



2M

Records	Cricket	Football	Hockey	Chess	Class
PLAYER 1	0	0	0	1	IN
PLAYER 2	1	1	1	0	OUT

Fig. Q3A

- 3B.** For the question Q3A, implement the contrastive divergence algorithm to train your RBM neural network sketched with the PLAYER 2 data only for one iteration. Given the learning rate as 0.5

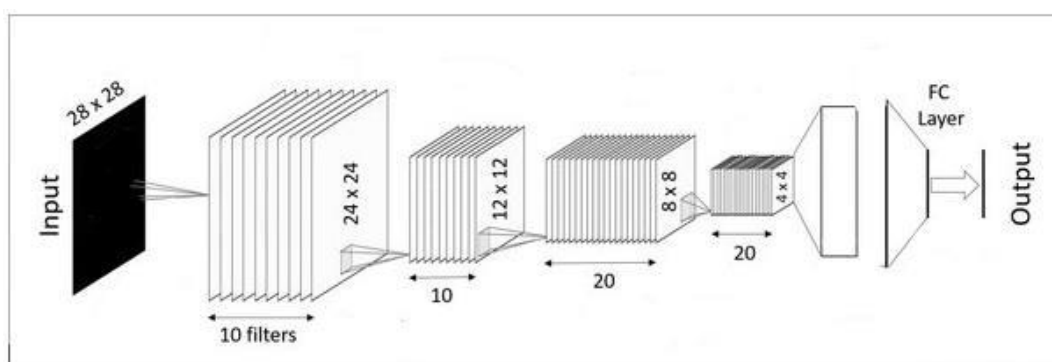
Your numerical answers you write must be approximated to four decimal places after the decimal point.

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- 3C** Differentiate a simple Recurrent neural network (RNN) from a Deep neural network (DNN). Discuss and prove the vanishing / exploding gradient problem is much worse in simple RNN than DNN.

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4A.



In Fig.2 is a CNN with the given input being a gray scale image.

- Identify the possible layers appearing in the above CNN.
- Solve to show your respective calculations in getting the respective outputs.
- Discuss on its FC layer if the dropout ratio is given as 0.5
- Why the dropout layers are to be considered in CNN? Discuss.

5M

- 4B.** Using McCulloch Pitt model principles, design a neural network with XOR gate functionality. Use the combination of available neural networks with functionalities OR and AND gates.  $x_1$  and  $x_2$  are the two inputs and  $Y$  is the output of the neural network.

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- 4C** Analyze how the designed neural network in Q4B works?

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- 5A.** Interpret how the Generator and the Discriminator training is done in Generative adversarial network with relevant diagram.

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- 5B.** Use the diagram that you have drawn in Q5A to write the mathematical equation of training the Generative adversarial network. Give a detailed explanation to every component in the equation you have written.

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