66, 10 (2) 02, 11, 97, 55, 23, 78
(3) 65, 97, 67, 11, 01, 78 (d) Cannot be determined

12. Which set of numbers will represent the word "NEW"?
(1) 20, 66, 56 (2) 22, 68, 57
(3) 75, 32, 88 (4) 23, 55, 97

13. Which set of numbers will represent the word "METER"?
(1) 62, 33, 44, 03, 57 (2) 55, 97, 12, 59, 03
(3) 76, 65, 87, 98, 00 (4) 57, 92, 10, 58, 04

14. Which set of numbers will represent the word "DIRT"?
(1) 86, 85, 21, 12 (2) 55, 97, 12, 03
(3) 20, 66, 56, 39 (4) 21, 23, 34, 31

Directions for Q. 15 to Q. 27 :
Given below are two matrices containing two classes of letters. The rows and columns of matrix I are numbered from 0 to 4 and that of Matrix II from 5 to 9. A letter from these matrices can be represented first by its row number and next by its column number.

	0	1	2	3	4
O	E	J	N	K	Y
1	K	Y	E	J	N
2	J	N	K	Y	E
3	Y	E	J	N	K
4	N	K	Y	E	J

Matix I

	5	6	7	8	9
5	T	A	D	G	O
6	G	O	T	A	D
7	A	D	G	O	T
8	O	T	A	D	G
9	D	G	O	T	A

Matrix II

15. Which set of numbers will represent the word "ENJOY"?
(1) 04, 65, 59, 43, 24 (2) 00, 33, 20, 59, 42
(3) 10, 12, 14, 32, 99 (4) 66, 79, 87, 44, 10

16. Which set of numbers will represent the word "TOY"?
(1) 97, 65, 42 (2) 43, 56, 79
(3) 79, 66, 30 (4) 44, 97, 87

17. Which set of numbers will represent the word "TONE"?
(1) 24, 77, 09, 36 (2) 24, 86, 12, 36
(3) 79, 66, 21, 12 (4) 86, 85, 21, 12

18. Which set of numbers will represent the word "EGG"?
(1) 24, 77, 89 (2) 42, 87, 87
(3) 10, 44, 87 (4) 48, 77, 89

19. Which set of numbers will represent the word "NEED"?
(1) 86, 85, 21, 12 (2) 02, 24, 43, 76
(3) 79, 66, 30, 00 (4) 02, 59, 20, 76

20. Which set of numbers will represent the word "TAKE"?
(1) 22, 34, 79, 69 (2) 98, 56, 22, 24
(3) 78, 44, 13, 79 (4) 99, 67, 85, 68

21. Which set of numbers will represent the word "TEN"?
(1) 55, 43, 14 (2) 42, 31, 99
(3) 41, 65, 78 (4) 99, 79, 85

22. Which set of numbers will represent the word "GATE"?
(1) 01, 14, 56, 59 (2) 89, 75, 86, 31
(3) 79, 10, 20, 30 (4) 57, 68, 79, 98

23. Which set of numbers will represent the word "NEAT"?
(1) 24, 89, 85, 33 (2) 33, 43, 87, 67
(3) 76, 31, 99, 86 (4) 77, 96, 21, 12

24. Which set of numbers will represent the word "GONE"?
(1) 86, 66, 20, 43 (2) 77, 43, 14, 87
(3) 96, 97, 40, 31 (4) 75, 86, 56, 76

25. Which set of numbers will represent the word "NOTE"?
(1) 00, 33, 89, 97 (2) 02, 66, 86, 31
(3) 99, 86, 43, 14 (4) 33, 75, 77, 21

26. Which set of numbers will represent the word "DAY"?
(1) 24, 89, 33 (2) 76, 66, 14
(3) 76, 99, 30 (4) 00, 77, 33

27. Which set of numbers will represent the word "GENE"?
(1) 86, 66, 72, 66 (2) 77, 31, 21, 12
(3) 02, 24, 89, 89 (4) 89, 75, 83, 22

Direction for Q. 28 to Q. 40 :
Given below are two matrices containing two classes of letters. The rows & columns of matrix I are symboled from + to = and that of Matrix II from – to /. A letter from these matrices can be represented first by its row number & next by its column number.

	+	?	@	*	=
+	S	P	L	C	O
?	C	O	S	P	L
@	P	L	C	O	S
*	O	S	P	L	C
=	L	C	O	S	P

	–	!	$	#	/
–	A	K	D	M	R
!	M	R	A	K	D
$	K	D	M	R	A
#	R	A	K	D	M
/	D	M	R	A	K

28. Which set of symbols will represent the word "POLAR"?
(1) ! –, $ /, +?, @?, # ! (2) @ =, + *, ! ?, # !, !!
(3) + ?, ? ?, +@, ! $, –/ (4) @ ?

29. Which set of symbols will represent the word "MARS"?
(1) ! –, $ /, ! !. @ = (2) = *, $ /, #$, / –
(3) @@, @ ?, /#, $ – (4) * +, # !, = *, ! #

30. Which set of symbols will represent the word "LOAD"?
(1) ! –, $ /, # –, ! ? (2) = ?, * #, = + , @ =
(3) +@, | |, = =, @ @ (4) @ ?, ? ?, – –, – $

31. Which set of symbols will represent the word "SLAM"?
(1) @ ?, @ *, ! ?, = ? (2) ? @, @ ?, / # , / !
(3) / –, ! | , / =, = / (4) * =, * *, / #, / =

32. Which set of symbols will represent the word "MARK"?
(1) / !, / # , / ?, / – (2) ! –, ! *, / * , * *
(3) ! –, $ / , # –, # $ (4) ! –, ! @, $!, ? $

33. Which set of symbols will represent the word "CARD"?
(1) ? ?, / /, ! !, – – (2) = =, * *, ? ?, @ =
(3) @ @, ! $, ! !, / – (4) @ ?, @ *, @ =, = *

34. Which set of symbols will represent the word "CLASS"?
(1) + ?, ! –, $ /, @ ?, / # (2) * =, * *, # !, = * , ? @
(3) @ ?, – – , ? ?, @ @, – /
(4) ! –, $ /, # –, @ =, – $

35. Which set of symbols will represent the word "SPARK"?
(1) @ =, * *, # –, @ =, – $
(2) = *, + ?, – $, ? ? , # –
(3) = *, + ? , # !, # –, $ –
(4) = *, $ /, # !, # –, – $

36. Which set of symbols will represent the word "MAD"?
(1) ! –, ! $, ! / (2) ! –, # !, * *
(3) ! –, + ?, ! / (4) ! –, ! /, ? /

37. Which set of symbols will represent the word "LOSS"?
(1) @ ?, ! $, ! /. = * (2) = !, @ *, = – , = +
(3) = ?, # !, @ =, = + (4) @ ?, @ *, @ =, = *

38. Which set of symbols will represent the word "COAL"?
(1) # –, # –, = *. ? @ (2) $ –, $ –, $ = , $ /
(3) = ?, * +, # !, = + (4) * *, * *, ? @, = *

39. Which set of symbols will represent the word "DORK"?
(1) # #, * +, # –. $ – (2) # #, ! –, @ = , = *
(3) @ =, * *, @ +, = * (4) # #, ! –, = *, = *

40. Which set of symbols will represent the word "MASS"?
(1) = *, ! –, @ ?. ! $ (2) = ?, @ *, @ ? , $ /
(3) / !, / #, = *, ? @ (4) ! –, !$, ! /, ! /

Hints & SOLUTIONS

Exercise 1

1. **(2)** Type – Direct substitution (Direct fashion)

Word	H	A	T	R	A	B	B	I	T
Code	7	8	2	6	8	1	1	9	2

Thus the code for the given word

H	A	B	I	T
7	8	1	9	2

Thus option (b) is the correct answer.

2. **(2)** Type – Simple Arrangement (Swap Coding)
Positions of T and E and L and N are swapped.
Also, positions of second E and P and H and A are swapped.
Therefore, for CROCODILE the code after swapping in the same pattern is ELOCIDRC.

Solutions of Q. 3 and Q. 4 :
Direct substitution in jumbled – fashion.

S. No.	Code	SENTENCE
1	782	— Flowers are beautiful.
2	692	— Roses are red.
3	628	— Roses are beautiful.

The digit '2' in the code is common in all three codes, similarly on the sentence side, 'are' is the word common in all the three sentences. Therefore, the digit '2' is the representation for 'are'.
Similarly, on the code side '8' is the digit common in 1st & 3rd codes, therefore, '8' stands for 'beautiful'.
Thus '7' is the representation for 'flowers'.
Also, the digit '6' is common in 2nd & 3rd codes and so is the word 'roses'. Therefore, '6' stands for 'roses'. Thus '9' stands for 'red'.

3. **(2)**

4. **(3)** Red.

5. **(2)** Alphanumeric coding type.

Word	Code value (alphabet series)	Final code
CAT	C = 3, A = 1, T = 20 3 + 1 + 20 = 24	24 × 2 = 48
Z	26	26 × 2 = 52
TEA	T = 20, E = 5, A = 1 20 + 5 + 1 = 26	26 × 2 = 52

6. **(4)** Type – Pattern substitution (+1)

Word	H	E	L	M	E	T
	+1	+1	+1	+1	+1	+1
Code	I	F	M	N	F	U

	C	H	O	C	O	L	A	T	E
∴	+1	+1	+1	+1	+1	+1	+1	+1	+1
	D	I	P	D	P	M	B	U	F

7. **(4)** Type – Alphanumeric series type.
Code for 'DRINK' = 6 Because no. of letters = 5
5 + 1 = '6', *i.e.,* the code.
Code for 'POLLUTION' = 10 Because no. of letters = 9
9 + 1 = '10', *i.e.,* the code.
Code for 'GOVERNMENT' = 11 Because no. of letters = 10
10 + 1 = '11', *i.e.,* the code.

8. **(2)** Type – Pattern substitution (moving forward in ascending order).

Word	F	A	I	R	T	A	P	E
	+3	+4	+5	+6	+3	+4	+5	+6
Code	I	E	N	X	W	E	U	K

9. **(4)** Type – Direct substitution (direct fashion)
So, code for CALICUT – 8251896.

10. **(3)** Type – Direct substitution (Jumbled fashion).

S.No.	Code	Sentence
1.	+ ÷ ?	Where are you
2.	@ – ÷	We are here
3.	+ @ ×	You come here

As we can see, that 'where' is only in sentence 1. ['Where' is the word for which we have to find the code.] Therefore, we need to gather the codes for 'are' & 'you' to find out the code for 'where'.
Sentence 1 & 2 have the word 'are' in common and the symbol '÷' in common. Therefore, '÷' is the symbol for 'are'.
Sentence 1 & 3 have the word 'you' in common and the symbol '+' in common. Therefore '+' stands for 'you'.
Thus '?' represents 'where'.

11. **(3)** Type – Alphanumeric coding.

Word ⟶	V	I	S	H	A	L
Value in alphabet series ⟶	22	9	19	8	1	12
		+1	+2	+3	+4	+5
Code	22	10	21	11	5	17

similarly, for the word	S	A	C	H	I	N
	19	1	3	8	9	14
		+1	+2	+3	+4	+5
Final code	19	2	5	11	13	19

Thus code is 1925111319, option (c).

12. **(1)** Type – Direct coding (Direct fashion)
5 → P, 4 → O, 6 → E, 1 → A, 3 → R.
Therefore, 54613 is coded as POEAR.

13. **(1)** Type – Simple arrangement (SWAP CODING)
Interchange F and D, R and N and I and E.
Similarly, DESERT is coded as TRESED.

14. **(2)** Type – Simple Arrangement (Swap coding).
In the word AFFAIR, the positions of first A & first F are interchanged second A & second F are interchanged and I and R are interchanged.
Similarly, RERRARIS is coded as EFRRRASI.

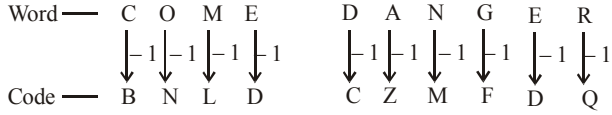
15. **(2)** Direct Substitution.

16. **(3)** Direct Substitution.

17. **(1)** Simple arrangement (Swap Coding)

18. **(4)** Direct Substitution.

19. **(3)** Pattern Substitution (–1).



Thus required code is 'CZMFDQ'.

Solutions 20 to 22 :

Type Direct coding (Jumbled fashion)

S. No.	Code	Sentence
1.	il be pee	roses are blue
2.	silk hee	red flowers
3.	pee mit hee	flowers are vegetables.

Common word in sentences 1 & 3 → 'are' and code → 'pee'
Common word in sentences 2 & 3 → 'flowers' and code → 'hee'.

Therefore,

Codes	Words
pee	are
hee	flowers
silk	red
niit	vegetables
il	roses / blue
be	blue / rose

20. **(2)** silk.

21. **(4)** il or be, cannot be determined.

22. **(1)** niit silk hee pee.

Exercise 2

Solutions for Q. 1 to Q. 6 :

The code is that A is substituted by Z, B is substituted by Y, C is substituted by X and so on. (This is also known as mirror coding.)

A B C D E F -------- U V W X Y Z.

Z Y X W V U -------- F E D C B A.

1. **(1)** LIMIT. **2.** **(2)** MAXIMUM.

3. **(1)** MINIMUM. **4.** **(4)** CHAPEL.

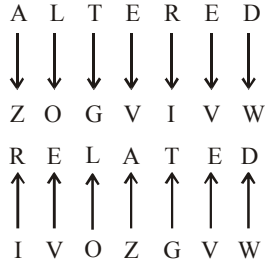
5. **(3)** OMEGA. **6.** **(3)** PLANE.

7. **(1)** The first, second, third, fourth & fifth letters in the word are respectively one, two, three, four and five steps ahead of the corresponding letter of the code. Hence, answer is MMXQG.

8. **(4)** In the first code, 'C' has been coded as + 2 alphabets, 'O' has been coded as +2 so on & so forth. Similarly PEARL can be coded as SHDUO.

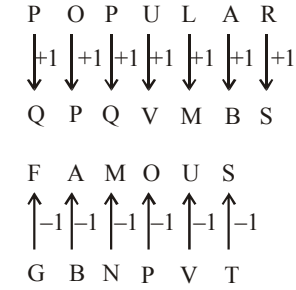
9. **(2)** Each letter of the word 'TOWN' is moved 1, 2, 3, & 4 steps forward, *i.e.,* 'T' is moved 1 step, 'O' 2 steps, W 3 steps & N 4 steps, to obtain the code. So in "village", V is coded as W, I as K, L as O, again L as P, A as F, G as M and E as L. Thus the code for **village** becomes WKOPFML.

10. **(3)**



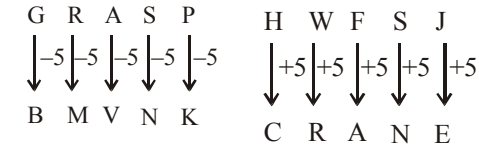
Thus, RELATED is the answer.

11. **(2)**



Thus, FAMOUS is the answer.

12. **(2)**



Thus, HWFSJ is the answer.

13. **(2)** PATTERN SUBSTITUTION (+ 1)

Solutions for Q. 14 to Q. 16 :

Simple arrangement (Swap Coding)

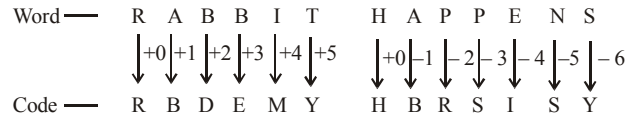
14. **(2)** GRAMMAR **15.** **(4)** MUMBAI

16. **(1)** MIRRORS **17.** **(2)** MILE

18. **(1)** DRILL **19.** **(4)** PEERS

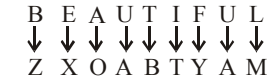
20. **(2)** DRIPS **21.** **(3)** STIR

22. **(1)** Pattern Substitution (Moving forward in ascending order).

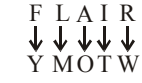


Exercise 3

1. **(1)**

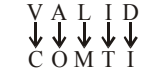


2. **(1)**



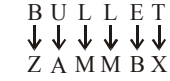
3. **(2)**

4. **(3)**



5. **(4)**

6. **(3)**



For Questions 7 to 14:

MATRIX-I

T – 00, 12, 24, 31, 43
N – 01, 13, 20, 32, 44
D – 02, 14, 21, 33, 40
R – 03, 10, 22, 34, 41
I – 04, 11, 23, 30, 42

MATRIX-II

M – 55, 67, 79, 86, 98
W – 56, 68, 75, 87, 99
O – 57, 69, 76, 88, 95
F – 58, 65, 77, 89, 96
E – 59, 66, 78, 85, 97

7. **(2)** T I M E – 43, 11, 55, 66

8. **(1)** E R O D E – 66, 10, 76, 02, 66

9. **(2)** F I N E – 65, 11, 20, 66

10. **(3)** D I N N E R – 02, 11, 13, 01, 66, 10

11. **(3)** F E M I N E – 65, 97, 67, 11, 01, 78

12. **(1)** N E W – 20, 66, 56

13. **(2)** M E T E R – 55, 97, 12, 59, 03

14. **(4)** D I R T – 21, 23, 34, 31

For Questions 15 to 27

MATRIX - I

E – 00, 12, 24, 31, 43

J – 01, 13, 20, 32, 44

N – 02, 14, 21, 33, 40

K – 03, 10, 22, 34, 41

Y – 04, 11, 23, 30, 42

MATRIX - II

T – 55, 67, 79, 86, 98

A – 56, 68, 75, 87, 99

D – 57, 69, 76, 88, 95

G – 58, 65, 77, 89, 96

O – 59, 66, 78, 85, 97

15. **(2)** 00, 33, 20, 59, 42

16. **(3)** 79, 66, 30

17. **(4)** 86, 85, 21, 12

18. **(1)** 24, 77, 89

19. **(2)** 02, 24, 43, 76

20. **(2)** T A K E – 98, 56, 22, 24

21. **(1)** T E N – 55, 43, 14

22. **(2)** G A T E – 89, 75, 86, 31

23. **(2)** N E A T – 33, 43, 87, 67

24. **(3)** G O N E – 96, 97, 40, 31

25. **(2)** N O T E – 02, 66, 86, 31

26. **(3)** D A Y – 76, 99, 30

27. **(2)** G E N E – 77, 31, 21, 12

For Questions 28 to 40

MATRIX-I

S – + +, ? @, @ =, * ?, = *

P – + ?, ? *. @ +, * @, = =

L – + @, ? =, @ ?, * *, = +

C – + *, ? +, @ @, * =, = ?

O – + =, ? ?, @ *, * +, = @

MATRIX-II

A – – –, ! $, $ /, # !, /#

K – – !, ! #, $ –, # $, / /

D – – $, ! /, $!, # #, / –

M – – #, ! –, $ $, # /, / !

R – – /, ! !, $ #, # –, / $

28. P O L A R – + ?, ? ?, + @, ! $, – /

29. M A R S – ! –, $ /, ! !, @ =

30. L O A D – @ ?, ? ?, – –, – $

31. S L A M – ? @, @ ?, / #, / !

32. M A R K – ! – , $ /, # –, # $

33. C A R D – @ @, ! $, ! !, / –

34. C L A S S – * =, * *, # !, = *, ? @

35. S P A R K – = *, + ?, # !, # –, $ –

36. M A D – ! –, ! $, 1 /

37. L O S S – @ ?, @ *, @ =, = *

38. C O A L – = ?, * +, # !, = +

39. D O R K – # #, * +. # –, $ –

40. M A S S – / !, / #, = *, ? @