## <u>CLASS X<sup>TH</sup></u>

## **TEST OF REAL NUMBERS AND POLYNOMIALS**

## Time allowed: 1.5 Hours

## Maximum marks: 45

- Find the LCM and HCF of the following integers by applying the prime factorisation method: (2)
   (i) 592 and 252 (ii) 506 and 1155
- 2. Verify that the numbers given alongside the cubic polynomials below are their zeros. Also, verify the relationship between the zeros and coefficients in each case: (4)
  (*i*) f(x) = 2x<sup>3</sup> + x<sup>2</sup> 5x + 2; 1/2, 1, -2
  (ii) g(x) = x<sup>3</sup> 4x<sup>2</sup> + 5x 2; 2, 1, 1
- 3. Find a cubic polynomial with the sum, sum of the product of its zeroes taken two at a time, and product of its zeros as 3, -1 and -3 respectively. (2)
- 4. Find the zeroes of each of the following quadratic polynomials and verify the relationship between the zeroes and their coefficient: (6)
  (i) f(x) = x<sup>2</sup> 2x 8
  (ii) g(s) = 4s<sup>2</sup> 4x + 1
  (iii) h(t) = t<sup>2</sup> 15
- 5. A merchant has 120 liters of oil of one kind, 180 liters of another kind and 240 liters of third kind. He wants to sell the oil by filling the three kinds of oil in tins of equal capacity. What should be the greatest capacity of such a tin? (3)

- 6. 144 cartons of Coke Cans and 90 cartons of Pepsi Cans are to be stacked in a Canteen. If each stack is of the same height and is to contain cartons of the same drink, what would be the greatest number of cartons each stack would have? (3)
- 7. Two brands of chocolates are available in packs of 24 and 15 respectively. If I need to buy an equal number of chocolates of both kinds, what is the least number of boxes of each kind I would need to buy? (3)
- 8. Explain why 7 × 11 × 13 + 13 and 7 × 6 × 5 × 4 × 3 × 2 × 1 + 5 are composite numbers (1)
- 9. Given that HCF (306, 657) = 9, find LCM (306, 657). (2)
- 10. Find the LCM and HCF of 6 and 20 by the prime factorisation method. (1)
- 11. Find the HCF and LCM of 6, 72 and 120, using the prime factorisation method. (1)
- 12. Find the zeroes of the quadratic polynomial  $x^2 + 7x + 10$ , and verify the relationship between the zeroes and the coefficients. (2)
- 13. Find the zeroes of the polynomial  $x^2 3$  and verify the relationship between the zeroes and the coefficients. (2)
- 14. Find a quadratic polynomial each with the given numbers as the sum and product of its zeroes respectively. (3)
  (i) -1, 1/4 (ii) 1/2, 3 (iii) 0,√5
- 15. Prove that  $\sqrt{3}$  is irrational. (3)

- 16. During a sale, colour pencils were being sold in packs of 24 each and crayons in packs of 32 each. If you want full packs of both and the same number of pencils and crayons, how many of each would you need to buy? (2)
- 17. Prove that  $\sqrt{a} + \sqrt{b}$  is irrational. (2)
- 18. Prove that the following are irrationals : (3) (i)  $1/\sqrt{2}$ (2)  $3+2\sqrt{5}$