

## EXAM 6 (duration: 25 minutes)

DatZ1143: Discrete mathematics for computing  
Instructor: Abuzer Yakaryılmaz

Name and surname:

Student number:

Date:

### Questions

(There are 7 questions, 10 points in total.)

1. What are the quotient and remainder when 80 is divided by 11?  
(i.e.,  $80 = q \cdot 11 + r$ , where  $0 \leq r < 11$ . Find  $q$  and  $r$ .) [1 point]

2. What are the quotient and remainder when  $-80$  is divided by 11?  
(i.e.,  $-80 = q \cdot 11 + r$ , where  $0 \leq r < 11$ . Find  $q$  and  $r$ .) [1 point]

3. Which pairs in  $\{-77, -53, -24, 24, 53, 77\}$  are congruent to each other modulo 7?  
[3 points]

4. Prove that 201 is not a prime number. [1 point]

5. Prove or disprove that if  $a$  divides  $b$ , then  $b$  also divides  $a$ . [1 points]

6. Find the prime factorization of 630. [2 points]

7. Find positive even integers  $c$  and  $p$  such that  $c$  is composite and  $p$  is prime. Clearly indicate which number is  $c$  and which number is  $p$ . [1 point]