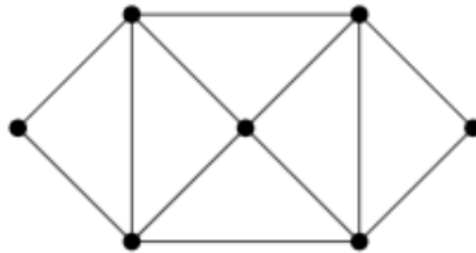


# 國立嘉義大學 110 學年度

## 資訊工程學系碩士班招生考試試題

### 科目：離散數學

1. Find two different spanning trees of the following graph. (20%)



2. (1) How many cards must be selected from a standard deck of 52 cards to guarantee that at least four cards of the same suit are chosen? (10%)  
(2) How many cards must be selected to guarantee that at least four hearts are selected? (10%)
3. Find the recurrence relation and initial condition for 1, 7, 31, 127, 511, .... (10%)
4. Assume that A is a friend of B if and only if B is a friend of A. Show that for any  $N \geq 2$ , there are two people in the group of N persons having the same number of friends. (15%)
5. Prove by induction  $\frac{1}{\sqrt{1}} + \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{3}} + \cdots + \frac{1}{\sqrt{n}} > \sqrt{n}$ . (15%)
6. Prove or disprove the following two graphs are isomorphic. (20%)

