# Exercise 5

**Submitted by:** Yaniv Tal - 031431166

## Part A – Theoretical part

1. Joint probability based on graph:
2. We need a total of **16 parameters** to define the network:
   1. P(A) - 1
   2. P(B|A) – 2
   3. P(C|B) – 2
   4. P(D|A) – 2
   5. P(E) – 1
   6. P(F|B, D, E) – 8
3. To define the full distribution P(A, B, C, D, E, F) we would need parameters
4. As following:
   1. - **True -** No data flow on D-F-E because F is unknown
   2. – **False** –Information flows on the path E-F-B-C
   3. – **True - T**he path E-F-B-C is closed because no data if F
   4. – **True** - Both paths A-B-F and A-D-F are closed by the evidence in B, D respectively
5. **Yes, the table suits the graph.** We can see from the covariances of the marginal distributions that:

   2. ,

