NUMBER SERIES, CODING DECODING AND ODD MAN OUT SERIES

LEARNING OBJECTIVES

- This Section deals with questions on which series or letters in some order, Coding and decoding
- These terms of the series or letters are follows certain pattern throughout

9.1 SERIES

Series Classified into Two Types, Namely

A. Number Series

B. Alphabet Series

A. NUMBER SERIES

Case 1: Missing terms of the series

In these type the questions we have to identify the missing term of the series according to a specific pattern of the series rule to form its code. The students are required to detect the missing number of the series and answer the questions accordingly.

Example 1: Find the missing term of the series 2, 7, 16, _____ , 46, 67, 92

Explanation: Here the terms of the series are +5, +9, +13, +17, +21 , +25…

Thus, 2 + 5 = 7; and 7 + 9 = 16 …

So missing term = 16 + 13 = 29

Example 2: Find the wrong terms of the series 9, 29, 65, 126, 217, 344

Explanation: $2^3+1; 3^3 + 1; 4^3 + 1; 5^3 + 1; 6^3 + 1; 7^3 + 1$

Here 29 is wrong term of series

Example 3: Find the missing term of the series 1,9, 25, 49, 81, 121, ...

Solution: The given terms of the series consists square of consecutive odd number $1^2, 3^2, 5^2, 7^2, ...$

So missing value = $13^2 = 169$

B. ALPHABET SERIES

Alphabet series consists of letters of the alphabets placed in a specific pattern. For example, the series are in the following order of the numbers.

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

Example 4: Find the next term of the series BKS, DJT, FIU, HHV?

Explanation: In each term, the first letter is moved two steps forward, the second letter one step backward and third letter one step forward to obtain the corresponding letter of the next term. So the missing term is JGW.

C. LETTER SERIES:

These type of question usually consist of a series of small letters which follow a certain pattern. However some letters are missing from the series. These missing letters are then given in a proper sequence as one of the alternatives.

Example 5: aab, _____, aaa, bba, _____

(a) baa (b) abb (c) bab (d) aab

1) The first blank space should be filled in by 'b' so that we have two a's by two b's.

2) The second blank place should be `a', so that we have three a's followed by three b's.

3) The last space must be filled in by 'a'.

4) Thus we have two possible answers – 'baa'and 'bba'.

5) But only 'baa'appears in the alternatives.

So the answer (a) is correct.

9.2 CODING AND DECODING

Before transmitting, the data is encoded and at receiver side encode data is decoded in order to obtain original data by determining common key in encoded data.

The Coding and Decoding is classified into the following types.

Type 1: Letter Coding

Type 2: Number Coding

Type 1: Letter Coding

In these type the real alphabets in a word are replaced by certain other alphabets according to a specific rule to form its code. The candidate is required to detect the common rule and answer the questions accordingly.

Case1: To form the code for another word

Example 6: If in a certain language MYSTIFY is coded as NZTUJGZ, how is MENESIS coded in that language?

Explanation: Clearly, each letter in the word MYSTIFY is moved one step forward to obtain the corresponding letter of the code.

<div align="center">

M Y S T I F Y

+1 ↓

N Z T U J G Z

</div>

So, in MENESIS, N will be coded as O, E as F, M as N and so on. Thus, the code becomes NFOFTJT.

Example 7: If TAP is coded as SZO, then how is FRIEND coded?

Explanation: Clearly each letter in the word TAP is moved one step backward to obtain the corresponding letter of the code.

<div align="center">

S Z O

-1 ↑

T A P

</div>

Thus, in FRIEND, F will be coded as E, R as Q , I as H, E as D, N as M and D as C. So, the code becomes EQHDMC.

Example 8: In a certain code, MENTION is written as LNEITNO. How is PRESENT written in that code?

Explanation: Clearly, to obtain the code, the first letter of the word MENTION is moved one step backward and the remaining letters are Reversed in order, taking two at a time. So, in PRESENT, P will be coded as O, and the sequence of the remaining letter in the code would be ERESTN. Thus the code becomes OERESTN. Hence, The answer is OERESTN.

Case 2: To find the word by analysing the given code (DECODING)

Example 9: If in a certain language CARROM is coded as BZQQNL, which word will be coded as HORSE?

Explanation: Each letter of the word is one step ahead of the corresponding letter of the code

<div align="center">

B Z Q Q N L	H O R S E
| | | | | |	| | | | |
C A R R O M	I P S T F

</div>

So, H is coded as I, O as P, R as S, S as T and E as F. HORSE is coded a IPSTF.

Type 2: Number Coding

In these questions, either numerical code values are assigned to a word or alphabetical code letters are assigned to the numbers. The candidate is required to analyse the code as per the directions.

Case 1: When a numerical code values are assigned to words.

Example 10: If in a certain language A is coded as 1, B is coded as 2, and so on, how is AICCI is coded in that code?

Explanation: As given the letters are coded as

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

So in AICCI, A is coded as 1, I as 9,and C as 3. Thus, AICCI is coded as 19339.

Example 11: If PAINT is coded as 74128 and EXCEL is coded as 93596, then how would you encode ANCIENT ?

Explanation: Clearly, in the given code, the alphabets are coded as follows:

P	A	I	N	T	E	X	C	L
7	4	1	2	8	9	3	5	6

So, in ANCIENT, A is coded as 4, N is coded as 2, C as 5, I is coded as 1, E as 9, and T as 8. Hence, the correct code is 4251928.

Case 2: Number to letter coding.

Example 12: In a certain code, 2 is coded as P, 3 as N, 9 as Q, 5 as R, 4 as A and 6 as B. How is 423599 coded in that code?

Explanation: Clearly as given, 4 as A, 2 as P, 3 as N and 5 is coded as R, 9 as Q. So, 423599 is coded as APNRQQ.

9.3 ODD MAN OUT

Classification means 'to assort the items' of a given group on the basis of a certain common quality they possess and then spot the stranger or 'odd one out'.

These questions are based on words, letters and numerals. In these types of problems, we consider the defining quality of particular things. In these questions, four or five elements are given, out of which one does not belong to the group. You are required to find the 'odd one'.

Example 13: January, May, July, November

(a) January   (b) May   (c) July   (d) November

Explanation: All the months above are 31 days , whereas , November 30 days

Answer: (d)

Example 14: 10, 14, 16, 18, 23, 24 and 26

(a) 26   (b) 17   (c) 23   (d) 9

Explanation: Each of the above series are even number, except 23.

Answer: (c)

Example 15: 6, 9, 15, 21, 24, 26, 30

(a) 9   (b) 26   (c) 24   (d) 30

Explanation: All are multiples of 3, except 26, answer (b)

Answer: (b)

Example 16: 1, 5, 14, 30, 51, 55, 91

(a) 5   (b) 55   (c) 51   (d) 91

Explanation: Each pattern is 1^2, $1^2 + 2^2$, $1^2 + 2^2 + 3^2$, $1^2 + 2^2 + 3^2 + 4^2$, $1^2 + 2^2 + 3^2 + 4^2 + 5^2$, $1^2 + 2^2 + 3^2 + 4^2 + 5^2 + 6^2$

But 51, is not of the form.

Answer: (c)

Example 17: 16, 25, 36, 62, 144, 196, 225

(a) 36 (b) 62 (c) 196 (d) 144

Explanation:

Each of the number except 62, is a perfect square.

Answer: (b)

EXERCISE 9(A)

(Note: Questions are taken from previous exam questions papers of Competitive exams like SSC, RRB, MAT, UPSC etc.)

Choose the most appropriate answer (a) or (b) or (c) or (d).

1) 6, 11, 21, 36, 56 ?

   (a) 42   (b) 51   (c) 81   (d) 91

2) 10 , 100, 200, 310 ?

   (a) 400   (b) 410   (c) 420   (d) 430

3) 11, 13, 17, 19, 23, 25, 29 ?

   (a) 33   (b) 27   (c) 31   (d) 49

4) 6, 12, 21, 33 ?

   (a) 33   (b) 38   (c) 40   (d) 48

5) 2, 5, 9, 14, ? , 27

   (a) 20   (b) 16   (c) 18   (d) 24

6) 6, 11, 21, ? , 56, 81

   (a) 42   (b) 36   (c) 91   (d) 51

7) 10, 18, 28, 40, 54, ?, 88

   (a) 70   (b) 86   (c) 87   (d) 98

8) 120, 99, ?, 63, 48, 35

   (a) 80   (b) 36   (c) 45   (d) 40

9) 22, 24, 28, 36, ? , 84

   (a) 44   (b) 52   (c) 38   (d) 54

10) 4832, 5840, 6848, 7856 ?

   (a) 8864   (b) 8815   (c) 8846   (d) 8887

11) 10, 100, 200, 310, 430 ?

   (a) 560   (b) 540   (c) 550   (d) 590

12) 28, 33, 31, 36, 34 ?

   (a) 38   (b) 39   (c) 40   (d) 42

13) 120, 80, 40, 45, ?, 15

   (a) 15   (b) 20   (c) 25   (d) 30

14) 2, 15, 41, 80, 132 ?

   (a) 184   (b) 144   (c) 186   (d) 197

15) 6, 17, 39, ?, 116

   (a) 72   (b) 75   (c) 85   (d) 80

16) 1, 4, 10, 22, ?, 94

   (a) 46   (b) 48   (c) 49   (d) 47

17) 4, 9, 25, 49, ? , 169, 289, 361

   (a) 120   (b) 121   (c) 122   (d) 164

18) 4, 12, 36, ? , 324

   (a) 107   (b) 109   (c) 108   (d) 110

19) 1, 1, 4, 8 , 9, ? , 16, 64

   (a) 27   (b) 28   (c) 32   (d) 40

20) 5760, 960, 192, ? 16, 8

   (a) 47   (b) 48   (c) 52   (d) 50

21) 1, 2, 6, 7, 21, 22, 66, ? , 201

   (a) 69   (b) 68   (c) 67   (d) 69

22) 48, 24, 96 , ? 192

   (a) 48   (b) 47   (c) 44   (d) 54

23) 165, 195, 255, 285, ?, 375

   (a) 345   (b) 390   (c) 335   (d) 395

24) 2, 3, 3, 5, 10, 13, 39, ?, 172, 177

   (a) 42   (b) 44   (c) 43   (d) 40

25) 7, 26, 63, 124, 215, ?, 511

    (a) 342   (b) 343   (c) 441   (d) 421

26) 3, 7, 15, 31, ? 127

    (a) 62   (b) 63   (c) 64   (d) 65

27) 8, 28, 116, 584, ?

    (a) 1752   (b) 3502   (c) 3504   (d) 3508

28) 6, 13, 28, 59, ?

    (a) 122   (b) 114   (c) 113   (d) 112

29) 2, 7, 27, 107, 427, ?

    (a) 1707   (b) 4027   (c) 4207   (d) 1207

30) 5, 2, 7, 9, 16, 25, 41, ?

    (a) 65   (b) 66   (c) 67   (c) 68

31) In a certain language, MADRAS is coded NBESBT, how DELHI is coded in that code?

    (a) EMMJI   (b) EFMIJ   (c) EMFIJ   (d) JIFEM

32) If RAMAN is written as 12325 and DINESH as 675489 how HAMAM is written?

    (a) 92323   (b) 92233   (c) 93233   (d) 93292

33) If RED is coded as 6720 then GREEN would be coded as

    (a) 9207716   (b) 167129   (c) 1677209   (d) 1672091

34) If A = 1, FAT = 27, FAITH = ?

    (a) 44   (b) 45   (c) 46   (d) 36

35) If BROTHER is coded 2456784, SISTER coded as 919684, what is coded for BORBERS?

    (a) 2542849   (b) 2542898   (c) 2454889   (d) 2524889

36) If DELHI is coded 73541 and CALCUTTA as 82589662, How can CALICUT be coded?

    (a) 5279431   (b) 5978213   (c) 8251896   (d) 8543962

37) If CLOCK is coded 34235 and TIME is 8679, what will be code of MOTEL?

    (a) 72894   (b) 77684   (c) 72964   (d) 27894

38) If PALE is coded as 2134 and EARTH is coded as 41590, how is PEARL is coded ?

    (a) 29530   (b) 24153   (c) 25430   (d) 254313

39) If LOSE is coded as 1357 and GAIN is coded as 2468, what do figure 82146 stands for?

    (a) NGLAI   (b) NGLIA   (c) GNLIA   (d) GNLIA

40) If MEKLF is coded as 91782 and LLLJK as 88867, how can IHJED is coded as?

    (a) 97854   (b) 64512   (c) 54610   (d) 75632

41) If in a certain code language NAME is written as 4258 then what is coded as MEAN ?

    (a) 2458   (b) 5842   (c) 8524   (d) 5824

42) If GOLD is written as IQNF, how WIND can be written as code?

    (a) YKPF   (b) VHCM   (c) XJOE   (d) DNIW

43) If ROSE is written as TQUG, how BISCUIT can be written in that code?

    (a) DKUEWKV   (b) CJTDVJU   (c) DKVEWKV   (d) DKUEWKY

LETTER: C Z N V R S W F D

CODE DIGIT: 8 6 4 7 2 9 3 5 1

(Q. No. 44-46) In each of the following questions find out the correctly coded alternative from amongst the given four alternatives (a), (b), (c), (d).

44) ZDRCVF

    (a) 612875   (b) 619875   (c) 612845   (d) 612835

45) WNCSZV

    (a) 348267   (b) 318267   (c) 348957   (d) 348967

46) RDNFVS

    (a) 21679   (b) 216549   (c) 214579   (d) 218579

47) If DELHI is coded as CCIDD, how would you encode BOMBAY?

    (a) AJMTVT   (b) AMJXVS   (c) MJXVSU   (d) WXYZAX

48) In a certain code, RIPPLE is written as 613382 and LIFE is written as 8192. How is PILLER written in that code?

    (a) 318826   (b) 318286   (c) 618826   (d) 338816

49) If PALAM could be given the code number 43, what code number can be given to SANTACRUZ?

    (a) 123   (b) 85   (c) 120   (d) 125

Directions: 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

50) 184632

    (a) MDJBSI   (b) MDJBIL   (c) MDJBWL   (d) MDBJIL

51) In a certain code '256' means 'you are good', '637' means 'we are bad' and '358' means 'good and bad'. Which of the following represents 'and' in that code?

    (a) 2   (b) 5   (c) 8   (d) 3

Directions: Find odd man out of the following (52-61):

52) 3, 5, 7, 15, 17, 19

    (a) 15   (b) 17   (c) 19   (d) 7

53) 10, 14, 16, 18, 23, 24, 26

    (a) 26   (b) 23   (c) 24   (d) 18

54) 1, 4, 9, 16, 24, 25, 36

    (a) 9   (b) 24   (c) 25   (d) 36

55) 41, 43, 47, 53, 61, 71, 83, 75

    (a) 75   (b) 73   (c) 71   (d) 53

56) 16, 25, 36, 73, 144, 196, 225

    (a) 36   (b) 73   (c) 196   (d) 225

57) 1, 4, 9, 16, 19, 36, 49

    (a) 19   (b) 9   (c) 49   (d) 16

58) 1, 5, 14, 30, 49, 55, 91

    (a) 49   (b) 30   (c) 55   (d) 91

59) 835, 734, 642, 751, 853, 981, 532

    (a) 751   (b) 853   (c) 981   (d) 532

60) 4, 5, 7, 10, 14, 18, 25, 32

    (a) 7   (b) 14   (c) 18   (d) 33

61) 52, 51, 48, 43, 34, 27, 16

    (a) 27   (b) 34   (c) 43   (d) 48

ANSWERS

EXERCISE-9 A

1. (c)	2. (d)	3. (c)	4. (d)	5. (a)	6. (b)	7. (a)	8. (a)	9. (b)	10. (a)
11. (a)	12. (b)	13. (d)	14. (d)	15. (a)	16. (a)	17. (b)	18. (c)	19. (a)	20. (b)
21. (c)	22. (a)	23. (a)	24. (c)	25. (a)	26. (b)	27. (d)	28. (a)	29. (a)	30. (b)
31. (b)	32. (a)	33. (c)	34. (a)	35. (a)	36. (c)	37. (a)	38. (b)	39. (a)	40. (c)
41. (d)	42. (a)	43. (a)	44. (a)	45. (d)	46. (c)	47. (b)	48. (a)	49. (a)	50. (d)
51. (c)	52. (a)	53. (b)	54. (b)	55. (a)	56. (b)	57. (a)	58. (a)	59. (a)	60. (c)
61. (b)									

NOTES