BHARATH COACHING CENTRE

10th CBSE	Arithmetic Progressions (Series)	Total: 50
Maths	SA – II	Time: 1.30hrs

Section A — 5 X 1 = 5

1. Find the sum of all even natural number less than 100.
2. In an AP, if a = 1, a_n = 20and S_n = 20 and S_n = 420, then find the value of n.
3. Sum of first n terms of a series is $5n^2 + 2n$, find the second term of this series.
4. Find the sum of first 10 multiples of 2.
5. Find the sum of first n terms of the series $\sqrt{2} + \sqrt{8} + \sqrt{18} + \cdots$

Section B — 5 X 2 = 10

6. If the n^{th} term of an A.P. is $T_n = 2n + 1$; find its sum to n terms.
7. Solve: 1 + 6 + 11 + 16 + … + x = 148.
8. The sum of first n terms of a certain series is given as $3n^2 - 2n$. Show that the series is an arithmetic series.
9. The sum of first six terms of an arithmetic progression is 42. The ratio of its 10^{th} term to its 30^{th} term is 1 : 3. Calculate the first and the thirteenth term of the A.P.
10. If the sum of m terms of an A.P. is the same as the sum of its n terms, show that the sum of its (m + n) terms is zero.

Section C — 5 X 3 = 15

11. How many terms of the AP: 9, 17, 25, … must be taken to get a sum of 450?
12. The sum of first 7 terms of an AP is 10 and that of next 7 terms is 17. Find the progression.
13. If the sum of first m terms of an A.P is n and the sum of first n terms is m, then show that the sum of its first (m + n) terms is –(m + n).
14. If the p^{th} term of an A.P is $\frac{1}{q}$ and the q^{th} term is $\frac{1}{p}$, show that the sum of first pq terms is $\frac{(pq+1)}{2}$.
15. Find the sum of the first 2n terms of the following series. $1^2 - 2^2 + 3^2 - 4^2 + \cdots$

Section D — 6 X 1 = 6

16. The sum of the third and seventh terms of an A.P. is 6 and their product is 8. Find the sum of first sixteen terms of the A.P.
17. If there are (2n + 1) terms in A.P., then prove that the ratio of the sum of odd terms and the sum of even terms is (n + 1) : n.
18. The sum of the first p, q, r terms of an A.P are a, b, c respectively. Show that $\frac{a}{p}(q-r) + \frac{b}{q}(r-p) + \frac{c}{r}(p-q) = 0$
19. The ratio of the sums of m and n terms of an AP is $m^2 : n^2$. Show that the ratio of the mth and nth terms is (2m - 1) : (2n - 1).
20. Find the sum of all numbers between 100 and 200 which are not divisible by 5.