1. Real Numbers

8 Marks:

1) Prove that $2+5\sqrt{3}$ is irrational
2) Prove that $\sqrt{5}$ is irrational
3) Prove that $6+\sqrt{2}$ is irrational
4) Prove that $7\sqrt{5}$ is irrational
5) Prove that $\sqrt{3}+\sqrt{5}$ is irrational
6) Prove that $5+3\sqrt{2}$ is irrational
7) Prove that $3+2\sqrt{3}$ is irrational
8) Prove that $\sqrt{3}$ is irrational
9) Prove that $3+2\sqrt{5}$ is irrational
10) Prove that $\sqrt{2}$ is irrational
11) Prove that $5-\sqrt{3}$ is irrational
12) Prove that $\sqrt{7}$ is irrational
13) Prove that $3-2\sqrt{5}$ is irrational
14) Prove that $2-3\sqrt{5}$ is irrational
15) Prove that $5+\sqrt{3}$ is irrational
16) Prove that $6-\sqrt{2}$ is irrational
17) i) Prove that $\frac{1}{\sqrt{2}}$ is irrational ii) $\frac{1}{\sqrt{3}}$ is irrational
18) Prove that $2-\sqrt{3}$ is irrational
19) Prove that $6+\sqrt{3}$ is irrational
20) Prove that $7+5\sqrt{3}$ is irrational
21) Prove that $3+4\sqrt{5}$ is irrational

1 Mark:

1) Find the prime factorisation of the following:

a) 30 b) 156 c) 140 d) 3825 e) 5005 f) 742 g) 144

h) 196 i) 7429 j) 91

2) State Fundamental theorem of Arithmetic

3) HCF of 144 and 420 is 12 then their LCM is ——.

4) HCF of a and b is 24 and that of c and d is 56, then HCF of a, b, c, d is ——

5) What is the HCF of two consecutive positive integers?

6) Find the HCF of 510 and 92 by prime factorisation method.

7) If HCF of 306 and 657 is 9 find LCM

8) Why $7 \times 11 \times 13 + 13$ is a composite number? and $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$

9) Find the $\frac{p}{q}$ form of the decimal number 0.375

10) The unit digit in 6^{125} is ——

11) HCF of two numbers is 5 and their product is 150, then find LCM

12) Match the following:

i) LCM (4, 8)	a) 21
ii) LCM (3, 7)	b) 24
iii) LCM (6, 8)	c) 8

13) Find the HCF and the LCM of i) 12, 21 and 15 ii) 8, 9 and 25 iii) 6 and 20 iv) 6, 72, 120 v) 96 and 404

14) The total number of factors of prime number is ——

15) 6^n can end with the digit 0 for any natural number n (True / False)

16) If the HCF of 60 and 110 is expressible in the form $60m - 110$, then the value of m is ——

17) If a and b are coprimes then HCF (a, b) is ——

18) If LCM (20, x) = 60, HCF (20, x) = 2 then x = ——