Mishra tutorial

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Class 10 - Mathematics

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Maximum Marks: 80 **Time Allowed: 1 hour**

Section A

1. The HCF of 867 and 255 is **1**

   a) 51 b) 35

   c) 25 d) 55

2. The HCF of two consecutive odd numbers is **1**

   a) 2 b) 0

   c) 1 d) 3

3. If m^2 - 1 is divisible by 8, then 'm' is **1**

   a) an odd integer b) a natural number

   c) an even integer d) a whole number

4. The LCM of 24, 60 and 150 is **1**

   a) 2400 b) 1800

   c) 600 d) 1200

5. If two positive integers 'a' and 'b' are written as $a = pq^2$ and $b = p^3q^2$, where 'p' and 'q' are prime numbers, then LCM(a, b) = **1**

   a) pq b) p^3q^2

   c) p^2q^3 d) p^2q^2

6. $1.23\overline{48}$ is **1**

   a) a rational number b) terminating decimal

   c) an irrational number d) an integer

7. The HCF of two consecutive numbers is **1**

   a) 2 b) 0

   c) 3 d) 1

8. A number when divided by 61 gives 27 as quotient and 32 as remainder, then the **1**

number is:

a) 1796 b) 1569

c) 1679 d) 1967

9. If two positive integers 'm' and 'n' can be expressed as $m = x^2y^5$ and $n = x^3y^2$,where 'x' and 'y' are prime numbers, then HCF(m, n) = **1**

a) x^2y^2 b) x^2y^3

c) x^3y^2 d) x^3y^3

10. The LCM of two co-prime numbers is **1**

a) 0 b) Their product

c) their sum d) their difference

11. Every positive odd integer is of the form 2q + 1, where 'q' is some **1**

a) None of these b) whole number

c) natural number d) integer

12. Every positive odd integer is of the form _____ where 'q' is some integer. **1**

a) 2q + 2 b) 5q + 1

c) 3q + 1 d) 2q + 1

Section B

13. Show that the cube of a positive integer is of the form 6q + r, where q is an integer and r = 0, 1, 2, 3, 4, 5. **2**
14. Prove that 6+$\sqrt{2}$ is irrational. **2**
15. Show that every positive even integer is of the from 2q and that every positive odd integer is of the form 2q + 1 for some integer q. **2**
16. Prove that $\sqrt{3}$ is irrational. **2**
17. Express the following in the form p/q, where p and q are integers and q ≠0. **2**

$0.\overline{2341}$

Section C

18. Show that one and only one out of n, (n + 2) or (n + 4) is divisible by 3, where n EN. **3**
19. Prove that 3 + 2 $\sqrt{5}$ is irrational. **3**
20. Factorise the following and find the LCM of: **3**

$11x^3(x+1)^3$ and $121x\left(2x^2+3x+1\right)$

21. Prove that $6+\sqrt{2}$ is irrational. **3**

22. The HCF and LCM of two polynomials P(x) and Q(x) are (2x–1) and $\left(6x^3+25x^2-24x+5\right)$ respectively. If $P(x)=2x^2+9x-5$, determine Q(x). **3**

23. Show that the square of any positive integer cannot be of the form 3m + 2, where m is a natural number. **3**

24. Wrtie the HCF and LCM of smallest odd composite number and the smallest odd prime number. If an odd number p divides q^2, then will it divide q^3 also? Explain. **3**

25. Find the HCF and LCM of the following pairs of positive integers by applying the prime factorization method: 72, 90 **3**

26. Find the zeroes of the given quadratic polynomials and verify the relationship between the zeroes and the coefficients.$6x^2-3-7x$ **3**

27. Find the values of a and b so that the polynomials P(x) and Q(x) have $\left(x^2-x-12\right)$ as their HCF, where **3**
$P(x)=\left(x^2-5x+4\right)\left(x^2+5x+a\right)$
$Q(x)=\left(x^2+5x+6\right)\left(x^2-5x-2b\right)$

Section D

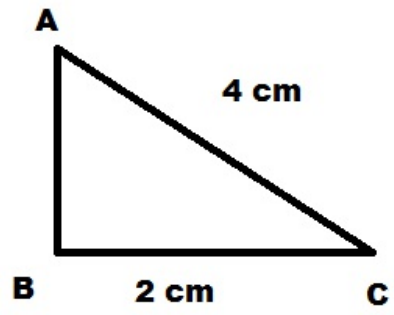
28. State Fundamental theorem of Arithmetic. Find LCM of numbers 2520 and 10530 by prime factorization method. **4**

29. Find the maximum number of students among whom 1001 pens and 910 pencils can be distributed in such a way that each student gets the same number of pens and the same number of pencils. **4**

30. Show that cube of any positive integer is of the form 4m, 4m + 1 or 4m + 3, for some integer m. **4**

31. If d is H.C.F of 45 and 27, find x and y satisfying d = 27x + 45y. **4**

32. Prove that the area of ΔABC is irrational **4**



33. State Fundamental theorem of Arithmetic. Is it possible that HCF and LCM of two numbers be 24 and 540 respectively. Justify your answer. **4**

34. On GT road, three consecutive traffic lights change after 36 s, 42 s and 72 s. If the **4**

lights are first switched on at 9.00 am, then at what time will they change simultaneously.