Q1: Find d(n) and the divisors for the following n’s: (using multiplicative table)
   a. 243  b. 500  c. 180  d. 1025

   (7 marks)

Q2: Suppose you have T system module 7 find the prime set in T system.

   (7 Marks)

Q3: find X and Y such that ax+by=(a,b):
   1. (a=402   b=1005)
   2. (a=867   b=71)
   3. (a=-60   b=731)

   (7 marks)

Q4: Find the integer and the fractional parts for the following numbers:
   a. -3.64  b. (\sqrt{17})^3  c. 10^{-1/5}

   (7 marks)

Q5: show with example that the rational set is countable.

   (7 marks)

Q6: show that if 0<j<k, then F_j divides F_{k-2}

   Note: F denotes to Fermat number.

   (7 marks)

Q7: if k=ab, where a is odd, prove that 2k+1 mod 2b + 1 = 0

   (7 marks)

Q8: use the prime factorization of (a) and (b) to
   (1) Decided a|b
   (2) Compute (a,b)
   (3) Compute [a,b]

   A= 1287  b=9009

   (7 marks)

Q9: define with example: Perfect Number, Ubundant number, Deficient Number.

   (7 marks)

Q10: write n as a product of primes (249, -38, -845, 47)

   (7 marks)

Q11: prove that there are infinitely many integers n such that \mu(n) + \mu(n + 1) = 0

   (7 marks)

Good Luck