

## CLASS – X SUB. – MATHEMATICS

- (1) Question numbers 1 to 5 are of one mark each, 6 to 8 are of two marks each, 9 to 11 are of three marks each.

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1. Use Euclid's division lemma to find the HCF of 210 and 55.
  2. Find a quadratic polynomial whose zeros are  $2 + \sqrt{3}$  and  $2 - \sqrt{3}$ .
  3. Find the value of  $k$  for which the given system of equations has infinitely many solutions.  $2x + (k - 2)y = k$  and  $6x + (2k - 1)y = 2k + 5$ .
  4. Give the relationship among mean, median and mode.
  5. A die is thrown. Find the probability of getting (i) a multiple of 2 or 3  
(ii) an even prime number.
  6. Find all the zeros of the polynomial  $f(x) = 2x^4 - 2x^3 - 7x^2 + 3x + 6$ . If its two zeros are  $\sqrt{\frac{3}{2}}$  and  $-\sqrt{\frac{3}{2}}$ .
  7. If  $AD$  and  $PM$  are the medians of  $\triangle ABC$  and  $\triangle PQR$ , respectively where  $\triangle ABC \sim \triangle PQR$ . Prove that  $\frac{AB}{PQ} = \frac{AD}{PM}$ .
  8. Prove that  $\sqrt{3} + \sqrt{5}$  is an irrational number.
  9. State and prove basic proportionality theorem.
  10. If the median of the following frequency distribution table is 28.5. find the missing frequencies  $x$  and  $y$ .

| Class     | 0 – 10 | 10 – 20 | 20 – 30 | 30 – 40 | 40 – 50 | 50 – 60 | Total |
|-----------|--------|---------|---------|---------|---------|---------|-------|
| frequency | 5      | $x$     | 20      | 15      | $y$     | 5       | 60    |

11. The sum of a two digit number and the number formed by interchanging the digits is 132. If 12 is added to the number, the new number becomes 5 times the sum of the digits. Find the number.

**OR**

A motor boat can travel 30 km upstream and 28 km downstream in 7 hours. It can travel 21 km upstream and 21 km downstream in 5 hours. Find the speed of the boat in still water and the speed of stream.