MODULE 3 – SERIES

1. 18, 37, 76, 155,____, 633, 1272
(a) 322 (b) 314 (c) 341 (d) 250

Solution:
The sequence is as follows 18, 18 x 2 + 1, 37 x 2 + 2, 76 x 2 + 3, 155 x 2 + 4 = 314. So option (b) is the correct answer.

2. **-1, 0, 1, 0, 2, 4, 1, 6, 9, 2, 12, 16, ? ? ?**
(a) 11, 18, 27 (b) -1, 0, 3 (c) 3, 20, 25 (d) Cannot be ascertained

Solution:
There are three series alternating inside this series and the terms of the three series are at intervals and of three places. Thus, the 1st, 4th, 7th, and 10th terms form the sequence -1, 0, 1, 2 and hence the 13th term would be 3.
Similarly, the 2nd, 5th, 8th, and 11th terms form the sequence 0, 2, 6, 12, and hence the 14th term would be 20 (as the series follows the logic +2, +4, +6 and hence would next need a +8).
The remaining sequence is 1, 4, 9, 16 and hence the 15th term would be 25. Option (c) is the correct answer.

3. Find the odd man out: 253, 136, 352, 324, 631, 244
(a) 324 (b) 136 (c) 352 (d) 631

Solution:
The sum of all three digits come to 10, except 324.

4. Find the odd man out: 16, 25, 36, 72, 144, 196, 225
(a) 225 (b) 196 (c) 72 (d) 36

Solution:
All are perfect square numbers except 72

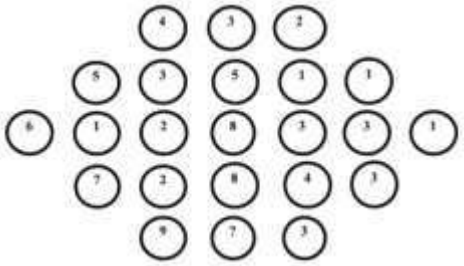
5. 17, 19, 23, 29,? , 37
(a) 31 (b) 33 (c) 35 (d) 37

Solution:
All are consecutive prime numbers, hence the missing number is 31.

6. In the following question below, one term in the number series is wrong. Find out the wrong term.
10, 26, 74, 218, 654, 1946, 5834
(a) 654 (b) 26 (c) 1946 (d) 218

Solution:
The relationship between the numbers is that there is a pattern to the additions between the consecutive terms of the series. Thus 10+16=26; 26+48=74; 74+144=218; 218+432=650; 650+1296=1946 & 1946+3888=5834. If you notice the numbers being added, you see that they form a GP: 48, 144, 432, 1296, and 3888. Thus, clearly the number 654 doesn't fit in the given series. Hence the correct answer is an option (a).

7. What number should replace the question mark?



(a) 1 (b) 4 (c) 12 (d) 6

Solution:
The value of the middle number in every row is equal to half the sum of the other numbers in the row. This can be viewed by looking at any of the first four rows. In the first row (4+2)/2 = 3; a similar logic exists for the other rows. The missing number is (9+3)/2 = 6.

8. Find the missing number in the following set:

2	4	6	8	10
2	14	34	?	98

(a) 30 (b) 62 (c) 42 (d) 78

Solution:
The logic of the second row is, the square of the number immediately above it – 2.
Thus, $2^2 - 2 = 2$; $4^2 - 2 = 14$; $6^2 - 2 = 34$; hence, $8^2 - 2 = 62$.

9. In this number grid insert the missing number at the sign of interrogation.

8	4	9	5
5	7	3	4
3	4	5	8
39	44	60	?

(a) 62 (b) 72 (c) 60 (d) 70

Solution:
The logic for each column is fixed: So the first column has 39 at the bottom because (8 + 5) x 3 = 39.
Similarly, in the second column, we have: (4 + 7) x 4 = 44.
In the third column we have: (9 + 3) x 5 = 60

In the fourth column we would get: (5 + 4) x 8 = 72. Option (b) is correct.

10. 2, 3, 18, 115, 854, ?
(a) 7776 (b) 7767 (c) 6676 (d) 6667
Solution:
$3 = 2 \times 1 + 1^2$
$18 = 3 \times 3 + 3^2$
$115 = 18 \times 5 + 5^2$
$854 = 115 \times 7 + 7^2$
$854 \times 9 + 9^2 = 7686 + 81 = 7767$

11. Find the odd man out: 35, 19, 11, 7, 5, 4.5, 3.5
(a) 3.5 (b) 4.5 (c) 19 (d) 7
Solution:
35-19 = 16
19-11 = 8
11-7 = 4
7-5 = 2
5-4 = 1
4-3.5 = .5
The difference is halved every time. Thus the wrong number is 4.5, it should be 4.

12. 21, 77, 165, 285, ?
(a) 437 (b) 869 (c) 591 (d) 525
Solution:
$21 = 5^2 - 4$
$77 = 9^2 - 4$
$165 = 13^2 - 4$
$285 = 17^2 - 4$ Hence, $437 = 21^2 - 4$

13. 15, 51, 216, 1100, ?, 46452
(a) 6530 (b) 6560 (c) 6630 (d) 6650
Solution:
15 * 3 + 3 * 2 = 51
51 * 4 + 4 * 3 = 216
216 * 5 + 5 * 4 = 1100
1100 * 6 + 6 * 5 = 6630
6630 * 7 + 7 * 6 = 46452

14. 4, 18, 100, 294, _____

(a) 1000 (b) 1100 (c) 1210 (d) 1452
Solution:
$2^3 - 2^2 = 4$
$3^3 - 3^2 = 18$
$5^3 - 5^2 = 100$
$7^3 - 7^2 = 294$
So, $11^3 - 11^2 = 1210$

15. 2, 30, 130, 350, _____
(a) 512 (b) 520 (c) 729 (d) 738

Solution:
$2 = 1^3 + 1$
$30 = 3^3 + 3$
$130 = 5^3 + 5$
$350 = 7^3 + 7$
So next term will be $9^3 + 9 = 738$

16. 12, 54, 144, 300, 540, 882, ?
(a) 1234 (b) 1314 (c) 1344 (d) 1446
Solution:
$(2^2) * 3 = 12$
$(3^2) * 6 = 54$
$(4^2) * 9 = 144$
$(5^2) * 12 = 300$
$(6^2) * 15 = 540$
$(7^2) * 18 = 882$
$(8^2) * 21 = 1344$

17. Find the next number in the following series: 2, 6, 12, 20, 30, 42, 56, ?
(a) 61 (b) 64 (c) 72 (d) 70
Solution:
2 + 4 = 6
6 + 6 = 12
12 + 8 = 20
20 + 10 = 30
30 + 12 = 42
42 + 14 = 56
56 + 16 + 72

18. Find the odd man out: 125, 106, 88, 76, 65, 58, 53
(a) 125 (b) 106 (c) 88 (d) 76
Solution:
Add series of prime numbers starting from 5 to get the next number
53 + 5 = 58
58 + 7 = 65
65 + 11 = 76
76 + 13 = 89
89 + 17 = 106
106 + 19 = 125
Hence, 88 is the odd one out.

19. Find the odd man out: 1, 3, 10, 21, 64, 129, 356, 777
(a) 3 (b) 64 (c) 129 (d) 356
Solution:
1 = 1
3 = 3
10 = 1 + 0 = 1

21 = 2 + 1 = 3
64 = 6 + 4 = 10 = 1+ 0 = 1
129 = 1 + 2 + 9 = 12 = 1 + 2 = 3
356 = 3 + 5 + 6 = 14 = 1 + 4 = 5 (The sum should be one. Hence, it is wrong)
777 = 7 + 7 + 7 = 21 = 2 + 1 = 3

20. Find the odd man out: 3, 7, 15, 39, 63, 127, 255, 511
(a) 15 (b) 39 (c) 63 (d) 127
Solution:
3 * 2 + 1 = 7
7 * 2 + 1 = 15
15 * 2 + 1 = 31
31 * 2 + 1 = 63
Hence, 39 is the odd element

LETTER SERIES

1. Which letter should be the tenth letter to the left of the ninth letter from the right, if the first half of the alphabets of English is reversed?
(a) D (b) F (c) E (d) I
Solution:
We are looking for the 19th letter from the right in the series:
MLKJIHGFEDCBANOPQRSTUVWXYZ.
The letter would be F as can be counted from the above series. Option (b) is correct.

2. What is the next term in the following series? ABE, BCF, CDG, DEH, EFI, _____
(a) FGK (b) FGJ (c) FGL (d) None of these
Solution:
The first two letters in the terms are continuous and it has a pattern - AB, BC, CD, DE, EF and hence the next term should be FG
The third letter in the terms is continuous and it has a pattern – E, F, G, H, I and hence the next term should be J.
Hence the answer is an option (b).

3. Find the missing term: ABXW, EFTS, ?, MNLK
(a) IJOP (b) IJPO (c) JIOP (d) JIPO
Solution:
First and second terms are in alphabetical order, while third and fourth terms are in reverse order. Therefore, the missing term is IJPO. Hence the answer is an option (b).

4. Find the next term in the series: R, K, F, C, ?
(a) A (b) D (c) E (d) I
Solution:
R-7, K-5, F-3, C, ___
The values that are subtracted are consecutive prime numbers in decreasing order.
Hence, the next letter in the series is C - 2 = A.

5. Find the missing term: PKC, SPF, XSK, AXN,___, IFV
(a) CAQ (b) FCS (c) FAS (d) CFS
Solution:

The given series is a mixed series. Pattern for the first letter:
P+3, S+5, X+3, A+5, F+3, I
Pattern for the second letter:
K+5, P+3, S+5, X+3, A+5, F
Pattern for the third letter:
C+3, F+5, K+3, N+5, S+3, V
Hence, the missing group is FAS.

6. Find the next terms in the following series:
N, O, M, P, L, Q, K, R, _ _ _
(a) J, S, I (b) G, S, I (c) G, S, J (d) G, T, J
Solution:
Odd Series: N, M, L, K, J, I….
Even Series: O, P, Q, R, S, T….
So the Answer will be J, S, I

7. What is the next term in the following series: O, T, T, F, F, S, S, _____
(a) P (b) T (c) E (d) R
Solution:
One
Two
Three
Four
Five
Six
Seven
Eight
Observe the first letter of each word. Hence, the answer is E

8. Find the next letter in the following sequence: y, w, v, t, r, p, n, ?
(a) m (b) l (c) k (d) j
Solution:
(y w) (v t) (r p) (n ?)
One letter gap
y-w
v-t
r-p
n-l
Hence, option B

9. The word **CONGRATULATIONS** is first written in reverse order and then written in alphabetical order. The letters remaining in the same position are?
(a) 0 (b) 1 (c) 2 (d) 3
Solution:
CONGRATULATIONS
Reverse Order SNOITALUTARGNOC
Alphabetical Order AACGILNNOORSTTU
“R” is the only letter remaining in the same position
10. Complete the series: E-5, G-7, I-9, K-11, ?

(a) L-13, N-14 (b) L-12, M-14 (c) M-13, O-15 (d) K-12, M-14

Solution:

Letters and its corresponding alphabetical position. Hence, option (b) is correct.

11. In the question below, three incomplete rows of letters/numerals are given which correspond to each other in some way. Find the letters/numerals which come in the vacant places marked by "?"

-	A	D	A	C	B	-	-	B	D	C	C
1	3	-	-	1	2	4	2	-	-	-	-
a	-	-	b	-	-	c	d	?	?	?	?

(a) a,c,d,d (b) d,a,c,c (c) c,a,d,d (d) d,c,a,a

Solution:

If we look vertically through the columns, you would be able to see that:

i. The capital letter C, corresponds to the digit 1, which in turn corresponds to the small letter a.

ii. The capital letter B, corresponds to the digit 2, which in turn corresponds to the small letter d.

iii. The capital letter D, must be corresponding to the digit 4, which in turn corresponds to the small letter c.

Hence, the correct sequence for the question marks would be d,c,a,a. Option (d) is correct.

12. Select the correct option to fill in the blank space/s:

c_bba_cab_ac_ab_ac

(a) b,c,b,a,c (b) c,a,b,c,b (c) a,c,c,b,c (d) a,c,b,c,b

Solution:

The best way to check a question like this is to fit in the four options in the blanks and check the full series. The following series get built when we do so for each of the options:

Option (a) – cbbbaccabbacaabcac

Option (b) – ccbbaacabbaccabbac

Option (c) – cabbaccabcacbabcac

Option (d) – cabbaccabbaccabbac

A closer look at the four options shows us that the fourth option has a pattern which goes as follows: cab bac cab bac cab bac. None of the other options shows any consistency in its pattern. Hence, Option (d) is the correct answer.

13. Find the missing alphabet.

H	C	?
B	F	E
P	R	T

(a) Y (b) O (c) D (d) G

Solution:

A quick look at the placing of the alphabets from A to Z as 1 to 26 shows us that the given figure will look as follows:

8	3	?
2	6	5
16	18	20

It is obvious once we see this that the number in the third row is simply the product of the numbers in the first two rows above it as 8 x 2 = 16, 3 x 6 = 18. Hence 4 x 5 = 20 and the missing alphabet is the 4th alphabet in alphabetical order. Thus, the missing alphabet is D, and option (c) is the correct answer.

14. Select the correct option to fill in the blank space/s:
D_F_DEE_D_EF_DE_F
(a) EFFDED (b) EFFDDF (c) EFFDFE (d) None of these
Solution:
Options (a) and (b) do not make any sense if they are put in the blanks of the series sequence:
DEFFDEEFDDEFEDEDF using the option (a) shows no consistent pattern.
Similarly, the sequence DEFFDEEFDDEFDDEFF got by using option (b) also shows no consistent pattern and hence can be rejected.
The sequence formed using option (c) is
DEFFDEEFDDEFFDEEF. This sequence makes sense if you were to break the sequence into 3 terms at a time. You will get the sequence as DEF – FDE – EFD – DEF – FDE – EF
In the above sequence it can be seen that there is always a sequential order in which the three letters appear and also the second group of 3 alphabets starts from the last letter of the first group of 3 alphabets. And this trend continues uninterrupted throughout the sequence. Hence, we can mark option (c) as the correct answer.

15. Complete the following series by replacing the ?:
TBLD, VEPI, XHTN,?
(a) ZJVP (b) ZVJP (c) ZKXS (d) ZKXP
Solution:
The four series that are running in the words are:
1. First letter of every word: T, V, X. So, the missing letter in Z (as there is one letter missing between T and V, so also between V and X). Thus, after X we would skip Y and use Z as the first letter of the last word.
2. Second letter of every word: is B, E, H. So, the missing letter is K (as there are two letters missing between B and E, so also between E and H). Thus, after H we would skip I and J and use K as the second letter of the last word.
3. Third letter of every word: L, P, T. So, the missing letter is X (as there are three letters missing between L and P, so also between P and T). Thus, after T we would skip U, V, and W and use X as the third letter of the last word).
4. Similarly D-I-N-S (Skip 4 letters).
Thus, the correct answer would be ZKXS. Option (c) is correct.

16. What is the next letter in the series?
U, F, Q, J, M , N, ?
(a) I (b) T (c) O (d) M
Solution:
There are two series intertwined in the given series.
F – J – N (skip 3 alphabets)
U – Q – M (skip 3 alphabets in the opposite order).

The next letter would depend on the second series above. After M, the 3 letters to be skipped are L, K, J and hence 'I' should be the next letter in the series. Option (a) is correct.

17. Replace the question mark with the right option.
BZ, HT, NN, ?, ZB
(a) LF (b) SX (c) TH (d) TI
Solution:
For the first alphabet add 6 to the position number to get the next first alphabet of the next element of the series and for the second alphabet subtract 6 from the position and we'll get the required number. Option (c) is correct.

18. The letters skipped between adjacent letters are in the order of 1, 2, 3, 4… Which alternative follows this rule?
(a) EFJNS (b) EGJOS (c) EGJNS (d) EGJNT
Solution:
Option C) EGJNS follows the skipping of 1, 2, 3 & 4 letters respectively as we can see in EFGHIJKLMNOPQRS

19. Find out the missing term: ABCDEFG, GABCDEF, FGABCDE, ?
(a) EFGABCD (b) GABCDEF (c) EFGABCDE (d) FGABCDE
Solution:
The next term is formed by removing the last alphabet in the previous term and attaching it to the first alphabet of the next. Hence, the next term in the series would be EFGABCD. So, the answer is an option (a)

20. What is the next term in the following series?
ZYXWTSRQNMLK
(a) I (b) G (c) H (d) J
Solution:
The given series starts with the last 4 alphabets of the English language and then gives a break of 2 alphabets, followed by the next four alphabets and so on. Hence, the next term in the series would be H (after skipping J and I). So option (c) is the answer.