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## **10th CBSE MATHEMATICS 2018**

### **SECTION A**

- 1.1 Find the value of  $k$  for which the roots of the quadratic equation  $(k-5)x^2 + 2(k-5)x + 2 = 0$  are equal.
- 1.2 Find the value of  $y$  for which the distance between the points  $(2, -3)$  and  $(10, y)$  is 10 units.
- 1.3 Write whether the rational number  $\frac{13}{3125}$  has a decimal expansion which is terminating or non-terminating repeating.
- 1.4 Write the  $n^{th}$  term of the A.P.  $\frac{1}{k}, \frac{1+k}{k}, \frac{1+2k}{k}, \dots$
- 1.5 If  $\sin \theta + \cos \theta = \sqrt{2} \cos(90^\circ - \theta)$ , find the value of  $\cot \theta$ .
- 1.6 DE is drawn parallel to the base BC of  $\triangle ABC$ , meeting AB at D and AC at E. If  $\frac{AB}{CD} = 4$  and  $CE = 2$  cm, find AE.

### **SECTION B**

- 2.1 A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball is three times that of drawing a red ball, find the number of blue balls.
- 2.2 The  $5^{th}$  and  $15^{th}$  terms of an A.P. are 13 and  $-17$  respectively. Find the sum of the first 21 terms.
- 2.3 Using Euclid's Division Algorithm, find the HCF of 225 and 867.
- 2.4 If the point  $(0, 2)$  is equidistant from  $(3, k)$  and  $(k, 5)$ , find the value of  $k$ .
- 2.5 Find the value of  $a$  for which the pair of linear equations  $2x + 3y = 7$  and  $4x + ay = 14$  has infinitely many solutions.

### **SECTION C**

- 3.1 Show that any positive odd integer is of the form  $4q + 1$  or  $4q + 3$  for some integer  $q$ .
- 3.2 The ten's digit of a number is twice its unit's digit. The number obtained by interchanging the digits is 36 less than the original number. Find the original number.
- 3.3 The line segment joining  $A(2, 1)$  and  $B(5, -8)$  is trisected at points  $P$  and  $Q$ . If  $P$  lies on the line  $2x - y + k = 0$ , find the value of  $k$ .
- 3.4 Show that  $1, \frac{1}{2}$  and  $-2$  are the zeroes of the polynomial  $2x^3 + x^2 - 5x + 2$ .
- 3.5 Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line segment joining the points of contact at the centre.