MM 35 Time 1 hour 15 Min

Section A 1 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) None of these

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) None of these

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.

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

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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 (7×11×13+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 0where 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 D 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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