13.1 : Number Series

Series

1) Number Series — 16, 18, 20, 22, 24, ...

2) Alphabetic Series — B, D, F, H, J, ...

3) Numeric Alpha Series (combination of number & alphabets) — 4D, 11K, 13M, ...

So find the wrong number in the series / add one

$$4, 9, 16, 25, 37$$

Ans = 37.

$2^2 = 4, \quad 3^2 = 9, \quad 4^2 = 16, \quad 5^2 = 25, \quad 6^2 = 36.$

Eg 961, 1024, 1089, ____ , 1225

Ans = 1156

$31^2 = 961, \quad 32^2 = 1024, \quad 33^2 = 1089, \quad 34^2 = 1156, \quad 35^2 = 1225.$

1) Decreasing order series

$$360, 180, 90, \underline{45}, 22.5$$

$\div 2 \quad \div 2 \quad \div 2 \quad \div 2$

2) Increasing order series

$$2, 6, 14, 30, \underline{62}$$

$\times 2 + 2 \quad \times 2 + 2 \quad \times 2 + 2 \quad \times 2 + 2$

3) Multiplication series

$$3, 3, 6, 18, 72, \underline{360}$$

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

4) Prime Numbers

$$31, 37, \underline{41}, 43, 47$$

$$6, 15, 35, \underline{77}, 143$$

$2 \times 3 \quad 3 \times 5 \quad 5 \times 7 \quad 7 \times 11 \quad 11 \times 13$

$$21, 24, 29, 36, 47, \underline{60}$$

$$3 \quad 5 \quad 7 \quad 11 \quad 13$$

5) Square / cube number series

$$1, 4, 9, 16, 25, \underline{36}$$

$$1^2 \quad 2^2 \quad 3^2 \quad 4^2 \quad 5^2 \quad 6^2$$

$$729, 1000, 1331, \underline{1728}, 2197$$

$$9^3 \quad 10^3 \quad 11^3 \quad 12^3 \quad 13^3$$

Series with combinations

6) Miscellaneous Series

Alternative Series

$$1, 10, 2, 9, 3, 8, 4, \underline{7}$$

$$96, 15, 71, 8, 37, 10, 41, \underline{5}$$

$$9+6 \qquad 7+1 \qquad 3+7 \qquad 4+1$$

$$2, 4, 6, 10, 16, 26, \underline{42} \qquad (\text{fibonacci Series})$$

$$2+4 \quad 4+6 \quad 6+10 \quad 16+10 \quad 26+16$$

Alphabetic Series

$$\overset{1}{A} \quad \overset{2}{B} \quad \overset{3}{C} \quad \overset{4}{D} \quad \overset{5}{E} \quad \overset{6}{F} \quad \overset{7}{G} \quad \overset{8}{H} \quad \overset{9}{I} \quad \ldots \ldots \quad \overset{24}{X} \quad \overset{25}{Y} \quad \overset{26}{Z}$$

26 Alphabets

13.2 : Number Series Problems

Q.1) 30, 34, 43, 59, 84, 120, __169__

$\underbrace{\quad}_{4} \underbrace{\quad}_{9} \underbrace{\quad}_{16} \underbrace{\quad}_{25} \underbrace{\quad}_{36} \underbrace{\quad}_{49}$

$2^2 \quad 3^2 \quad 4^2 \quad 5^2 \quad 6^2 \quad 7^2$

Q.2) 9, 18, | 54, 108, | 324, __648__

$\times 2 \quad \times 3 \quad \times 2 \quad \times 3 \quad \times 2$

Q.3) 43, 38, 31, 22, 11, −2, __−17__

$\underbrace{\quad}_{-5} \underbrace{\quad}_{-7} \underbrace{\quad}_{-9} \underbrace{\quad}_{-11} \underbrace{\quad}_{-13} \underbrace{\quad}_{-15}$

Q.4) 17, 78, 26, 89, 35, __80__

+9 → +9 →
−9, −9

Q.5) 221, __192__, 165, 140, 117, 96

$\underbrace{\quad}_{-29} \underbrace{\quad}_{-27} \underbrace{\quad}_{-25} \underbrace{\quad}_{-23} \underbrace{\quad}_{-21}$

Q.6) 3240, 540, 108, 27, __9__, 4.5

$\div 6 \quad \div 5 \quad \div 4 \quad \div 3 \quad \div 2$

Q.7) 3.25, 6.5, 19.5, 78, 390, __2340__

$\times 2 \quad \times 3 \quad \times 4 \quad \times 5 \quad \times 6$

Q.8) 14, 30, 52, 80, 114, __154__

$\underbrace{\quad}_{16} \underbrace{\quad}_{22} \underbrace{\quad}_{28} \underbrace{\quad}_{34} \underbrace{\quad}_{40}$

$\underbrace{\quad}_{6} \underbrace{\quad}_{6} \underbrace{\quad}_{6} \underbrace{\quad}_{6}$

Q.9) a) Find the odd one in the following series

172, 155, 121, (71), 2, −83

$\underbrace{\quad}_{-17} \underbrace{\quad}_{-34} \underbrace{\quad}_{-50} \underbrace{\quad}_{-69} \underbrace{\quad}_{-85}$

17×1   17×2   17×3   17×4   17×5

Correct no. should be 70.

9) 4.2, 6.2, 18.6, (20.4), 61.8, 63.8

+2   ×3   +2   ×3   +2

Correct no. should be 20.6.

10) G^7, $\underline{K}^{11}$, O^{15}, S^{19}, W^{23}

4   4   4   4

11) DE, 4H, JK, $\underline{MN}$, PQ

45   78   1011   1617

3   3   3   3   3

12) W23, T20, $\underline{Q17}$, N14

13) PK, SH, VB, $\underline{YB}$

1611   198   225   252

14) 3M, 5M, 7J, $\underline{9S}$, 11N

March   May   July   September   November

+2 throughout

Q.1) Given the sequence of terms AD, CG, FK, JP, the next term is

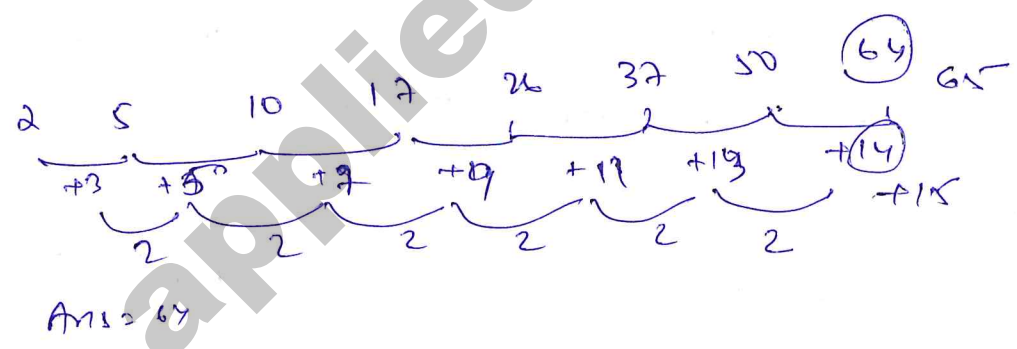(a) OV   (b) OW   (c) PV   (d) PW   (GATE 2012)

OR

Ans = OV.
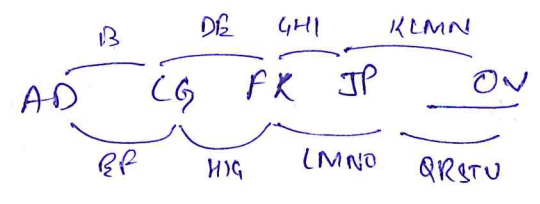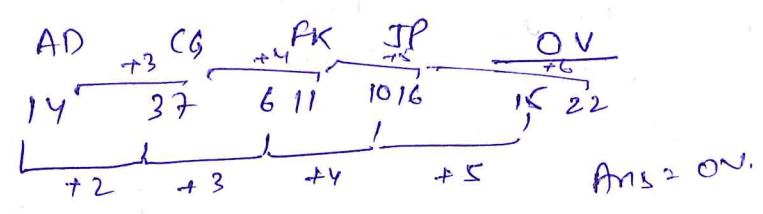
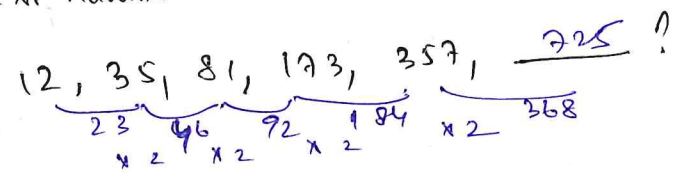Q.2) Which number does not belong in the series below?   (GATE 2014)
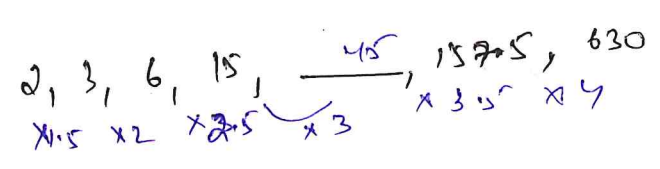
2, 5, 10, 17, 26, 37, 50, 64

(a) 17   (b) 37   (c) 64   (d) 26

Ans = 64

(GATE 2014)

Q.3) What is the next number in the series

12, 35, 81, 173, 357, __725__ ?

(GATE 2014)

Q.4) Fill in the missing number in the series.

2, 3, 6, 15, ___45___, 157.5, 630

Q.5) The next number in the series   (GATE 2014)

$$81, \quad 54, \quad 36, \quad 24, \quad \underline{16}$$

$\div 3 \times 2 \quad \div 3 \times 2 \quad \div 3 \times 2 \quad \div 3 \times 2$

Q.6) Find the odd one from the following group: (GATE 2014)

WEKO   IQWA   FNTX ,   NVBD ⇒ ODD
23 5 11 15   9 17 23 1   6 14 20 24   14 22 2 4
8 6   4   8 6 4   8 6 4   8 6 2
     31   27   28 30

Q.7) Find the odd one in the following group   (GATE 2014)

QWZB ,   BHKM ,   WCGJ , ⇒ ODD   MSVX
17 23 26 2   2 6 11 13   23 3 7 11   13 19 22 24
   6 3 2   6 3 2   6 4 4   6 3 2
        28   29

Q.8) Find the next term in the sequence   (GATE 2014)

$$7G, \quad 11K, \quad 13M, \quad \underline{17Q} \quad ?$$

$+4 \qquad +2 \qquad +4$

Q.9) Find the missing sequence   (GATE 2015)

A , CD , GHI , $\underline{MNOP}$, UVWXY
  B   EF   JKL   QRST

(a) LMN   (b) MNO   (c) MNOP   (d) NOPQ

Q.10) Pick the odd one out of the following   (GATE 2016)

13 , 23, 33 , 43, 53
          ↓
      Non Prime

(a) 23   (b) 33   (c) 43   (d) 53

Q.11) The number that least fits this set :

(GATE 2014)

324 , 441, 97, 64 in
 ↓   ↓   ↓   ↓
18^2 21^2 odd 8^2

(a) 324,   (b) 441   (c) 97   (d) 64

Q.12) Pick the odd one from the following options :   (GATE 2016)

(a) CADBE   b) JHKIL   (c) X VYWZ   d) ONPMQ

C A D B E
3 1 4 2 5
  -2 +3 +2 +3

J H K I L
10 8 11 9 12
 -2 +3 -2 +3

X V Y W Z
24 22 25 23 26
  -2 +3 -2 +3

O N P M Q =) ODD.
15 14 16 13 17
  -1 +2

Q.13) Find the missing sequence   (GATE 2016)

B,   FH,   LNP,   TVXZ

2   6 8   12 14 16   20 22 24 26
  ⌣   ⌣   +2
   4   +2   4   +2 +2   4 →

Q.14) Find the missing group of letters   (GATE 2018)

BC ,   FGH,   LMNO,   TUVWX

2 3   6 7 8   12 13 14 15   20 21 22 23 24
  ⌣   ⌣   ⌣
   3   4   5

Q.15) Find the next term in the sequence   (GATE 2018)

13M, 17Q , 19S, 23W ?
   ⌣   ⌣   ⌣
    +4   +2   +4