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Aptitude Advance

Coding and Decoding

eBook

Chapter 1: Coding-Decoding

Almost every test on Reasoning contains questions on coding. In such questions, generally one word and its code is given and the students are asked to find the code for the other given word, applying the same logic, as what has been applied in the given examples.

But before we proceed to discuss the various types of questions related to coding, it is better to have an idea regarding the general types in coding. Some of the major types of coding are

1. Constant addition in the position of alphabets.
2. Constant subtraction in the position of alphabets.
3. Denoting the position of alphabets in the whole alphabetic order.
4. Addition of the positions of all the alphabets to make code for the word.
5. Constant addition and subtraction respectively in the position of all the alphabets.
6. Square of the number of letters in the word.

7. Arranging the letters in the alphabetic order.
8. Arranging the letters given in the main word, in the reverse order.
9. Interchanging each pair of the letters, in the whole word.
10. Constant addition and then reversing the letters to make the final code.

These are some of the important types of the coding, now we will discuss all of these types and much more with the help of examples.

You must have noticed from the above points, that it is very important for the student to know the alphabetic order of all the alphabets.

The following method can be applied to learn the alphabetic order.

I. **THE ALPHABET:** The normal English alphabet contains 26 letters in all.

(Usually, questions on alphabet are accompanied by this normal alphabet). From A to M, the alphabet completes its first half, while the other half starts from N and ends at Z.

A-M - 1-13 (First Alphabetical Half)

N-Z –14-26 (Second Alphabetical Half)

II. **EJOTY:** For purpose of convenience, it is helpful to remember this simple formula called EJOTY, with the help of which you can easily find the position of any letter without much effort. But for practical purposes, you should learn by heart the positions of different letters in the alphabet, where these five letters represent the following positions.

E	J	O	T	Y
5	10	15	20	25

1.1 Solved Examples

Ex.1. In a certain code 'CSAT' is written as EUCV. How is 'CIVIL' written in that code?

Sol. In this all the letters in the word are moved two places forward.

So CIVIL will be written as EKXKN.

Ex.2. If the word AMITABH is coded as HBATIMA, then how will you code the word ANUPAM ?

Sol. In this the whole of the word is written in the reverse order only, then the word ANUPAM would also be written in the reverse order and MAPUNA would be obtained as answer.

Ex. 3. If HEMA $\Rightarrow$ EHAM, then REKHA = ?

Sol. In this the pairs of letters are interchanged, similarly the pairs in the word REKHA would be interchanged. And ERHKA, because A is the single letter that remains, and it would be written as it is.

Ex. 4. In a certain code 'SERVICES' is written as TFSWHBDR. How is BULLSEYE written in that code?

Sol. In this first half of the letters are moved one place forward and second half of the letters are moved one place backward. So, BULLSEYE will be written as CVMMRDXD.

Ex. 5. If the word RAMESH is written as 181135198, how will you write the word SUNITA ?

Sol. Now in this case, simply the position of the alphabet is written i.e. R = 18, A = 1, M = 13 and so on. Similarly while making code for the word SUNITA, their alphabetic positions will be written i.e. S = 19, U = 21, N = 14, I = 9, T = 20 and A = 1 and the code will become 1921149201.

Ex. 6. If the code for the word RAM is 32, then what is the code for the word SHAM?

Sol. In this question, the code for the word RAM has been made by adding the positions of all the alphabets in the word i.e. R = 18, A = 1, M = 13 $\Rightarrow$ 18 + 1+ 13 = 32. Similarly the code for the word SHAM would be made by adding all the alphabets in the word i.e S = 19, H = 8, A = 1 and M = 13 $\Rightarrow$ the code would be 19 + 8 + 1 + 13 = 41.

Ex. 7. If the code for the word ABHISHEK is BAIHTGFJ, then what is the code for the word HRITIK?

Sol. In this case, both +1 & - 1 are applied. A + 1 = B, B – 1 = A, H + 1 = I, I – 1 = H, S + 1 = T, H – 1 = G, E + 1 = F and K – 1 = J, Similarly the code for the word HRITIK will be made i.e. H + 1 = I, R – 1 = Q and so on. The code will finally be IQJSJJ.

Ex. 8. In a certain code, the word ADARSH is written as ZOZXYP, then how RADHA would be written in the same code?

Sol. Now in this case, the coding done cannot be cracked, the simple method which is to be applied in this case is that all the letters of the word RADHA are present in the word ADARSH, so corresponding code for each letter would be taken. Firstly take code for R i.e. = X, then take code for A i.e. = Z. Similarly taking the codes for other letters, the word RADHA would be coded as XZOPZ.

Ex. 9. If RAM = 9, SUDHA = 25, RAMESH = ?

Sol. Now logic applied- here is very simple. The logic is, there are 3 letters in the word RAM, so it's code is 3^2 = 9, similarly there are 5 letters in the word SUDHA, so 5^2 = 25. As there are 6 letters in the

word RAMESH, so its code will be 6^2 = 36 and that is the answer.

Ex. 10. If RAMESH = AEHMRS, then ANURADHA = ?

Sol. In this case, the coding is simply done in the increasing position of alphabets i.e. the dictionary order. That is arrange the alphabets in the same order as they are in the actual alphabetic order. Firstly A comes, then E, then H, then M, R and S respectively. Similarly when the code for the word ANURADHA will be made, it would be AAADHNRU.

Ex.11. If HARISH is coded as ITJSBI, then how would REEMA be coded ?

Sol. In this case, the immediate next letter in the alphabet is taken and the code is written in the reverse order i.e. the code for the letter H is I and it is in the end, the code for A is B and it is second from the end, similarly the code for R is S and it is third from the end and so on. While coding the word REEMA, the code for R will be S and it would be written in the end, similarly the codes for E, E, M and A would be F, F, N and B respectively. And the

final code would be BNFFS. This type is called +1 and reverse order.

Ex. 12. If SHIVANI is coded as 574, then what is the code for GANESH?

Sol. In this case, EJOTY of all the words has been added, then this is multiplied by the number of letters in that word. SHIVANI $\Rightarrow$ S = 19, H = 8, I = 9, V = 22, A = 1, N = 14, I = 9 $\Rightarrow$ 19 + 8 + 9 + 22 + 1 + 14 + 9 = 82 × 7 ($\because$ there are 7 letters in the word SHIVANI), Similarly while making code for GANESH $\Rightarrow$ 7 + 1+ 14 + 5 + 19 + 8 = 54 × 6 ($\because$ there are six letters) = 324 would be the code.

Ex. 13. If EVITCDNIV is coded as HZNZJLWSG, then what is the code for ABDICTION?

Sol. In this question, firstly + 3, then +4, +5, +6, +7 and so on. Similarly when the code for the word ABDICTION is made, firstly +3, then , +4, +5, + 6, +7 and so on. The code will finally become DFIOJBRYY

Ex. 14. If SILVER is coded as HROEVI, then what is the code for MEENAKSHI?

Sol. In this case, if the letter is at 'nth' position from the beginning then the letter at 'nth' position from the end is written. This can always be checked, whenever the sum of the number and its respective code is 27. Then the method applied for the coding would be this only. As in SILVER, S is 19 and its code H is 8 and the sum is 27. I is 9 and its code R is 18 and sum is 27. While coding MEENAKSHI, the same method of coding will be applied. M is 13, so what should be added in 13 to make it 27 (that is 14), write the 14^{th} letter which is N as the code for M. Similarly E is 5, find 22^{nd} letter to make sum as 27 (V is 22^{nd} letter) and so on. The code for the word MEENAKSHI will be NVVMZPHSR.

Ex. 15. If A = E, B = F, C = G and H = L, how will the word COME BACK be coded in this code?

Sol. Here in this case, it can be checked that A + 4 = E, B +4 = F, C+ 4 = G and so on. . So COME BACK would be coded in the same way as C + 4 = G, O will be S and the code would become GSQI FEGO.

Ex. 16. If blue is called green, green is called yellow, yellow is called red, red is called brown and brown is called pink, then what is the colour of blood?

1. red 2. brown 3. pink 4. Yellow

Sol. We know that colour of blood is red. In this question red is coded as brown. So, our answer is brown, i.e. 2nd option.

Ex. 17. If bird is called pen, pen is called air, air is called well, well is called car, car is called sky, , then from where one can draw water?

1. well 2. sky 3. car 4. pen

Sol. Water can be drawn from well. Well is coded as car. So, answer is car. i.e. 3rd option.

Ex. 18. In a certain code language 'sim ma kom' means ' bring me water'. 'ma mo mok' means 'water is life'. 'jka od sim' means 'give me toy' and 'mo min not' means 'life and death'. Which of the following is representing 'is' in that language ?

1. mo 2. ma 3. mok 4. min

Sol. Here in such questions by combining two groups, the code for one particular word can be decided.

In the first two coded sentences, the only code common is 'ma' and the only word common is 'water'. This implies that 'ma' is the code for 'water'. Similarly in the second and fourth coded sentences the only code common is 'mo' and the only word common is 'life'. This implies that the code for the word 'life' is 'mo'. After this, in the second coded sentence the only code remaining is 'mok' and the only word remaining is 'is', So the code for the word 'is' is 'mok'.

Ex. 19. In a certain code language, '952' means 'order my tape' '849' means ' buy great tape' and '246' means 'buy my water'. Which of the following digits represents 'great' in that code ?

1. 2 2. 6 3. 8
4. 5

Sol. Here by comparing sentence 1 and 2 get the code for the word 'tape' which is 9. By comparing second and

third sentence get the code for the word 'buy', which is 4. So the remaining word in the second sentence is 'great' and the remaining code is 8. So the answer is 8 which is the third option.

♠ Sometimes a very different type of questions are asked. In the directions itself four/five types of coding methods are given, then from the question itself you have to recognize which type of coding is done.

Ex. 20. Given below are five possible ways of coding a word. Study carefully and analyze which of the methods has been used in each case.

1. GRAPES is coded as TFQBSH
2. APPLE is coded as DSSOH
3. ORANGE is coded as LOXKDB
4. COCONUT is coded as OCOCUNT
5. PINEAPPLE is coded as ELPPAENIP

A. COMPUTER is coded as OCPMTURE

1. 1 2. 2 3. 3
4. 4

In this question, it can be seen, that the code is made by interchanging the pairs of letters as in the case

of 4th type. CO was made as OC, then again CO as OC, then NU as UN and the last letter was alone, so it was just left. So the answer to this question is the 4th type of code, which is given as option 4.

B. FLOPPY is coded as IORSSB.

1. 5 2. 3 3. 2
4. 1

In this question, the coding done is +3, i.e. every letter is replaced by a letter which is after three places in the alphabet. This is the case in the second type of coding. So second type of coding, which is given in the option 3, is the answer.

C. GLOBALISATION is coded as OPJUBTJMBCPMH.

1. 4 2. 3 3. 2
4. 1

In this case, the coding done is +1 and writing it in the reverse order. i.e. as in first type of coding replacing every letter with its next letter in the alphabetic order and then writing the code in the reverse order (the code for the first letter is written at the last position, the code of

the second letter is written in the second last position and the code of the last letter is written at the first position). Hence the answer is option 4.