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MM 35

Time 1 hour 15 Min

Section A1 mark each

- Q1. The largest number which divides 75 and 130, leaving remainders 3 and 5, respectively, is
 (A) 3 (B) 5 (C) 3510 (D) 1950
- Q2. The least number that is divisible by all the numbers from 1 to 10 (both inclusive) is
 (A) 10 (B) 100 (C) 504 (D) 27720
- Q3. The decimal expansion of the rational number $\frac{14987}{1250}$ will terminate after:
 (A) one decimal place (B) two decimal places
 (C) three decimal places (D) four decimal places.
- Q4. The product of a non-zero rational and an irrational number is
 (A) always irrational (B) always rational
 (C) rational or irrational (D) none of these
- Q5. LCM of $a^3b^2c^{16}d^9e^{11}$ and $f^{33}g^4a^5b^9c^{10}$
 (A) $a^3 b^2 c^{10}$ (B) $a^5 b^9 c^{16}d^9e^{11}f^{33}g^4$
 (C) $a^3 b^2 c^{10}defg$ (D) None of these
- Q6. Sum of two irrational numbers may be rational or irrational. Sum of two integers is
 (A) always an integer (B) always irrational
 (C) may be rational or irrational (D) none of these
- Q7. HCF of $a^3b^2c^{16}d^9e^{11}$ and $f^{33}g^4a^5b^9c^{10}$
 (A) $a^3 b^2 c^{10}$ (B) $a^3 b^2 c^{10}de$ (C) $a^3 b^2 c^{10}de$ (D) $a^5 b^9 c^{16}$

Section B 2 marks each

- Q8. Can two numbers have 18 as their HCF and 380 as their LCM? Give reasons
- Q9. Find the H.C.F. of 12576 and 4052 and hence find their L.C.M.

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Q10. Without actually performing the long division, state whether the following rational number has a terminating expansion or a non-terminating repeating decimal expansion: $\frac{6}{15}$

Q11. Use Euclid's Division Algorithm to show that the square of any positive integer is either of the form $3m$ or $3m+1$ for some integer m .

Q12. Is $(7 \times 11 \times 13 + 13)$ composite or prime.

Q13. Use Fundamental theorem of Arithmetic to find the H.C.F. and L.C.M. of 225, 336 and 360

Q14. Check whether 8^n can end with digit 0 where n is a positive integer.

Section C 3 marks each

Q15. Prove that $\sqrt{2}$ is an irrational number.

Q16. Prove that $\sqrt{a} + \sqrt{b}$ is irrational, where a, b are primes.

Section C 4 marks each

Q17. Show that the square of any positive integer cannot be of the form $5q + 2$ or $5q + 3$ for any integer q .

Q18. Prove that one and only one out of $n, n + 2$ and $n + 4$ is divisible by 3, where n is any positive integer.

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