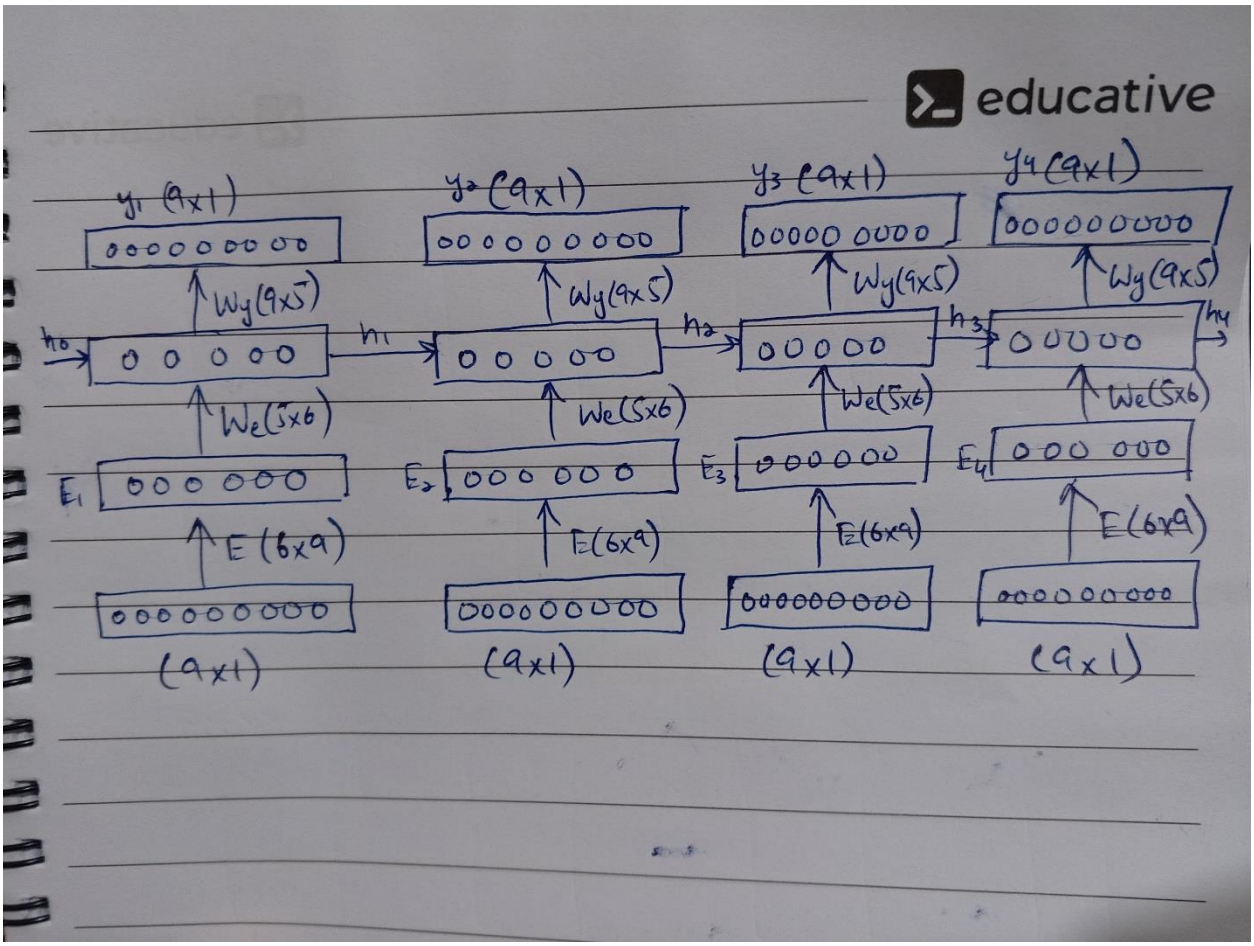
Q1 (a)



$$a_t = W_H h_{t-1} + W_X X_t$$ **Hidden Nodes**

Activation Function

Output From Hidden State $\longrightarrow h_t = tanh(a_t)$

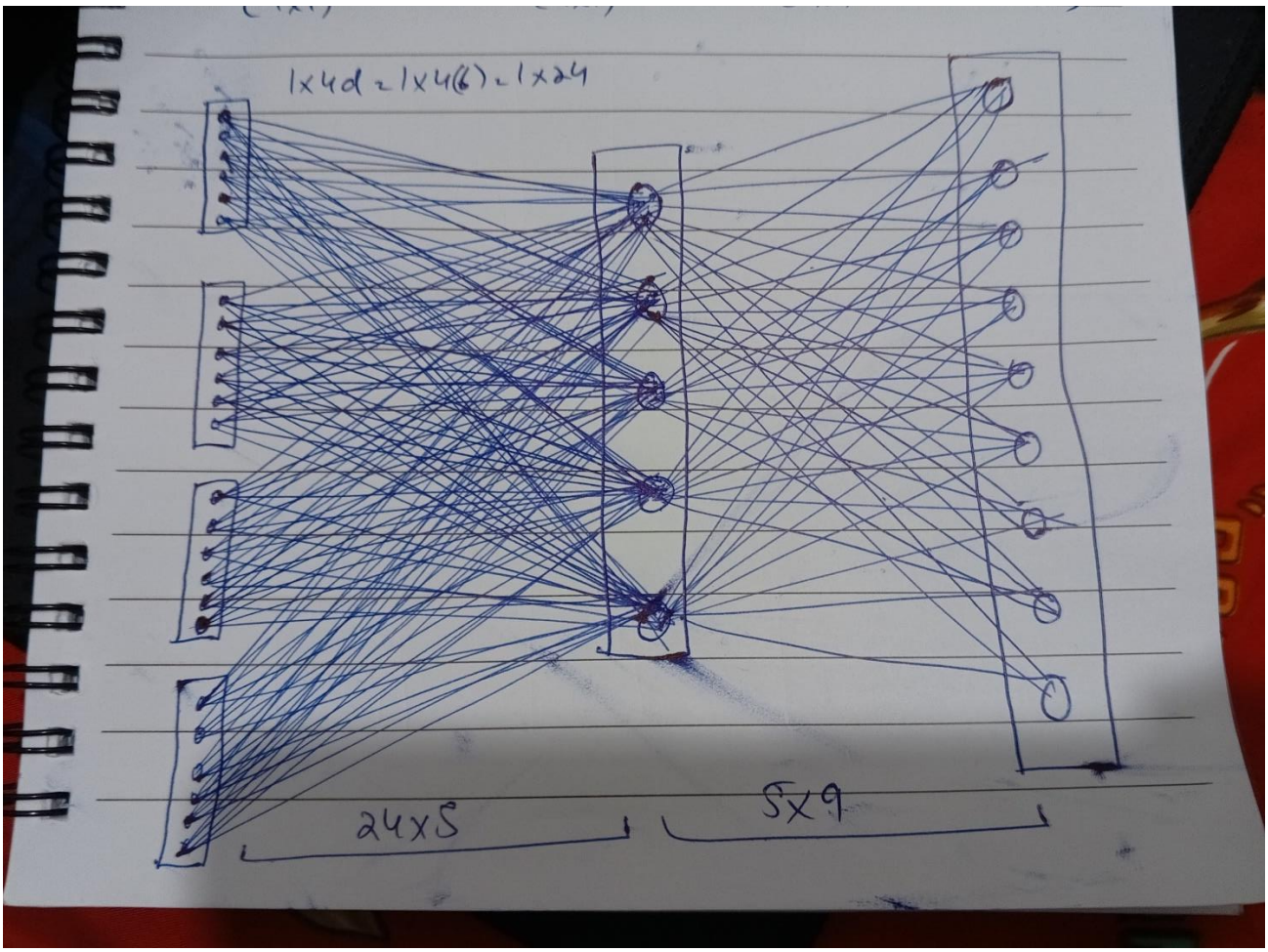
Hidden State

Prediction at time t $\longrightarrow y_t = softmax(W_Y h_t)$

(b) Total Number of Parameters= (6*9) +(5*6) +(9*5) +(5*5) = 154

(c) Total Number of Parameters= 154, if the input sequence is increase to 10

Q2 (a)



$$
\begin{aligned}
e &= (Ex_1, Ex_2, \ldots, Ex) \\
h &= \sigma(We + b) \\
z &= Uh \\
y &= \text{softmax}(z)
\end{aligned}
$$

(b) Total Number of Parameters= (24*5) + (5*9) = 165

(c) Total Number of Parameters= (10*6*5) + (5*9) = 345