

Chap 9. Number Series, Coding and Decoding and Odd man out

Number Series is a series of numbers following a particular pattern will be called as number Series.

And question on it will be such that, one term is missing in given series and you need to find that missing term.

* For Example :-

[a] 1, 2, 3, 4, ..., 6, 7, 8

[b] 2, 4, 6, 8, 10, 12, ...

[c] ..., 9, 16, 25, 36, 49

* Different types of Number Series

• Perfect Square Series

$$\begin{array}{cccccc}
 +2 & +2 & +2 & +2 & +2 & \\
 3^2 & 5^2 & 7^2 & 9^2 & 11^2 & 13^2 \\
 9 & 25 & 49 & 81 & 121 & 169
 \end{array}$$

• Perfect Cube Series

$$1^3 \quad 2^3 \quad 3^3 \quad 4^3 \quad 5^3$$

$$1, 8, 27, 64, 125$$

• Difference Series

$$2 \quad 4 \quad 6 \quad 8 \quad 10 \quad 12$$

$$\begin{array}{cccccc} +2 & +2 & +2 & +2 & +2 & \\ \hline 4-2 & 6-4 & 8-6 & 10-8 & 12-10 & \\ \hline 2 & 2 & 2 & 2 & 2 & \end{array}$$

$x-10=2 \therefore x=12$

• Geometric / Ratio Series

$$3 \quad 9 \quad 27 \quad 81 \quad 243$$

$$\begin{array}{cccccc} \times 3 & \times 3 & \times 3 & \times 3 & & \\ \hline 9/3=3 & 27/9=3 & 81/27=3 & 243/81=3 & & \therefore x=243 \end{array}$$

• Prime Number

$$2, 3, 5, 7, 11, 13, 17, 19, 23$$

NOTE: NO. WHICH IS DIVISIBLE BY THEMSELF & ONE ONLY

• Mixed Series

$$1, 1, 2, 4, 3, 16, 4, 64, 5, 256$$

Two Series are running parallel

$$\Delta] 1, 2, 3, 4, 5$$

$$\square] 1, 4, 16, 64, 256$$

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Two-Tier Series:

In this series, difference between two consecutive terms makes an Arithmetic or Geometric progression or series.

$$2, 5, 11, 23, 47$$

3 6 12 24

Alphabet Series:-

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

• Co-Prime Number Series

$$7, 23, 47, 119, 167, \underline{223}, 287$$

↓ ↓ ↓ ↓ ↓ ↓

$$3^2-2 \quad 5^2-2 \quad 7^2-2 \quad 11^2-2 \quad 13^2-2 \quad (15^2)-2$$

+2 +2 +2 +2 +2

II Number Coding

Case 1: A is 1, B is 2, so how ATCCT coded?
ATCCT ← Coding as per Alphabet series
19339

So, ATCCT is coded to 19339

Case 2: Given PAINT, EXCEL, Find ANCIENT
74128 93596

ANCIENT ← Coding as per no. given to letters
4251928 in question.

So, ANCIENT is coded to 4251928

Case 3: Given 2 3 9 5 4 6, Find code of 423599
P N Q R A B

423599 ← Coding as per letters given to No.
APNR@@ in question.

The No. 423599 is coded to APNR@@

3. Odd Man Out

- Even / Odd no.s
- Prime no.s
- perfect square / cube no.s
- Add / Subtract in series
- Divisible / Not Divisible by 2, 3, 4

_ / _ / _

2. Coding and Decoding is a pattern in which a word is coded and decoded.

I. Letter Coding

Case 1: M Y S T I F Y
 +1 ↓
 N Z T U J G Z

Here, word MYSTIFY is coded to NZTJUGZ

Case 2: S Z O
 -1 ↑
 T A P

Here, word TAP is coded to SZO

Case 3: M E N T I O N
 -1 ↓ ✕ ✕ ✕
 L N E I T N O

Here, word MENTION is coded to LNEITNO

Case 4: B Z @ @ N L H O R S E
 +1 ↓ +1 ↓
 C A R R O M I P S T F

Here, word BZ@@NL is decoded to original word CARROM, same, word HORSE is decoded to its original word IPSTF.

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* Module Question Bank

1)

$$6, 11, 21, 36, 56, ? 81$$

$\underbrace{\quad} +5 \quad \underbrace{\quad} +10 \quad \underbrace{\quad} +15 \quad \underbrace{\quad} +20 \quad \underbrace{\quad} +25$

option c

2)

$$10, 100, 200, 310, ? 430$$

$\underbrace{\quad} +90 \quad \underbrace{\quad} +100 \quad \underbrace{\quad} +110 \quad \underbrace{\quad} +120$

option d

3)

$$11, 13, 17, 19, 23, 25, 29, ? 31$$

$\underbrace{\quad} +2 \quad \underbrace{\quad} +4 \quad \underbrace{\quad} +2 \quad \underbrace{\quad} +4 \quad \underbrace{\quad} +2 \quad \underbrace{\quad} +4 \quad \underbrace{\quad} +2$

option c

4)

$$6, 12, 21, 33, ? 48$$

$\underbrace{\quad} +6 \quad \underbrace{\quad} +9 \quad \underbrace{\quad} +12 \quad \underbrace{\quad} +15$

option d

5)

$$2, 5, 9, 14, ? 20, 27$$

$\underbrace{\quad} +3 \quad \underbrace{\quad} +4 \quad \underbrace{\quad} +5 \quad \underbrace{\quad} +6 \quad \underbrace{\quad} +7$

option a

6)

$$6, 11, 21, ? 36, 56, 81$$

$\underbrace{\quad} +5 \quad \underbrace{\quad} +10 \quad \underbrace{\quad} +15 \quad \underbrace{\quad} +20 \quad \underbrace{\quad} +25$

option b

7)

$$10, 18, 28, 40, 54, ? 70, 88$$

$\underbrace{\quad} +8 \quad \underbrace{\quad} +10 \quad \underbrace{\quad} +12 \quad \underbrace{\quad} +14 \quad \underbrace{\quad} +16 \quad \underbrace{\quad} +18$

option a

8)

$$120, 99, ? 80, 63, 48, 35$$

$\underbrace{\quad} -21 \quad \underbrace{\quad} -19 \quad \underbrace{\quad} -17 \quad \underbrace{\quad} -15 \quad \underbrace{\quad} -13$

option a

9) 22, 24, 28, 36, ? 52, 84, 140 **option b**
 $\underbrace{+2}, \underbrace{+4}, \underbrace{+8}, \underbrace{+16}, \underbrace{+32}$

10) 4832, 5840, 6848, 7856, ? 8864 **option a**
 $\underbrace{+1008}, \underbrace{+1008}, \underbrace{+1008}, \underbrace{+1008}$

11) 10, 100, 200, 310, 430, ? 560 **option a**
 $\underbrace{+90}, \underbrace{+100}, \underbrace{+110}, \underbrace{+120}, \underbrace{+130}$

IMP 12) 28, 33, 31, 36, 34, ? 39 **option b**
 $\underbrace{+5}, \underbrace{-2}, \underbrace{+5}, \underbrace{-2}, \underbrace{+5}$

VIMP 13) 120, 80, 40, 45, ? 30, 15 **option d**
 $\underbrace{\times 2}, \underbrace{\times 2}, \underbrace{\times 2}, \underbrace{\times 2}, \underbrace{\times 2}$

VIMP 14) 2, 15, 41, 80, 132, ? 197 **option d**
 $\underbrace{+13}, \underbrace{+26}, \underbrace{+39}, \underbrace{+52}, \underbrace{+65}$
 $\underbrace{\times 2}, \underbrace{\times 3}, \underbrace{\times 4}, \underbrace{\times 5}$

15) 6, 17, 39, ? 72, 116 **option a**
 $\underbrace{+11}, \underbrace{+22}, \underbrace{+33}, \underbrace{+44}$

16) 1, 4, 10, 22, ? 46, 94 **option a**
 $\underbrace{+3}, \underbrace{+6}, \underbrace{+12}, \underbrace{+24}, \underbrace{+48}$

IMP 17) 4, 9, 25, 49, ? 121, 169, 289, 361 **option b**
 $\downarrow^2, \downarrow^3, \downarrow^5, \downarrow^7, \downarrow^{11}, \downarrow^{13}, \downarrow^{17}, \downarrow^{19}$

IMP 18) 4, 12, 36, ? 108, 324 **option c**
 $\underbrace{\times 3}, \underbrace{\times 3}, \underbrace{\times 3}, \underbrace{\times 3}$

Imp 19) $1, 1, 4, 8, 9, 7, 27, 16, 64$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $2^0 \quad 2^0 \quad 2^2 \quad 2^3 \quad 3^2 \quad 3^3 \quad 4^2 \quad 4^3$

option a

Imp 20) $5760, 960, 192, 7, 48, 16, 8$
 $\underbrace{\hspace{1cm}} \times 6 \quad \underbrace{\hspace{1cm}} \times 5 \quad \underbrace{\hspace{1cm}} \times 4 \quad \underbrace{\hspace{1cm}} \times 3 \quad \underbrace{\hspace{1cm}} \times 2$

option b

Imp 21) $1, 2, 6, 7, 21, 22, 66, 7, 67, 201$
 $\underbrace{\hspace{1cm}} + 1 \quad \underbrace{\hspace{1cm}} \times 3 \quad \underbrace{\hspace{1cm}} + 1 \quad \underbrace{\hspace{1cm}} \times 3 \quad \underbrace{\hspace{1cm}} + 1 \quad \underbrace{\hspace{1cm}} \times 3 \quad \underbrace{\hspace{1cm}} + 1 \quad \underbrace{\hspace{1cm}} \times 3$

option c

Imp 22) $48, 24, 96, 7, 48, 192$
 $\underbrace{\hspace{1cm}} \div 2 \quad \underbrace{\hspace{1cm}} \times 4 \quad \underbrace{\hspace{1cm}} \div 2 \quad \underbrace{\hspace{1cm}} \times 4$

option a

23) $165, 195, 255, 285, 7, 345, 375$
 $\underbrace{\hspace{1cm}} + 30 \quad \underbrace{\hspace{1cm}} + 60 \quad \underbrace{\hspace{1cm}} + 30 \quad \underbrace{\hspace{1cm}} + 60 \quad \underbrace{\hspace{1cm}} + 30$

option a

Imp 24) $2, 3, 3, 5, 10, 13, 39, 7, 43, 172, 177$
 $\underbrace{\hspace{1cm}} + 1 \quad \underbrace{\hspace{1cm}} \times 1 \quad \underbrace{\hspace{1cm}} + 2 \quad \underbrace{\hspace{1cm}} \times 2 \quad \underbrace{\hspace{1cm}} + 3 \quad \underbrace{\hspace{1cm}} \times 3 \quad \underbrace{\hspace{1cm}} + 4 \quad \underbrace{\hspace{1cm}} \times 4 \quad \underbrace{\hspace{1cm}} + 5$

option c

Imp 25) $7, 26, 63, 124, 215, 7, 342, 511$
 $2^3-1 \quad 3^3-1 \quad 4^3-1 \quad 5^3-1 \quad 6^3-1 \quad 7^3-1 \quad 8^3-1$

option a

26) $3, 7, 15, 31, 7, 63, 127$
 $\underbrace{\hspace{1cm}} + 4 \quad \underbrace{\hspace{1cm}} + 8 \quad \underbrace{\hspace{1cm}} + 16 \quad \underbrace{\hspace{1cm}} + 32 \quad \underbrace{\hspace{1cm}} + 64$

option b

Imp 27) $8, 28, 116, 584, 7, 3508$
 $\underbrace{\hspace{1cm}} \times 3 + 4 \quad \underbrace{\hspace{1cm}} \times 4 + 4 \quad \underbrace{\hspace{1cm}} \times 5 + 4 \quad \underbrace{\hspace{1cm}} \times 6 + 4$

option d

Imp 28) $6, 13, 28, 59, 7, 122$
 $\underbrace{\hspace{1cm}} \times 2 + 1 \quad \underbrace{\hspace{1cm}} \times 2 + 2 \quad \underbrace{\hspace{1cm}} \times 2 + 3 \quad \underbrace{\hspace{1cm}} \times 2 + 4$

option a

IMP 29) 2, 7, 27, 107, 427, ? 1707 option a

$\begin{matrix} +5 & +20 & +80 & +320 & +1280 \\ \times 4 & \times 4 & \times 4 & \times 4 & \times 4 \end{matrix}$

VIMP 30) 5, 2, 7, 9, 16, 25, 41, ? 66 option b

Here every new term is sum of last two terms

$5+2=7, 2+7=9, 7+9=16, 9+16=25, 16+25=41, 25+41=66$

31) MADRAS = NBESBT
~~EFMIJ~~ DELHI = ?

MADRAS
 $\begin{matrix} +1 \\ -1 \end{matrix}$
 NBESBT

DELHI
 $\begin{matrix} +1 \\ -1 \end{matrix}$
 EFMIJ

option b

32) RAMAN DINESH HAMAM

1 2 3 4 5 6 7 5 4 8 9 ?

HAMAM
 9 2 3 2 3

option a

VIMP 33)

R	18	} +2	20	G	7	} +2	9
E	5		7	R	18		20
D	4		6	E	5		7
= 6720				E	5	7	
				N	14	16	

= 1677209 option c

VIMP 34)

F	6	F	6
A	1	A	1
T	+20	I	9
	= 27	T	20
		H	+8
			= 44

Option a

35) BROTHER , SISTER , BOB BERS
2456784 919684 ?

BOB BERS

2542849

option a

36) DELHI , CALCUTTA , CALICUT
73541 82589662 ?

CALICUT

8251896

option c

37) CLOCK , TIME , MOTEL
34235 8679 72894

option a

38) PALE , EARTH , PEARL
2134 41590 24153

option b

39) LOSE , GAIN , NGLAI
1357 2468 82146

option a

40) MEKLF , LLLJK , IHJED
91782 88867 546126

option c

V.IMP

In option D is 0

41) NAME , MEAN
4258 5874

option d

42) GOLD , WIND
IQNF , YKPF

option a

IMP

Hint: G, H skip, I
O, P skip, Q
L, M skip, N

43) ROSE BTSCUIT V.JMP
TQUG DKUEWKV option a

Hint: R, Skip, T
O, Skip, Q
S, Skip, U

LETTER: C Z N Y R S W F D
CODE DIGIT: 8 6 4 7 2 9 3 5 1

For Q.No. 44-46

44) ZDRCVF
6 1 2 8 7 5 option a

45) WNCSZY
3 4 8 9 6 7 option d

46) RDNFVS
2 1 4 5 7 9 option c

47) DELHI BOMBAY V.JMP
CCIOO AMJXYS option b

Hint: D -1 = C
E -2 = C
L -3 = I
H -4 = D
I -5 = D

48) RIPPLE LIFE PILLER
6 1 3 3 8 2 8 1 9 2 3 1 8 8 2 6 option a

49) P 16 S 19
A 1 14
L 12 20
A 1 1
M + 13 3
43 18
NCDZDS 21
+ 26
123 JMP
option a

50) DIGIT : 1 7 2 1 5 3 9 8 6 4
 LETTER : W L M S I N D J B

For Q. No. 50-51

50) 184632

MOBJIL Option d

51)

256 you are good 637 we are bad 358 good and bad

what digit is for 'and' = 8 option c V.IMP

ODD MAN OUT (52-61)

52) 3, 5, 7, 15, 17, 19
 odd becoz of not a prime no.

Ans: 15 option a

53) 10, 14, 16, 18, 23, 24, 26
 odd becoz not a even no.

No. which is divisible by 2 are option b

Ans: 23

54) 1, 4, 9, 16, 24, 25, 36
 odd becoz not a perfect square Ans: 24 option b

55) 41, 43, 47, 53, 61, 71, 83, 75
 odd becoz only no. which is divisible by 3
 rest can't be divided by 3

V.IMP

Ans: 75

option a

56. 16, 25, 36, $\boxed{73}$, 144, 196, 225
odd becoz only no. which is not a perfect square

Ans 73 option b

57. 1, 4, 9, 16, $\boxed{19}$, 36, 49
odd becoz not a perfect square.

Ans 19 option a

58. 1, 5, 14, 30, $\boxed{49}$, 55, 91
 $\sqrt{4} \quad \sqrt{9} \quad \sqrt{16} \quad \sqrt{25}$ odd becoz gap should be of 25
 $2^2 \quad 3^2 \quad 4^2 \quad 5^2$

Ans 49 option a

59. 835, 734, 642, $\boxed{751}$, 853, 981, 532
 $\uparrow \downarrow \quad \uparrow \downarrow \quad \uparrow \downarrow \quad \uparrow \downarrow$ odd becoz sum of two digit on right side (5,1) is not equal to first digit (7)

Ans = 751 option a

60. 4, 5, 7, 10, 14, $\boxed{18}$, 25, 32
 $+1 \quad +2 \quad +3 \quad +4 \quad +5$ odd becoz $14 + 5$ is not 18

Ans = 18 option c

61. 52, 51, 48, 43, $\boxed{34}$, 27, 16
 $-1 \quad -3 \quad -5 \quad -7$ odd becoz $43 - 7 \neq 34$

Ans 34 option b