

CODING-DECODING

9

CHAPTER

The term **Coding-Decoding** primarily relates with message sent in secret form which can not be understood by others easily. **Coding**, therefore, means rule or method used to hide the actual meaning of a word or group of words and decoding means the method of making out the actual message that is disguised in coding.

Category I

In this category of questions, a word is coded by simply changing the order of letters of the word.

❖ EXAMPLES ❖

Ex.1 In a code language if TRAINS is coded as RTIASN, how PISTOL will be coded in the same language ?

- (A) SITLOP (B) IPSTLO
(C) SIPTLO (D) IPTSLO

Sol. If we compare the basic word {TRAINS} with the coded word {RTIASN}, we would see that the letters used in the word are same as in the basic word but their order of placement has been changed. Letter T at first position of basic word has been placed at second position in the coded word & letter R at second position has been placed in the first position.

It means that in this question, letters of the basic word have been interchanged i.e., first letter with second, third with the fourth and so on. And thus we get the coded word. In this code language word, PISTOL will be coded as IPTSLO. Hence, option (D) is our answer.

Category II

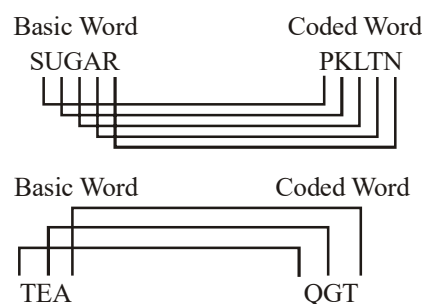
In this category of questions, letters of a word are substituted for either a new letter or a numeric. And the same substitution helps to find out the coding of the word in questions. This substitution of letters may either be direct or in a jumbled up fashion.

(A) Direct Substitution

Ex.2 In a code language if SUGAR is coded as PKLTN and TEA is coded as QGT, how would you code GREAT in the same code language ?

- (A) ENGTP (B) LNGTK
(C) LNGTQ (D) LNGQT

Sol.



Here we see that S is substituted for P, U for K, G for L, A for T & R for N. And in the word TEA, T is substituted for Q, E for G and A for T. Now we find that coding for letter A in SUGAR is T and coding for letter A in TEA is also T. This implies that substitution of letter in coded word takes place in the same order as in basic word. In simple words, in the word SUGAR letter S in the basic word has been substituted for a new letter and coded at first place in the coded word, U at the second place, G at the third place and so on.

When letters of a word are substituted for the new letters and are placed in the coded word at the same position as in the basic word then this method of substitution is called direct substitution.

Therefore, code for GREAT will be LNGTQ. Hence, option (C) will be our answer.

Ex.3 In a code language if TEARS is coded as VWXYZ and MAN is coded as 123 then how would you code RESENTMENT in that language ?

- (A) YWZW3V1W3Y (B) YWZ3WV1W3Y
(C) YWZW3V1WY3 (D) YWZW3V1W3V

- (A) It cannot be the code for TEASE as code for A (5 or 4) is not available.
- (B) It cannot be the code for TEASE as code for S (9 or 1) is not available.
- (C) It may be the code for TEASE as besides 662 code for EE and T, we get 5 probable code for A and 9 probable code for S. Hence, option (C) is our answer.

Category III

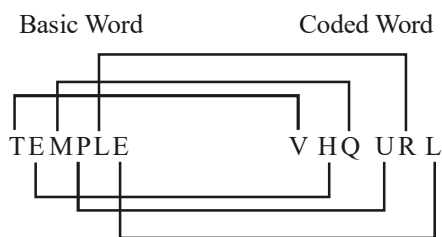
In this category, rule of coding is of entirely different type from what has been discussed so far in category I and II. In this type, word is coded, replacing each letter of the word by a new word from the alphabets (A Z) on the basis of a particular method. It has been explained in the following examples -

Ex.6 If TEMPLE is coded as VHQURL, how would you code CHURCH ?

(A) EKYWIO (B) EKWIO

(C) EKYWIN (D) EKYWJO

Sol.



Code for T is V, for E it is H, for M it is Q. It may be noticed from here that letters of TEMPLE have been replaced by new letters from the alphabets.

There is a gap of one letter between T and V, gap of two letters between E and H, gap of three letters between M & Q and so on in the alphabets.

Therefore, coding for CHURCH is

C	H	U	R	C	H
+1	+2	+3	+4	+5	+6
E	K	Y	W	I	O

Hence (A) is our answer.

Ex.7 If TEMPLE is coded as VHQNIA, how would you code CHURCH ?

(A) EKYWI (B) EKYQZD

(C) EKYPZD (D) EKYQWD

Sol. Coding for TEMPLE is

T	E	M	P	L	E
+1	+2	+3	-1	-2	-3
V	H	Q	N	I	A

Here, the first half of the letters of the word TEMPLE have been replaced with new letters from the alphabets with a gap of 1, 2 & 3 letters respectively in forward direction, and second half of the letters of the word have

been replaced by new letters from the alphabets with a gap of 1, 2 and 3 in backward direction. Hence, code for word CHURCH would be EKYPZD. Hence, (C) is our answer.

Directions : (Ex. 8 to 10)

The number in each question below is to be codified in the following code :

Digit	7	2	1	5	3	9	8	6	4
Letter	W	L	M	S	I	N	D	J	B

Ex.8 184632

(A) MDJBSI (B) MDJBIL

(C) MDJBWL (D) MDBJIL

Sol. As given 1 is coded as M, 8 as D, 4 as B, 6 as J, 3 as I and 2 as L. So, 184632 is coded as MDBJIL.

Ex.9 879341

(A) DWNIBS (B) DWNBIM

(C) DWNIBM (D) NDWBIM

Sol. As given 8 is coded as D, 7 as W, 9 as N, 3 as I, 4 as B and 1 as M. So, 879341 is coded as DWNIBM.

Ex.10 64928

(A) JBNLD (B) JBLND

(C) BJNLD (D) DBNLS

Sol. As given , 6 is coded as J, 4 as B, 9 as N, 2 as L and 8 as D. So, 64928 is coded as JBNLD.

Ex.11 In a certain code, 15789 is written as AXBTC, 2346 is written as MPDU. How is 23549 written in that code ?

(A) MPXDT (B) MPADC

(C) MPXCD (D) MPXDC

Sol. The numbers are coded as shown :

1	5	7	8	9	2	3	4	6
A	X	B	T	C	M	P	D	U

i.e., 2 as M, 3 as P, 5 as X, 4 as D and 9 as C. So, 23549 is coded as MPXDC.

Ex.12 In a certain code, 15789 is written as XTZAL and 2346 is written as NPSU. How is 23549 written in that code ?

(A) NPTUL (B) PNTSL

(C) NPTSL (D) NBTSL

Sol. The numbers are coded as shown :

1 5 7 8 9 2 3 4 6
X T Z A L N P S U

i.e., 2 as N, 3 as P, 5 as T, 4 as S and 9 as L.
So, 23549 is coded as NPTSL.

Ex.13 In a certain code, 33946 is coded as PPOAL and 1987 is coded as ROSE. How is 94678 coded in that code ?

- (A) ROSEP (B) OALES
(C) POALE (D) OSEPL

Sol. The numbers are coded as shown :

3 9 4 6 1 8 7
P O A L R S E

i.e., 9 as O, 4 as A, 6 as L, 7 as E and 8 as S.
So, 94678 is coded as OALES.

Ex.14 If in a certain language, 943 is coded as BED and 12448 is coded as SWEET, how is 492311 coded in that language ?

- (A) EDSWBS (B) TSWBDD
(C) DSWTEE (D) EBWDSS

Sol. The number are coded as shown :

9 4 3 1 2 8
B E D S W T

i.e., 4 as E, 9 as B, 2 as W, 3 as D and 1 as S,
So, 492311 is coded as EBWDSS.

Ex.15 If MOBILITY is coded as 46293927, then EXAMINATION is coded as

- (A) 45038401854 (B) 56149512965
(C) 57159413955 (D) 67250623076

Sol. Let A = 1, B = 2, C = 3,..., X = 24, Y = 25, Z = 26.

Then, M = 13 = 1 + 3 = 4; O = 15 = 1 + 5 = 6;

L = 12 = 1 + 2 = 3; T = 20 = 2 + 0 = 2;

Y = 25 = 2 + 5 = 7.

So, MOBILITY = 46293927.

Similarly, EXAMINATION = 56149512965.

Ex.16 If MASTER is coded as $\overline{411259}$, then POWDER will be coded as

- (A) $\overline{765439}$ (B) $\overline{765439}$
(C) $\overline{765459}$ (D) $\overline{765549}$

Sol. Let A = 1, B = 2, C = 3, ..., Z = 26.

Now, M = 13 = $\overline{4}$

(remainder obtained after dividing by 9);

S = 19 = 1

(remainder obtained after dividing by 9 twice);

T = 20 = 2

(remainder obtained after dividing by 9 twice);

R = 18 = $\overline{9}$

(remainder obtained after dividing by 9).

So, MASTER = $\overline{411259}$.

Similarly, POWDER = $\overline{765459}$.

Ex.17 In a certain code, 15789 is written as EGKPT and 2346 is written in ALUR. How is 23549 written in that code ?

- (A) ALEUT (B) ALGTU
(C) ALGUT (D) ALGRT

Sol. In the given codes, the numbers are coded as shown :

1 5 7 8 9 2 3 4 6
E G K P T A L U R

i.e., 2 as A, 3 as L, 5 as G, 4 as U and 9 as T.
so, 23549 is coded as ALGUT.

Ex.18 In a certain code, a number 13479 is written as AQFJL and 5268 is written as DMPN. How is 396824 written in that code ?

- (A) QLPNKJ (B) QLPNMF
(C) QLPMNF (D) QLPNDF

Sol. In the given codes, the numbers are coded as shown :

1 3 4 7 9 5 2 6 8
A Q F J L D M P N

i.e., 3 as Q, 9 as L, 6 as P, 8 as N, 2 as M and 4 as F. So, 396824 is coded as QLPNMF.

Exercise

- Q.1** If 'TEACHER' and 'HIGHLY' are written as 'X W P B R W M' and 'Q S N R D Z' respectively, how will you code the word 'CHARITY' ?
 (A) B P R N S B Z (B) B R P M S Z B
 (C) B R P M S D Z (D) B R P M S X Z
- Q.2** 'SCHOOL' = PNIKKB' and 'ME' = ZY', how will you write 'COOL HOME' ?
 (A) N K K B I K Z Y (B) N K K L I K Z Y
 (C) P K K N I K Z Y (D) N K K B P K Z Y
 (E) N K K I B K Z Y
- Q.3** 'XYMNOPQ' is a certain code which is deciphered as 'N B O U I G T'. Based on this scheme of coding, select code for the word 'OUTGOING'
 (A) M N O Q P N P (B) M N Q P M O X P
 (C) P W D C T N P (D) M N O P Q N P
 (E) M N Q O P Y P
- Q.4** If 'C L I P O E' stands for 'M T D F B E', how will you code 'POLICE' ?
 (A) F B T D M F (B) F B T D M E
 (C) F B T D E M (D) F T B D M F
 (E) F B D T M E
- Q.5** 'X Y M N O P Q' is decoded as 'R H O U I G T' code 'O U T R I G H T'
 (A) M N Q O X N Y Q
 (B) M N O Q X Y N Q
 (C) M N Q X O P Y Q
 (D) M N I O X Y P Q
 (E) M N I O Y X P Q
- Q.6** 'LOAD' is coded as 'MPBE' and 'DRIVE' as 'ESJWF', how will you code 'LADDER' ?
 (A) M D E E F S (B) M B E E F S
 (C) N C F F G T (D) M B E E S P
 (E) O C F F G T
- Q.7** 'GO AT ONCE' is a coded message received as JB SM BQZY, and you are required to relay the answer in a coded message 'GO TO DATE'. Select the code you will be using based on the scheme applied in the example here -
 (A) HP BU PMDF (B) JB MK JSMY
 (C) IM CS QMDF (D) JB MK JMSY
 (E) JB MB JSMY
- Q.8** 'START = WALKA' and 'BUDPI = XZFMQ', what would be 'STUPID' = ?
 (A) B A Z M O E (B) W A Z N O F
 (C) W A Z M M F (D) B A Z M Q F
 (E) W A Z M Q F
- Directions :**
 Based on the following code scheme, encode the words given in the question 9–13
 Code : Z A X B Y O T W C M I
 Key : B Y E T F A I R U L D
- Q.9** BEAUTY
 (A) Z X O C B A (B) T X A C I F
 (C) Z X O C F I (D) Z X O F C I
 (E) Z X C O F I
- Q.10** FAILED
 (A) Y O T M X I (B) Y O T M X D
 (C) Y O T M I X (D) A I R M X D
 (E) Y O T X I M
- Q.11** FLAIR
 (A) Y M O T W (B) Y M U T W
 (C) Y M I O W (D) Y M O I W
 (E) Y M W I O
- Q.12** TEARFUL
 (A) B X O W Y C M (B) I X O M Y C M
 (C) B X O W I C M (D) B X O W M Y C
 (E) B X W O Y C M
- Q.13** If 'HBPQMNOT' stands for 'SUNDAY TO' how will you write 'YOU DO SO' using the coding scheme used for SUNDAY TO ?
 (A) N T B Q T H T (B) N T B Q T H B
 (C) N T Q B T H B (D) N T Q B T H T
 (E) N T B Q H T B

Directions :

Questions 14-19 are based on the following coding pattern :

If 'EFGHIJE' are coded letters representing 'VUTSRQP', choose the right code for the words given in capital letters from the answer choices (a-e) given under each;

- Q.14** LIMIT
 (A) K N R N C (B) O R N R G
 (C) J K O K G (D) R S T S G
 (E) M H L H S
- Q.15** SOUR
 (A) I F L T (B) H L F I
 (C) L I F T (D) I H I F
 (E) F L T I
- Q.16** POCKET
 (A) K L X P U C (B) K L X U P F
 (C) K L X G U P (D) K L X V P G
 (E) K L X P V G
- Q.17** GROUP
 (A) T I L F K (B) T I L E L
 (C) T I L G H (D) T I L H G
 (E) T F G F K
- Q.18** HIGH
 (A) S T R S (B) R J H R
 (C) G L O G (D) R S T R
 (E) S R T S
- Q.19** ZERO
 (A) B U H N (B) A V I M
 (C) A V I L (D) A U T L
 (E) A V T I

Directions :

'GO AHEAD' is coded as 'J R D K H D G' and 'STOP' is coded as 'V W R S', how will you code/decode the correct answer from the answer choices (A-E) :

- Q.20** FIRE
 (A) U R I V (B) I U J G
 (C) L U H I (D) I L U H
 (E) J R S G

- Q.21** SHOOT
 (A) V K R R W (B) U M S S X
 (C) T J P P R (D) V K S S W
 (E) V L Q Q U
- Q.22** RETURN
 (A) U H W X U Q (B) V I X U Q M
 (C) U H W X U R (D) U H W X V R
 (E) U X W V U R
- Q.23** V W D U W
 (A) STAIN (B) STEPS
 (C) SPORT (D) STAND
 (E) START
- Q.24** HEAD
 (A) O H D G (B) N U E G
 (C) K H D G (D) K H G D
 (E) K B G A
- Q.25** G R Z Q
 (A) OWNS (B) DOWN
 (C) DONE (D) COME
 (E) SHUT
- Q.26** If 'H J S M' means 'GIRL', what does 'R N E S' means ?
 (A) BOYS (B) COWS
 (C) TOYS (D) SOFT
 (E) BULL
- Q.27** If 'D B M D V U U B' stands for 'CALCUTTA', how will you write 'BOMBAY' ?
 (A) D Q O D D X (B) C P N C B Z
 (C) D P N C B X (D) C P M C B Z
 (E) C P N V F Z
- Q.28** If 'OVER' is coded as 'QYIW' and 'UP' as 'WS' then 'STAR' will be coded as _____ ?
 (A) U W E V (B) U W D V
 (C) U V B S (D) U W E W
 (E) U W E X
- Q.29** In a certain code 'DELHI' is written 'C D K G H', 'MADRAS' as 'L Z C Q Z R', how will 'PATNA' be coded ?
 (A) O Z T M Z (B) O Z S M Z
 (C) Q B U M B (D) O Z T Z M
 (E) O Z M S Z

Q.30 If 'FIRE' is coded for a secret message to be teleprinted as 'E H Q D'. How should the answer 'DONE' be relayed ?
 (A) D M O E (B) C N M D
 (C) D L N C (D) D N P E
 (E) D M P E

Q.31 'N P W F' is a secret code for 'MOVE'. You have to telex the reply 'DIFFICULT' using the code based on the scheme used to code MOVE
 (A) E J G G J D V M U
 (B) F K H H K E W N Y
 (C) E J G G J E V M U
 (D) E J C C J D V M U
 (E) E J G C E J V M U

Q.32 If A = E, B = F, C = G and H = L, how will you code 'GO AHEAD' ?
 (A) K S F L I F H (B) H P B I F B E
 (C) K S G I G H (D) H P B I F D E
 (E) K S E L I E H

Q.33 If 'WHILE' is coded as, how will you code 'HOTEL'
 (A) J Q V G N (B) I P U F M
 (C) K R V H O (D) L S W I P
 (E) L E T O H

Directions :

If 'TENDER' is coded as 'SDMCDQ', select appropriate code for the following words.

Q.34 HOTEL
 (A) L E T O H (B) K R V H O
 (C) G N S B K (D) G N S D I
 (E) G N S D K

Q.35 SOUPS
 (A) P N T Q S (B) R N T O R
 (C) S P U O U S (D) R M T O R
 (E) T P V Q T

Q.36 PEONS
 (A) O D M N R (B) S N O E P
 (C) O D N M R (D) O D N M S
 (E) O D N M T

Q.37 LIMITED
 (A) D E T I M I L (B) K H L H S D E
 (C) K H P H S D F (D) K H L H S D C
 (E) K H L H S D C

Q.38 if 'TENDER' is written as 'X I R H I V', how will you write 'HOTEL', ?
 (A) K R V H O (B) L S W I P
 (C) L S V I P (D) L S X I P
 (E) L S W I Q

Q.39 If 'SELDOON' means 'NOODLES', what does 'S P U O S' means ?
 (A) D O M E D (B) B O M E D
 (C) T O M E D (D) S O U P S
 (E) T O E D S

Q.40 If 'FRIIHH' stands for 'COFFEE', how will you write 'NOODLES' ?
 (A) R S S H P I W (B) P Q Q F N G U
 (C) Q R R G O H V (D) R S S H P I W
 (E) S E L D O O N

Directions :

Study the code given below for 'CIRCULATED' and based on the same code, code the words in questions :

Word	Code
C I R C U L A T E D	E K T W N C X

Q.41 CALCULATED
 (A) D B M V M B U F E (B) E C N W N C V G F
 (C) E C N W N C X (D) E C N W O C X

Q.42 LANDS
 (A) M B O E T (B) N C P X U
 (C) N C P E U (D) N C P F U

Q.43 HATEDLY
 (A) I C U F E M Z (B) J C X N A
 (C) J C V G F N A (D) I C U X M Z

Q.44 HEATD
 (A) I F B U E (B) J G C V F
 (C) J G C X (D) I F B X

Directions :

The following questions are based on a code language. In each question the capital letters in column I are written in a code in small letters in column II. Each small letter in column II stands for some capital letter in column I. The small letters are not arranged in the same order in

which the capital letters in column I are arranged. They are mixed up/jumbled. Study the two columns carefully to find out the small letter or code letter which stands for the underlined capital letter in column I.

A

	Column-I	Column-II				
		(a)	(b)	(c)	(d)	(e)
Q.45	<u>L</u> O B E Q	g	d	t	i	w
Q.46	<u>O</u> L C T M	u	l	e	g	d
Q.47	<u>B</u> L O P Q	h	i	g	d	t
Q.48	<u>P</u> L L O B	d	g	t	d	h
Q.49	O B P L <u>T</u>	g	d	t	h	l
Q.50	B L P O <u>Q</u>	h	i	t	g	d

B

- Q.51** G B S L C q a r h v
- Q.52** C B S G P h v e q r
- Q.53** B S M B G h q v b q
- Q.54** D B P S G q e h s v
- Q.55** S G O B C v h d q r
- Q.56** T A G S O p i d h v
- Q.57** How will you code 'ACCOMMODATE' if S and V are coded as 8 and 5 respectively ?
 (A) 26-24-24-12-14-14-12-23-7-26-22
 (B) 26-24-24-12-14-14-23-12-7-26-22
 (C) 26-25-25-12-14-14-23-12-26-7-22
 (D) 26-24-12-14-14-23-21-12-26-7-22
 (E) 26-24-24-12-14-14-12-23-26-7-22
- Q.58** If III stands 2, IIII for 3 and II for 1, how will you solve the following ?
 IIII – II + III + IIII = ?
 (A) IIIIII (B) IIIIIIII
 (C) IIIII (D) IIII
 (E) VII
- Q.59** If 'BARS' = 10 and 'BEERT' = 10, 'DEEZ' will be ?
 (A) 15 (B) 12
 (C) 14 (D) 10

- Q.60** 'ADARSHI' = 53, SCHOOL = 66, STUDENT = ----?
 (A) 90 (B) 97
 (C) 89 (D) 96
- Q.61** In a certain code language 'CAR = 19' and 'TRUCK = 68' then what will be the code for 'TAXI' ?
 (A) 60 (B) 63
 (C) 50 (D) 56
- Q.62** PEN = 32, PAPER = 51, DESK = ?
 (A) 40 (B) 45
 (C) 85 (D) 35
- Q.63** If 'DEAR' is coded as 7 and 'BEARS' as 9, what should be the code for 'wax' ?
 (A) 10 (B) 12
 (C) 16 (D) 10
 'POSTER' and 'MOON' are coded as '234678' and '5331' respectively. How will you code the following words -
- Q.64** MOST
 (A) 5463 (B) 3546
 (C) 5346 (D) 5376
- Q.65** STOPS
 (A) 46316 (B) 46754
 (C) 46324 (D) 46234
- Q.66** STERN
 (A) 465871 (B) 46581
 (C) 46781 (D) 46671
- Q.67** POEM
 (A) 2375 (B) 2175
 (C) 2475 (D) 2365
- Q.68** STEMS
 (A) 46574 (B) 46734
 (C) 46754 (D) 46753
 In a certain code language, 'EXAMINATIONS' is coded as '123456375869'. Give appropriate codes for the words given in capital letters:
- Q.69** NOMINATION
 (A) 6854637586 (B) 6845637586
 (C) 8645637586 (D) 6845635786

- Q.70** TIMES
(A) 74519 (B) 76419
(C) 75419 (D) 73419
- Q.71** MATES
(A) 43619 (B) 43718
(C) 43519 (D) 43719
- Q.72** If M = 12 and O = 15, code 'DEAF'
(A) 4616 (B) 4316
(C) 4716 (D) 4516
- Q.73** If 2554 and 7520 are codes for BEED and GET respectively, how will you code 'HIDE' ?
(A) 8745 (B) 7945
(C) 8935 (D) 8945
- Q.74** HIGH = 5645 and DEEM = 12210, how will you code 'FEEL' ?
(A) 2338 (B) 3449
(C) 3229 (D) 4337
- Q.75** If 'HELD' and 'KILL' are coded as '5291' and '8699' respectively, how will you write 'HIDE' ?
(A) 4512 (B) 6712
(C) 5612 (D) 3612
- Q.76** RUST = 9-6-8-7 and board = 25-12-26-9-23, how will you code 'BEAT' ?
(A) 25-23-24-7 (B) 25-21-26-7
(C) 25-22-25-7 (D) 25-22-26-7

ANSWER KEY

Q.No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	D	A	B	B	C	B	E	E	A	A	A	A	A	B	B	E	A	E	C	D
Q.No	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ans.	A	A	E	C	B	D	B	D	B	B	A	E	B	E	B	C	D	D	D	C
Q.No	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	C	D	B	C	B	D	E	E	E	B	E	A	B	D	E	C	E	A	D	B
Q.No	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76				
Ans.	C	D	C	C	C	C	A	C	B	C	D	D	D	C	C	D				