UNIT 17 EXERCISES 11-15

ARITHMETIC

2002B 11. The positive integers A, B, $A-B$, and $A+B$ are all prime numbers. The sum of these four primes is

(A) even **(B)** divisible by 3 **(C)** divisible by 5 **(D)** divisible by 7

(E) prime

2003B

12. What is the largest integer that is a divisor of

$$(n+1)(n+3)(n+5)(n+7)(n+9)$$

for all positive even integers n?

(A) 3 **(B)** 5 **(C)** 11 **(D)** 15 **(E)** 165

2015A

14. What is the value of a for which $\frac{1}{\log_2 a} + \frac{1}{\log_3 a} + \frac{1}{\log_4 a} = 1$?

(A) 9 **(B)** 12 **(C)** 18 **(D)** 24 **(E)** 36

2011B 15. How many positive two-digit integers are factors of $2^{24} - 1$?

(A) 4 **(B)** 8 **(C)** 10 **(D)** 12 **(E)** 14

2014A 15. A five-digit palindrome is a positive integer with respective digits $abcba$, where a is not zero. Let S be the sum of all five-digit palindromes. What is the sum of the digits of S?

(A) 9 **(B)** 18 **(C)** 27 **(D)** 36 **(E)** 45