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HLT 1

Date: __ / __ / ____ Name: _____ Max Marks: 40

Section- A (One Marks Each)

1 Find the standard quadratic polynomial having sum and product of zeroes are -2√3, -9 respectively.

2 Represent in rational form: 1.232323….

3 Find the zeroes of the polynomial expression and then verify the relation between zeroes and coefficients: $2x^2 + 7/2\ x + 3/4$

4 If m and n are the zeroes of the polynomial $3x^2 + 11x - 4$, find the value of $(m/n) + (n/m)$

5 Apply Euclid's division lemma to find the HCF of 441,567,683.

6 Express 13860 as a product of its prime factors.

7 Is the following fraction a termination fraction? $(\frac{3}{5} + \frac{2}{3})$

8 The product of two numbers is 86400. If their LCM is 720, find their HCF.

Section-B (Two Marks Each)

9 Find the HCF and LCM of 90 and 144 by prime factorization method.

10 If α and β are the zeroes of the quadratic polynomial $f(x) = x^2 - px + q$, then find the value of $\frac{1}{\alpha} + \frac{1}{\beta}$.

11 Using Euclid Division Algorithm, find the largest number that divides 1251, 9377 and 15628 leaving remainders 1, 2 and 3 respectively.

12 If n is an odd integer, then show that $n^2 - 1$ is divisible by 8.

13 If p and q are the zeroes of $p(x) = kx^2 - 3x + 2k$ and $p + q = pq$ then find the value of k.

14 Is the pair of the numbers (630, 221) co-prime? Justify your answer.

Section-C (Three Marks Each)

15 Use Euclid's division lemma to show that the cube of any integer is of the form 9m, 9m+1 or 9m+8.

16 Given that √2 is a zero of the cubic polynomial $6x^3 + √2x^2 - 10x - 4√2$, find its other two zeroes.

17 In a seminar, there are 60 Hindi teachers, 84 English teachers and 108 mathematics teachers. If in each seminar room the same number of teachers to be seated, with all teachers being of the same subject, find the minimum number of rooms required.

18 Proves that √p + √q is irrational, where p, q are primes.

Section-D (Four Marks Each)

19 For which values of 'a' and 'b', are the zeroes of $g(x)=x^3 + 2x^2 + a$ also the zeroes of the polynomials $p(x)=x^5 - x^4 - 4x^3 + 3x^2 + 3x + b$? Which zeroes of p(x) are not the zeroes of g(x).

20 Show that one and only one out of n, n + 4, n + 8, n + 12 and n + 16 is divisible by 5, where n is any positive integer.