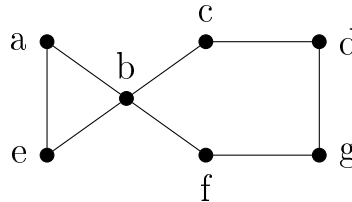
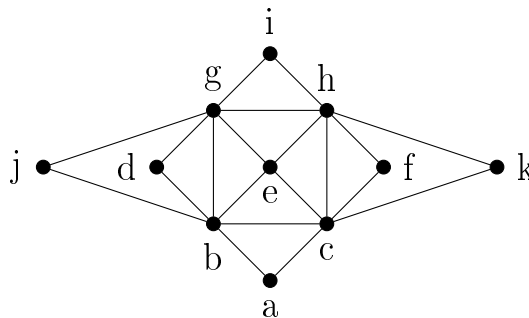


## Second Repeat of the Second Midterm Test

1. From a complete graph on 10 vertices we delete the edges of two such cycles on 3 vertices which have exactly one vertex in common. Determine the chromatic number of the graph obtained.
2. Determine whether the following graph is an interval graph or not.



3. We double each edge of a cycle of length 5 of the complete graph on 5 vertices (i.e. we substitute the edges by two parallel edges). Determine the edge-chromatic number of the graph obtained.
4. Determine a maximum matching in the graph below.



5. We delete two non-adjacent edges from the complete graph on 6 vertices. Determine the largest integer  $\ell$  for which the graph obtained is  $\ell$ -edge-connected.
6. In a simple graph on 99 vertices the degree of each vertex is exactly 6. Show that the graph contains at least two odd cycles.

Total work time: 90 min.

The full solution of each problem (including explanations) is worth 10 points. Show all your

work! Results without proper justification or work shown deserve no credit.

Notes and calculators (and similar devices) cannot be used.

Grading: 0-23 points: 1, 24-32 points: 2, 33-41 points: 3, 42-50 points: 4, 51-60 points: 5.