UNIT -3
CHAPTER 5
CODING DECODING and DIRECTION
CONTENT AS PER IBPS LEVEL

INTRODUCTION

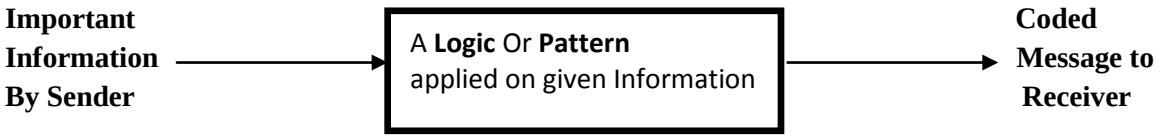
Coding - Decoding is a system of letters, digits and signs used for identification purposes. Codes are used for transmitting messages to the receiver without any third person knowing it. After transmission, receiver decode the coded massage and found the relevant information.

HISTORICAL IMPORTANCE

Coding – Decoding is a very popular subject and also known as Cryptography. In old days secrete messages were encrypted by kings, secrete agencies and spies into a coded language. Coding – Decoding also has its historic importance. It was used by Julius Caesar, Chanakya, Samudragupta and many others to hide secret information from spies and enemies.

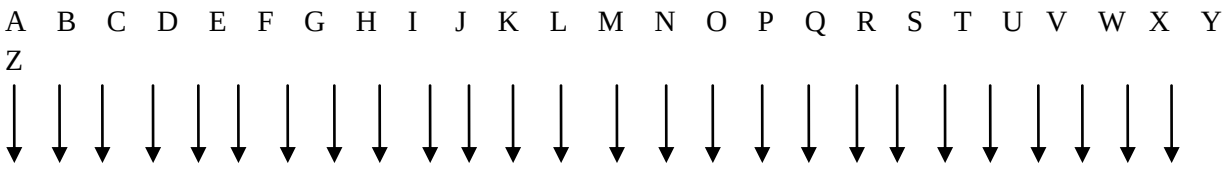
Caesar Cipher

Julius Caesar had been developed a unique technique named **Caesar Cipher** to hide important information into secret message. He was very cleaver. He always send his information by the hand of two Messengers, one was carried himself a **Coded Message** and another was carried the **Logic** or **Pattern** of the code.



Caesar Cipher:- Julius Caesar was able to develop a new Logic for every new secret information. That process was known as Caesar Cipher. Suppose, if he had to send a secret information to his army containing the word **ATTACK** then, he was coded it with the help of following two steps :-

First Step:- He must made a cipher with the help of Logic or Pattern.



W X Y Z A B C T U V D E F G P Q R S H I J M N O K L

A coded as W, B coded as X, C coded as Y.....and Z coded as L.

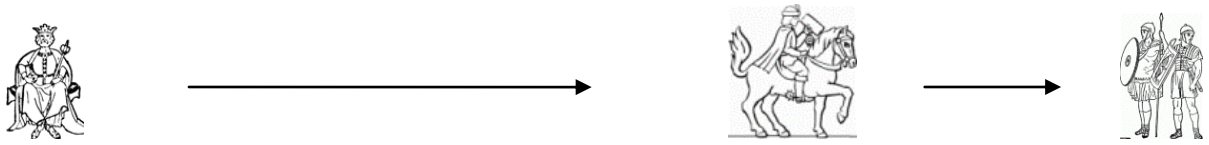
Second Step- Now on the basis of above logic or pattern **ATTACK** coded as:-

A T T A C K

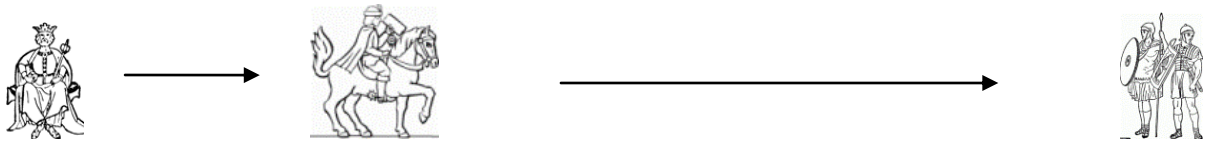
W I I W Y D

So the **ATTACK** is coded as **WIIWYD**.
Now, **WIIWYD** is a Coded Message.

We can also understand Julius Caesar's communication process to share secrete information with his army to the following diagrams:-



King (Sender) — 1st Messenger (Coded Message:-**WIIWYD**) — Army (Receiver)



King (Sender) — 2nd Messenger (Logic:- A B C.... W X Y....) — Army (Receiver) (Code + Logic)

So, according to above discussion we can say that coding – decoding has great historical importance.

Now we can say,
The coding and decoding questions are set to judge the candidate's ability to perceive the principles and pattern on which a word or message is codified and to decipher it. Such questions are becoming increasingly popular in the different examinations. They call for careful observation concentration, and analytical aptitude.

TYPES OF CODING DECODING

As for as our reasoning purpose is concern, we will learn following type of coding – decoding patterns:-

ALPHABET TO ALPHABET CODING – DECODING

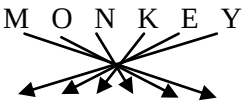
According to above category, alphabet letters are used to codify other alphabet letters.

Example:- 1 If letters of the word **MONKEY** are coded as **NPOLFZ,** then find out the code for word **TIGER ?**

Solution:- Here, we are observing a very simple pattern, M is coded as N, O is coded as P and so on. Next letter is the code of previous one. So the code of word TIGER is UJHFS.

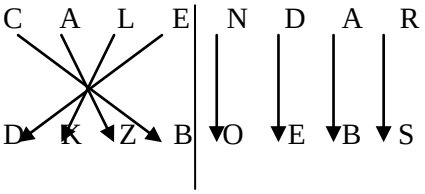
Example:- 2 If letters of the word **MONKEY** are coded as **XDJMNL,** then find out the code for word **TIGERS ?**

Solution:- Word **MONKEY** is Coded as,



So the code for word **TIGERS** is **RQDFHS**.

Example:- 3 If **CALENDAR** = **DKZBOEBS**, then **NEELAM** = ?
Solution:- This type is just a bit different from the previous type.
Word CALENDAR is coded as,



According to above logic, word **NEELAM** is coded as **DDMMBN**.

Example:- 4 If **EVITCDNIV** = **HZNZJLWSG**, then **ABDICTION** = ?
Solution:- In this question, firstly + 2, then + 3, +4, +5, +6,+7 and so on. Similarly when the code for the word **ABDICTION** is made firstly+2, then +3, +4, +5, + 6 and so on. The code will finally become

DFIOJBNYY.

Example:- 5 If **PERSON** = **THTWRP**, then **ENGINE** = ?
Solution:- Here P + 4 = T, E + 3 = H, R + 2 = T, Then S + 4 =W, O + 3 = R, N + 2 = R. The method for coding is +4, +3, +2. The code for ENGINE will become E + 4 = I, N + 3 = Q, G + 2 = I, I + 4 = M, N + 3= Q and E +2 = G. Therefore the code is IQIMQG.

Example:- 6 If **SILVER** = **HROEVI**, then **MEENAKSHI** = ?
Solution:- 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 coding will be applied. M is 13, so what should be added in 13 to make it 27 (that is14), 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 that is the code and so on. The code for the word **MEENAKSHI** will be **NVVMZPSR**.

ALPHABET TO NUMBER CODING – DECODING

In this category letters are coded in numbers or vice versa.

Example:- 7 If **RELATION** = **95312965**, then **MANAGEMENT** = ?
Solution:- In this case, the code for every letter is its position in the alphabetic order, represented as a single digit. If its position is already a single number, then it is simply assigned as the code, and if there are two digits in its position, then those digits are added to get the code for that letter. In this case R is the 18^{th} letter so its code would be 1 + 8 = 9, E is the 5^{th} letter so its code is 5, L is the 12^{th} letter so its code is 1 + 2 = 3, A is 1 and so on. Similarly when the code for the word **MANAGEMENT** is made. M is 13, 1 + 3 = 4. A= 1, N is 14 1 + 4 = 5, A = 1, G = 7 and so on. The final code for the word **MANAGEMENT** would be **4151754552**.

Example:- 8 If **SHIVANI** = **574**, then **GANESH** = ?

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

Example:- 9 If **ACTIVITY** = **24315137**, Then **ELEPHANT** = ?
Solution:- It involves the position of alphabet in the alphabetic order + 1. If it becomes a single digit number, write it and if it is a two digit number then add it to get a single digit number as in question no. 13. Similarly **ELEPHANT** => E = 5 + 1 = 6, L = 12 +1 = 13 => 1 + 3 = 4, E = 5 + 1 =6, P = 16 + 1 = 17 => 1 + 7 = 8 and so on. The code will become **64689263**.

Example:- 10 The questions given below are based upon the following set of codes.

Digit	**:**	**1**	**0**	**6**	**4**	**2**	**9**	**8**	**7**	**5**
Code	**:**	**M**	**O**	**X**	**L**	**S**	**T**	**N**	**H**	**P**

A) Find the code for **24750**.

B) Find the code for **814005**.

Solution:-Now here in this case, it can be verified that the code for the 2 is S, 4 is L, 7 is H, 5 is P and 0 is O. Therefore the code in the first case would become **SLHPO** and in the second case the code would be **NMLOOP**.

LANGUAGE CODING – DECODING

In this type of questions, sentences of a given language are coded in to different language. We need to find out the meaning of required word into another language.

Example:- 11 In a certain code. **'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 ?

Solution:- 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 **'ma'**. 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'**.

Example:- 12 In a certain code language, **'it pit sit'** means **'I am boy'**, **'it nit sit'** means **'I am girl'**, which of the following means **'girl'**?

Solution:- We have,
It pit sit ⟶ I am boy
It nit sit ⟶ I am girl
Here, **'It sit'** is common in both the messages and **'I am'** is common in both codes. Hence, code for girl will be **'nit'**.

Example:- 13 In a certain code language,
(i) **'786'** means **'study very hard'**
(ii) **'958'** means **'hard work pays'** and
(iii) **'645'** means **'study and work'**.
Which of the following is the code for **'very'** ?

Solution:- In the first and second statements, the common code digit is **'8'** and the common word is **'hard'**. So, **'8'** means **'hard'**. In the first and third statements, the common code digit is **'6'** and the common word is **'study'**. So, **'6'** means **'study'**.
From equation (i) and (ii), 8 ⟶ hard
From equation (i) and (iii), 6 ⟶ study

Hence very ⟶ 7

SUBSTITUTION CODING – DECODING

In this section, some particular words are assigned certain substituted names. Now,

questions are formed based on that principles.

Example:- 14 If **'white'** is called **'blue'**, **'blue'** is called **'red'**, **'red'** is called **'yellow'**, **'yellow'** is called **'green'**, **'green'** is called **'black'**, **'black'** is called **'violet'** and **'violet'** is called **'orange'**, then what would be the colour of human blood ?

Solution:- We know the colour of the human blood is **'red'** and given that **'red'** is called **'yellow'**. So, the colour of human blood is **'yellow'**.

Example:- 15 If **'Parrot'** is known as **'Peacock'**, **'Peacock'** is known as **'Swallow'**, **'Swallow'** is known as **'Pigeon'** and **'Pigeon'** is known as **'Sparrow'**, then what would be the name of Indian National Bird?

Solution:- We know **Peacock** is the Indian National Bird. But here **Peacock** is known as **Swallow**. So the answer is **Swallow**.

Example:- 16 On another planet, the local terminology for **'earth'**, **'water'**, **'light'**, **'air'** and **'sky'** are **'sky'**, **'light'**, **'air'**, **'water'** and **'earth'**, respectively. If someone is thirsty there, what would he drink?

Solution:- The person would drink water, but water is called light. Hence he would drink light there

MATRIX CODING – DECODING

MATRIX Concept

In this type of questions, two matrices of letters and numbers are given in which each letters can be represented by a set of two numbers. The first number (from left) indicates the row number while the second number indicates the column number. You are required to identify the code for the given word or a group of letters on the basis of two matrices given.

Now consider the following examples which were asked in the previous exams:

Direction(17-19):- In the following questions given below are two matrices of twenty five cells each containing two classes of letters from the alphabet. The columns and rows of matrix 1 are numbered from 0 to 4 and that of matrix 2 from 5 to 9. A letter from these matrices can be represented first by its row number and next by its column number. For example, R can be represented by 02, 31. In each of the following questions identify one set of number pairs out of (1), (2), (3), d)which represents the given word:

MATRIX – I

	0	**1**	**2**	**3**	**4**
0	**E**	**S**	**R**	**U**	**N**
1	**R**	**N**	**S**	**E**	**U**
2	**U**	**E**	**N**	**R**	**S**
3	**S**	**R**	**U**	**N**	**E**
4	**N**	**U**	**E**	**S**	**R**

MATRIX - II

	5	6	7	8	9
5	W	O	P	T	I
6	T	I	O	W	P
7	I	W	I	P	T
8	O	P	T	O	W
9	P	T	W	I	O

Example:-17 What is the code for **PENT** ?
a)87, 21, 31, 66 b)95, 33, 40, 78 c)57, 02, 34, 87 d)78, 42, 11, 58 e)None
Example:-18 What is the code for **NOTE** ?
a)40, 75, 96, 34 b)33, 99, 87, 14 c)04, 67, 78, 21 d)22, 56, 65, 43 e)None
Example:-19 What is the code for **WRITER** ?
a)55, 10, 66, 57, 00, 31 b)89, 12, 75, 58, 11, 23 c)76, 23, 77, 79, 13, 12
d)68, 31, 86, 87, 42,10 e)None

Solution (17-19):-
E =00, 13, 21, 34, 42
I =59, 66, 75, 77, 98
N=04, 11, 22, 33, 40
O=56, 67, 75, 88, 99
P= 57, 69, 78, 86, 95
R= 10, 12, 13, 31, 44
T= 58, 65, 79, 87, 96
W=55, 68, 76, 89, 97.
Answer 17:- (d)

Option	P	E	N	T
(1)	~~87~~	21	~~31~~	~~66~~
(2)	95	~~33~~	40	~~78~~
(3)	57	~~02~~	~~34~~	87
(4)	78	42	11	58

Answer 18:- (a)

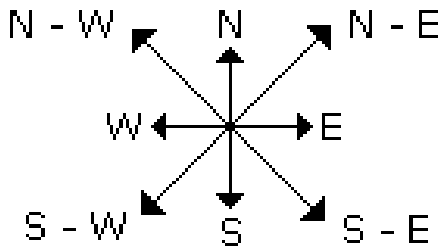
Option	N	O	T	E
(1)	40	75	96	34
(2)	33	99	87	14
(3)	04	67	78	21
(4)	22	56	65	43

Answer 19:- (c)

Option	W	R	I	T	E	R
(1)	55	10	66	57	00	31
(2)	89	02	75	58	11	23
(3)	76	23	77	79	13	02
(4)	68	31	86	87	42	10

DIRECTION

In this test, the questions consist of a sort of direction puzzle. A successive followup of direction is formulated and the candidate is required to ascertain the final direction or the distance between two points. The test is meant to judge the candidate's ability to trace, follow and sense the direction correctly.



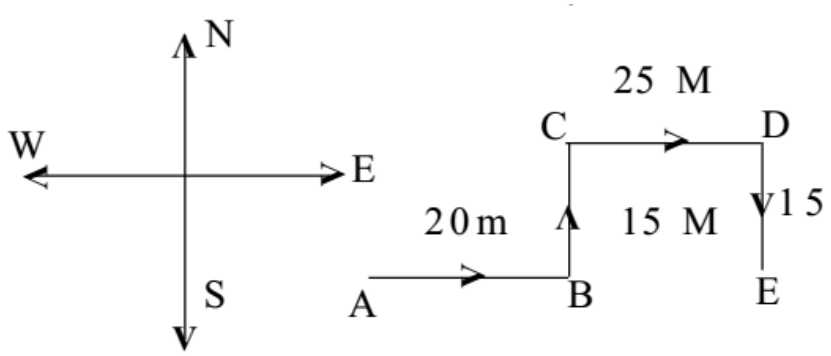
The figure shows the four main directions (North N, South S, East E, West W) and the four cardinals (North East NE, North West NW, South East SE, South West SW) to help the candidates to know the directions.

To solve such problems it is necessary to make sketches on paper as per the direction of th e questions. Generally to confuse the candidates the left or right turns are provided in the direction (question). Here it is necessary to understand that on the surface of the paper, clock wise direction is the right and anticlockwise direction is the left.

SOLVED EXAMPLES :

1 . Anil walks 20 meters towards the east and turns left, and continues to walk for 15 metres after which he turns right and continues to walk for 25 metres. After that he tur ns right and walks for 15 metres. How far is he away from his original place?

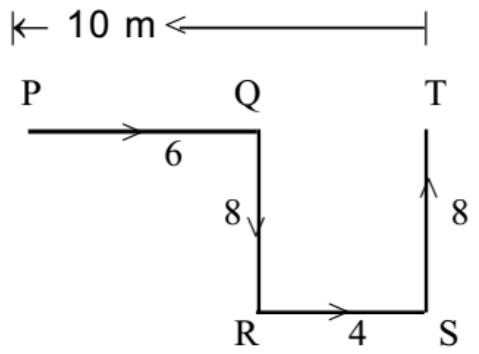
Ans. Let he starts from A and takes respective turns at B, C, D and finally reaches at E



ie, Anil is 45 m away from his original place.

2 . Rema walks from point 'P' for 6 km towards east to reach point 'Q' then she turns right and walks for 8 km to reach point 'R' Then she turns towards east and walks for 4 km to reach at poin t 'S' Then she turn s left and walks 8 km to reach the poin t 'T' find the distance between points 'P' and 'T ?

Solution:



ie; the required distance = 10 km

EXERCISE ON CODING DECCODING

CONTENT AS PER IBPS LEVEL

1. If 'FISH' is written as 'EHRG' in a certain code, then how would 'JUNGLE' be written in that same code? (1) ITMFKD (2) ITNFKD (3) KVOHMF (4) TIMFKD (5) None of these

2. If 'GIRL' is written as 'FJSK' in a certain code, then how would 'BOY' be written in that same code?
(1) CPX (2) APX (3) APZ (4) CPZ (5) None of these

3. If 'HAPPY' is written as 'IBQQZ' in a certain code, then how would 'SORROW' be written in that code? (1) TPSSXX (2) TTPSSPX (3) TPPSPX (4) TPSSSX (5) None of these
4. If the word 'TABLECLOTH' is coded as 'XEMRANRIXT', how can 'HOTEL' be coded?
(1) RIXAT (2) TIXAR (3) TAXIR (4) RAXIT

5. If in a certain code language, 'MIRACLE' is coded as 'NKUEHRL', then how is 'GAMBLE' coded in that same code language?
(1) JDOCMF (2) CLEMNK (3) HCPFQK (4) AELGMN (5) None of these

6. If in a certain code language, 'BROWSER' is written as 'RESWORB', then how 'TEACHER' be coded in that same language?

(1) REHCEAT (2) REHCAET (3) REHCTEA (4) AHRCTEA (5) None of the above

7.In a certain code, P is #, A is %, C isf and E is @. How is PEACE written in that code?
(1) #@%@# (2) #@#f@ (3) %#@f% (4) #@%f@ (5) None of these

8. In a certain code, 'BELIEF' is written as 'AFKKDH'. How would 'SELDOM' be written in that code?
(1) RDKCHL (2) RFKENM (3) RFKFNO (4) TFKENP (5) None of these

9. In a certain code, 'INSTITUTION' is written as 'NOITUTITSNI'. How would 'PERFECTIONS' be written in that code? (1) SNOICTEREP (2) SNOITCEFERP (3) SNOITCEFRPE (4) SNOITCEFREP (5) SNOITCEFPER

10. If 'DELHI' is coded as '73541' and 'CALCUTTA' as '82589662', how will 'CALICUT' be coded?
(1) 5279431 (2) 5978213 (3) 8251896 (4) 8543691

11. If in a certain code, 'DAUGHTER' is written as 'TERDAUGH', how will 'APTITUDE' be written in that code?
(1) DEUAPTIT (2) UDEAPTIT (3) DUEAPTIT (4) DAUEPTIT

12. In a certain code, 'TERMINAL' is written as 'NSFUMBOJ' and 'TOWERS' is written as 'XPUTSF'. How is 'MATE' written in that same code?
(1) FUBN (2) UFNB (3) BNFU (4) BNDS (5) None of these
13. In a certain code, 'KAVERI' is written as 'VAKIRE'. How is 'MYSORE' written in that same code?
(1) EROSYM (2) SYMROE (3) SYMEOR (4) SMYERP (5) SYMERO

14. In a certain code, 'GOODNESS' is coded as 'HNPCODTR'. How is 'GREATNESS' coded in that same code?
(1) HQFZUODTR (2) HQFZUMFRT (3) HQFZSMFRT (4) FSDBSODTR (5) None of these

15. If in a certain code language, 'POPULAR' is coded as 'QPQVMBS', then which words from the following would be coded as 'GBNPVT'?
(1) FARMER (2) FAMOUS (3) FRAMES (4) FAMOTH

16. In a certain code, 'REFRIGERATOR' is coded as 'ROTAREGIRFER'. Which words from the following would be coded as 'NOITINUMMA'?
(1) ANMOMIUTMI (2) AMNTOMUIIN (3) AMMUNITION (4) NMMUNITIOA (5) None of these

17. In a certain code, 'CERTAIN' is coded as 'XVIGZRM' 'SEQUENCE' is coded as 'HVJFVMXV'. How would 'REQUIRED' be coded?
(1) FJIVWVIR (2) VJIFWTRV (3) WVJRIFVI (4) IVJFRIVW

18. In a certain code, 'BUILDER' is written as JVCKSFE. How is 'SEALING' written in that same

code?
(1) BFTKHOJ (2) JOHKBT (3) TFBKHOJ (4) BFTKJOH

19. If code for 'SET' is 'UGV', then what would be the code for 'BRICK'? [Delhi Police 2009]
(1) CSJDL (2) DSJEM (3) DTKEM (4) DTKFM

20. In a certain code language, 'CURATIVE' is written as 'BSVDDUHS'. How 'STEAMING' is to be written in the same code language?
(1) BFUTFMHL (2) TUFBFMHL (3) BFUTLHMF (4) BFUTHOJN (5) None of the above

DIRECTIONS (Q. Nos. 21-25**) In each of the questions given below, given a group of digits followed by four combinations of letters/symbols numbered (1), (2), (3) and (4). You have to find out which of the combinations correctly represents the group of the digits based on the coding system and the conditions given below. Mark the number of that combination as your answer. If none of the combinations correctly represent the group of digits, mark (5), i.e., 'None of these' as your answer.**

Digits	5	1	3	4	9	6	8	2	7
Letters/Symbols			P	A	K	%	R	@	D	©	M

Conditions
(i) If the first digit is odd and the last digit is even, the codes for the first and last digits are to be reversed.
(ii) If the first and the last digits are even, both are to be coded as H.
(iii) If the first and the last digits are odd, both are to be coded as $.

21. 215349
(1) RAPK%© (2) HAPK%H (3) $APK%$ (4) ©APK%R (5) None of these

22. 671254
(1) @MA©P% (2) $MA©P$ (3) HMA©PH (4) %MA©P© (5) None of these

23. 813469
(1) RAK%@D (2) DAK%@R (3) DAP%@R (4) HAK%@H (5) None of these

24. 794821
(1) MR%D©A (2) AR%D©M (3) M%RD©A (4) $R%D©$ (5) None of these

25. 591426
(1) @RA%P© (2) PRA%©@ (3) @AR%©P (4) $RA%©H (5) None of these

Directions (Q. Nos. 26-30) **Study the following information to answer the given questions. [IDBI Bank PO 2012] In a certain code 'new banking systems' is coded as 'ss tp na', 'officer in uniform' is coded as 'or mu at'. 'new bank officer' is coded as 'or bk na', and 'systems in bank' is coded as 'bk at ss'.**
26. What does the code 'bk' stand for ?

(1) new (2) systems (3) officer (4) bank (5) None of these

27. What will the code ‘ss mu’ stand for?
(1) banking officer (2) new uniform (3) uniform banking (4) uniform systems (5) None of these

28. How will ‘new officer’ be coded?
(1) or na (2) tp na (3) na at (4) tp or (5) ss at

29. How will ‘bank officer in uniform’ be coded?
(1) ss na at or (2) bk at or mu (3) ss na bk at (4) at mu ss or (5) bk ss mu na

30. What is the code for ‘in’?
(1) ss (2) or (3) at (4) mu (5) None of these

EXERCISE – DIRECTION

CONTENT AS PER IBPS/SSC LEVEL

31. Deepak starts walking straight towards east. After walking 75 m he turns to the left and walks 25 m straight. Again he turns to the left and walks a distance 40 m straight, again he turns to the left and walks a distance of 25 m. How far is he from the starting point?

a) 140 m b) 35 m c) 115 m d) 25

32. Arun started walking towards north. After walking 30m , he turned left and walked 40m. He then turned left and walked 30m. He again turned left and walked 50m. How far was he from his original position?

a) 50 m b) 40 m c) 10 m d) 20m

33. Ramu went 15 kms to the west from his house, then he turned left and walked 20 kms. He then turned east and walked 25 kms and finally turning left covered 20 kms. How far was he from his house?

a) 5 kms b) 10 kms c) 40 kms d) 80 kms

34. Rekha who is facing south turns to her left and walks 15 m, then she turns to her left and walks 7 meters, then facing west she walks 15m. How far is she from her original position?

a) 22 m b) 37 m c) 44 m d) 7m

35. Going 50 m to the south of her house, Radhika turns left and goes another 20m. Then turning to the north, she goes 30m. and then starts walking to her house. In which direction is she walking now?

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

36. Shailesh and Mohan starts from a fixed point. Shailesh moves 3 km northward, turns right and then covers 4 km. Mohan moves 5 km westwards, turns right and walks 3 km. The distance between Shailesh and Mohan now is

a) 10 km b) 9 k m c) 8 km d) 6 km

37. A man walks 30 meters towards south. Then, turning to his right , he walks 30 metres. Then turning to his left, he walks 20 meters. Again, he turns to his left and walks 30 meters. How far is he from his initial position?

a) 30 meters b) 20 meters c) 50 meters d) 60 meters

38. Suresh starts from his house towards west. After walking a distance of 30 m, he turned towards right and walked 20 meters. He then turned left and moving a distance of 10 meters, turned to his left again and walked 40 meters. He now turns to the left and walks 5 meters. Finally he turns to his left. In which direction is he walking now?

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

39. Aman walks 10 km towards north. From there he walks 6 km towards south. Then he walks 3 km towards east. How far is he now and in which direction with reference to his starting point?

a) 7 km east b) 5 km west c) 5 km north-east d) 7 km west

40. One morning after sunrise, Sumesh and Ratheesh were standing on a lawn with their backs towards each other. Sumesh's shadow fell exactly towards left hand side. Which direction was Ratheesh facing?

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

41. A watch reads 4.30 if the minute hand points East, in what direction will the hour hand point?

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

42. Five students A,B, C, D and E are sitting in a row, D is on the right of E. B is on the left of E but is on the right of A. D is on the left of C. Who is sitting on the extreme left?

a) A b) B c) C d) D

43. Facing the east, Rajesh turned left and walked 10 metres, then he turned to his left again and walked 10 m. He then turned 45 degree towards his right and went straight to cover 25 metres. In which direction from his starting point is he?

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

44. Shyam travels 5 km towards east and then he turns left and moves 6 km further. He then turns right and moves 9 km. Finally he turns once again to his right and moves 6 km. How far is he from the starting point?

a) 26 km b) 21 km c) 14 km d) 9 km

45. A man travels 2 km to the north and turns east and travels 10 km and again he turns north and travels 3 km and again turns to east and travels 2 km. How far is he from the starting point?

a) 10 km b) 13 km c) 15 km d) 17 km

46. Reena travelled from point A to a distance of 1 0 ft east a t p oin t B. She then turned right and walked 3 ft. Again she turned right and walked 14 ft. How far is she from the starting point?

a) 4 ft b) 5 ft c) 24 ft d) 27 ft

47. A starts and walks towards south . He then turns to his right and walks 3 km and then again turns left and walks 5 km. In which direction is he from the starting point?

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

48. A man travels 12 km west, then 3 km towards south and then 8 km towards east. How far is he from the start?

a) 23 km b) 20 km c) 15 km d) 5 km

49. Which runs faster? A train running at 60 km per hour OR a car speeding at 100 metres per 6 seconds?

a) Train b) Car c) Both will progress in the same speed d) It is not possible to say

50. Which of the following turning sequences will make one who started walking towards East, walk towards South?

a) Left, Left, Left b) Left, Left, Right c) Right, Right, Right d) Left, Right Left

51. Raj starts from his office facing west and walks 100 metres straight, then takes a right turn and walks 100 metres. Further he takes a left turn and walks 50 metres. In which direction is Raj now from the starting point?

a) North -east b) South –west c) North d) Nor th -west

52. One day John left home and cycled 10 km southwards, turned right an d cycled 5 km and turned

right and cycled 10 km and turned left and cycled 10 km. How many kms will he have to cycle to reach his home straight?

a) 10 km b) 15 km c) 20 km d) 25 km

53. A rat runs 20' towards East and turns to right runs 10' and turns to right runs 9' and again turns to left runs 5' and then turns to left runs 12' and finally turns to left and runs 6'. Now which direction is the rat facing?

a) East b) North c) W e s t d) South

54. I travelled 3 km southwards, then turned right and travelled 5 km. Then again turned right and travelled 7 km. In which direction was I travelling last?

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

55. After walking 6 km, I turned right and covered a distance of 2 km, then turned left and covered a distance of 10 km. In the end, I was moving towards the north. From which direction did I start my journey?

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

56. Arun started walking positioning his back towards the sun. After some time, he turned left, then turned right and then towards the left again. In which direction is he going now?

a) East or South b) West or North c) North or South d) South or West

Directions : (Qs. 57-58) : A, B, C and D are standing on four corners of a square piece of plot as shown in the given figure. They start moving and the movements are explained in each of the questions. Read the question and select the right alternative.

57. From the original position, D starts crossing the field diagonally. After walking half the distance he turns right; walks some distance and turns left. Which direction is D facing now?

a) South -east b) North-west c) South -west d) North

58. B travelled straight to C, a distance of 10 km. He turned right and walked 7 km. towards D, again he turned right and walked 8 km. and then finally turned right and walked 7 km. How far is he from his original position?

a) 7 km b) 8 km c) 2 km d) 3 km