



### Sample Questions for Section on Numerical Value-Mathematics

**Q.1:** Let  $\alpha$  and  $\beta$  be two roots of the equation  $x^2+2x+2=0$ , then  $\alpha^{15}+\beta^{15}$  is equal to\_\_\_\_\_.

**Answer:** 256

**Q.2:** Consider a group of 5 females and 7 males. The number of different teams consisting of 2 females and 3 males, that can be formed from this group, if there are two specific males A and B, who refuse to be the member of the same team, is \_\_\_\_\_.

**Answer:** 300

**Q.3:** Let  $a_1, a_2, a_3, \dots$  be an A.P.,  $S = \sum_{i=1}^{30} a_i$  and  $T = \sum_{i=1}^{15} a_{2i-1}$ . If  $a_7=37$ , and  $S-2T=75$ , then  $a_{15}$  is equal to\_\_\_\_\_.

**Answer:** 77

**Q.4:** If  $y = y(x)$  is the solution of the differential equation  $x \frac{dy}{dx} + 2y = x^2$  satisfying  $y(1) = 1$ , then  $16y(1/2)$  is equal to \_\_\_\_\_.

**Answer:** 49

**Q.5:** If  $\vec{a} = i - j$ ,  $\vec{b} = i + j + k$  and  $\vec{c}$  be a vector such that  $\vec{a} \times \vec{c} + \vec{b} = \vec{0}$  and  $\vec{a} \cdot \vec{c} = 4$ , then  $|\vec{c}|^2$  is equal to\_\_\_\_\_.

**Answer:** 9.5