北京邮电大学 2021—2022 学年第二学期

卷八:Discrete Mathematics—Midterm Test

考试课程	离散数学				考试时间						
题号	一	二	三	四							总分
满分	25	25	25	25							
得分											
阅卷教师											

1. [25 points] Show that a subset of an antisymmetric relation is also antisymmetric.

2. [25 points] Determine the operational table of the quotient group Z/3Z,where Z has operation +.

3. [25 points] Let H be a parity check matrix. Decode the following words relative to a maximum likelihood decoding function associated with e_H.

$$H = \begin{bmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

a) 10100   b)01101   c)11011

4. [25 points] Find all solution of the recurrence relation

$$a_n = 4a_{n-1} - 3a_{n-2} + 2^n + n + 3 \text{ with } a_0 = 1, a_1 = 4.$$