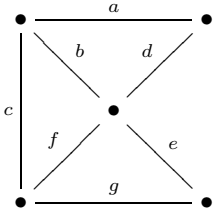
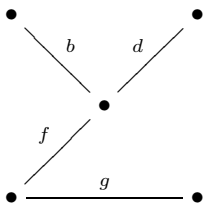
MAD 5932 Applied Graph Theory **Quiz 3** 9 Jun 2006 **Name:** _____

Show **ALL** work for credit; Give exact answers when possible.

1. For the graph G below left and the spanning tree T given by the edges $\{b, d, f, g\}$ below right

G 

T 

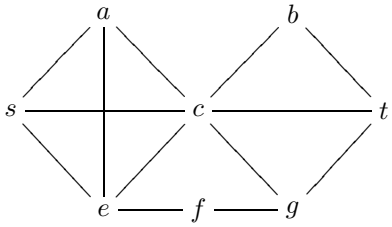
   (a) Find the fundamental system of edge-cuts associated with T.

   (b) Find the fundamental system of cycles associated with T.

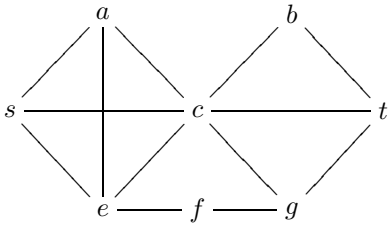
   (c) Find the other non-null elements of the cycle space $W_C(G)$ for G not listed in part (b).

2. For the graph repeated 4 times below.

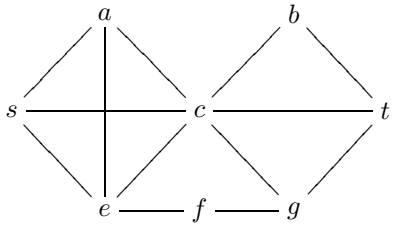
   (a) Show it has an Euler circuit or show none exists.



   (b) Show it has a Hamilton cycle or show none exists.



   (c) Find the maximum number of internally-disjoint s-t paths and and the minimum number of vertices in a s-t separating set S. (Show the paths and S)



   (d) Find the maximum number of edge-disjoint s-t paths and and the minimum number of edges in a s-t edge-separating set S. (Show the paths and S)