(1) (a) $E = \{ag, af, ab, be, cg, cf, cd, hi\}$
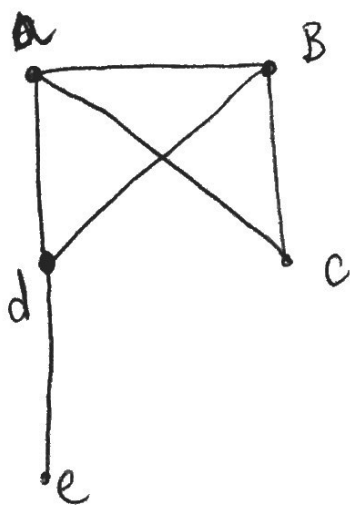
(b) $N(\{b, d, h\}) = \{a, e, c, i\}$

(c) $|V| = 9$

(d) $\deg(c) = 3$

(e) f and d are not adjacent since fd is not an edge in G

(f) Yes, it is a simple graph because there are no loops and multiple edges.

(g) $V_1 = \{a, c, e, h\}$ $V_2 = \{b, d, f, g, i\}$.
Yes, G is a bipartite graph.

(h) G is not connected because there is no path from a to h.

(i) No, G does not have an Euler circuit because all vertices do not have even degree. For instance, $\deg(a) = 3$.

(2)

(3) a) Not possible because sum of degrees is odd (4+4+4+4+3=19)

b) Not possible because sum of degrees is odd (5+5+5+5+5=25)

OR

Not possible because maximum possible degree in a simple graph with 5 vertices is 4

c)