Question 1

For graph G discribed as in the question, in order to find the relationship between $z_1^{(2)}$ and $z_4^{(2)}$, we can derive their values:

$$z_1^{(2)} = \alpha_{12}^{(2)} z_2^{(1)} + \alpha_{13}^{(2)} z_3^{(1)}$$
$$z_4^{(2)} = \alpha_{42}^{(2)} z_2^{(1)} + \alpha_{43}^{(2)} z_3^{(1)}$$
$$= \alpha_{12}^{(2)} z_2^{(1)} + \alpha_{13}^{(2)} z_3^{(1)}$$

However, we have $\alpha_{42}^{(2)} = \alpha_{12}^{(2)}$. Thus, $z_1^{(2)} = z_4^{(2)}$.

Question 2

Question 3

Question 4

References