

## Comprehensive Test Series-3

### Arithmetic Progression

TIME: 1.5 hr

MM: 45

#### General Instructions:

- All Questions are compulsory.
  - Marks are given alongwith the questions individually.
  - Use of calculator is not permitted.
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- Q.1 Find the sum of integers from 1 to 100 that are divisible by 2 or 5. (3050)
- Q.2 Show that the sum of  $(m + n)^{\text{th}}$  and  $(m - n)^{\text{th}}$  terms of an A.P. is equal to twice the  $n^{\text{th}}$  term.
- Q.3 If the sum of three numbers in A.P. be 24 and their product is 440, find the numbers.  
(5,8,11 or 11, 8,5)
- Q.4 Let the sum of  $n, 2n, 3n$  terms of an A.P. be  $S_1, S_2$  and  $S_3$  respectively, show that  $S_3 = 3(S_2 - S_1)$ .
- Q.5 Find the sum of all numbers between 200 and 400 which are divisible by 7. (8729)
- Q.6 Find the sum of integers from 1 to 100 that are divisible by 2 or 5. (3050)
- Q.7 Find the sum of all two digit numbers which when divided by 4, yield 1 as remainder. (1210)
- Q.8 The sum of first four terms of an A.P. is 56. The sum of the last four terms is 112. If its first term is 11, then find the number of terms. (11)
- Q.9 150 workers were engaged to finish a job in a certain number of days. 4 works dropped out on the second day, 4 more workers dropped out on the third day and so on. It took 8 more days to finish the work.. Find the number of days in which the work was completed. (25 days).
- Q.10 Find the sum of all natural numbers between 50 and 500 which are divisible by 3 and 5. (8325)
- Q.11 Find the A.P. whose  $n^{\text{th}}$  term is
- (a)  $9 - 5n$  (4, -1, -6, -11,...)
- (b)  $6 - n$  (5, 4, 3, 2.....)

(c)  $5 + 2n$

(7, 9, 11, 13...)

(d)  $3 + 4n$

(7, 11, 15, 19...)

(e)  $2n + 7$

(9, 11, 13, 15...)

Q.12 If the first term of an A.P. is 2 and the sum of first five terms is equal to one-fourth of the sum of the next five terms, then:

(i) Show that  $a_{20} = -112$

(ii) find the sum of first 30 terms (-2550)

Q. 13 Find A.P. whose sum to  $n$  terms is  $2n^2 + n$ .

Q. 14 The first term of an A.P is 5, the common difference is 3 and the last term is 80; find the number of terms. (26)

Q. 15 If 9<sup>th</sup> term of an A.P is zero, prove that its 29<sup>th</sup> term is double the 19<sup>th</sup> terms.

Q.16 If 10 times the 10<sup>th</sup> term of an A.P. is equal to 15 times the 15<sup>th</sup> term, show the 25<sup>th</sup> term of the A.P is zero.

Q. 17 In a certain A.P the 24<sup>th</sup> term is twice the 10<sup>th</sup> term .Prove that the 72<sup>nd</sup> term is twice the 34<sup>th</sup> term.