King Fahd University of Petroleum & Minerals, Information & Computer Science Department

ICS-254 Discrete Structures 2, Quiz 02, Section 01, First Semester 2020-21 [Online]

Name: _____, ID: _____

Q.1: It can be shown that every integer can be uniquely represented in the form

$$e_k 3^k + e_{k-1} 3^{k-1} + \cdots + e_1 3 + e_0,$$

where $e_j = -1, 0,$ or 1 for $j = 0, 1, 2, \ldots, k$.

Expansions of this type are called **balanced ternary expansions**.

Find the balanced ternary expansion for 71 [Show your work]

Q. 2: Prove or disprove the following statement: There exists an integer n such that $n^2 \equiv 2 \pmod 4$.