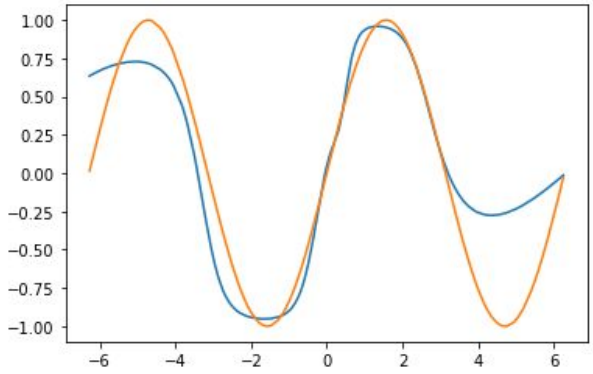
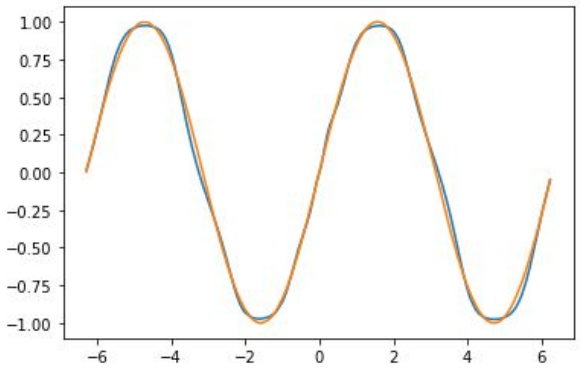
SINE PROBLEM

Architecture: 1x641284x1
η = 0..01
500 and 5000 epochs respectively.





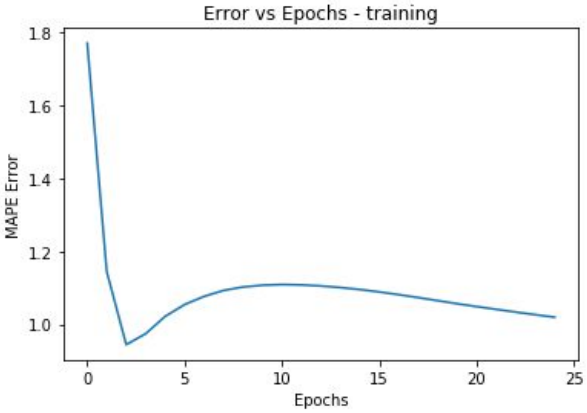
CYCLE POWER PLANT PROBLEM

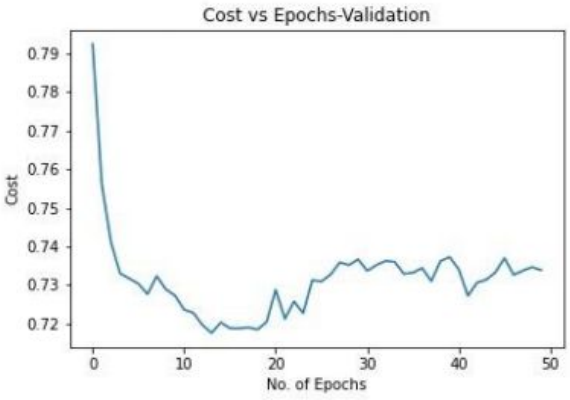
Convergence history plots for different parameters:

The architecture for the following experiments were, 1x64x32x1, η = 0.01, batch size = full. While one parameter was subject to change the other's default value was taken as mentioned above.

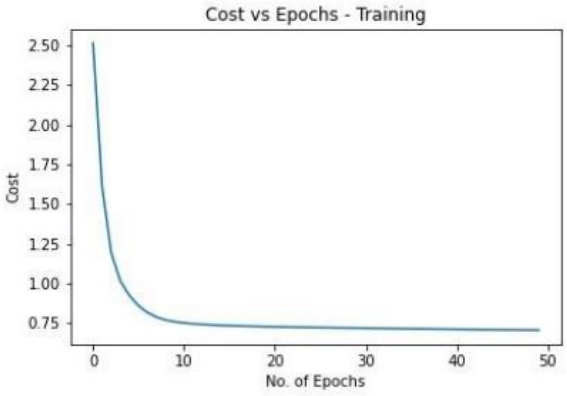
η:

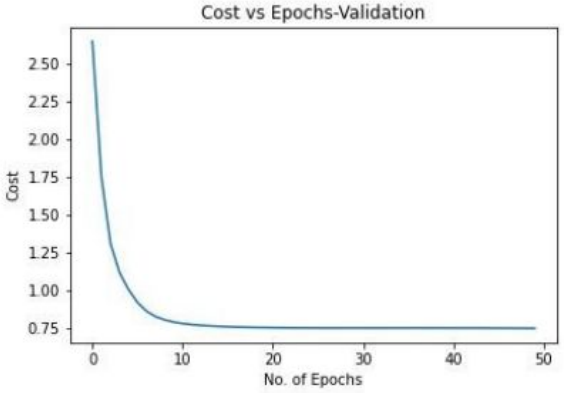
1. η = 0..01





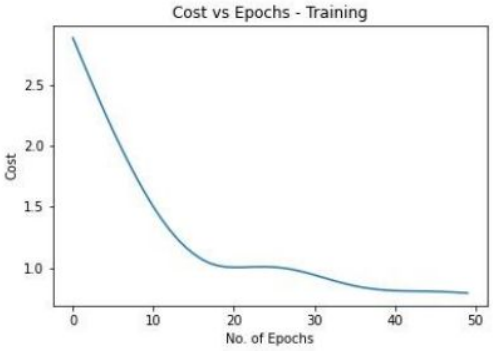
2. η = 0..0001

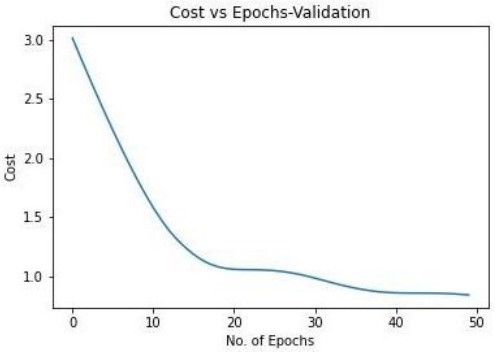




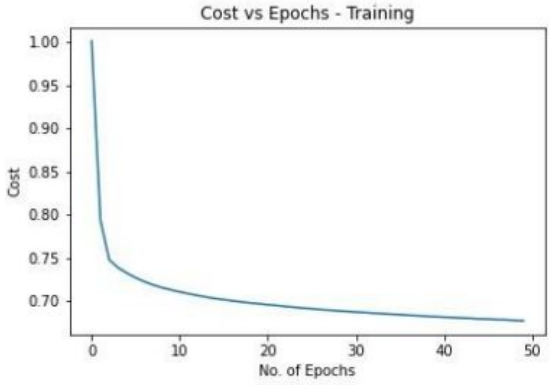
Mini-batches

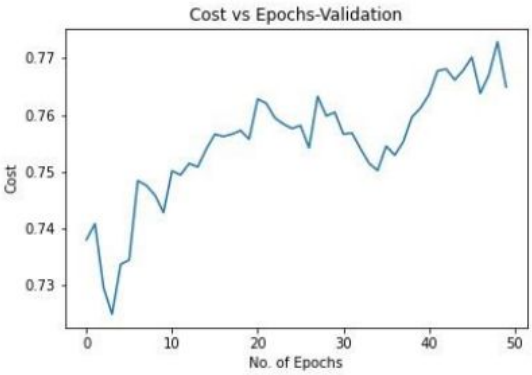
1. Full batch:



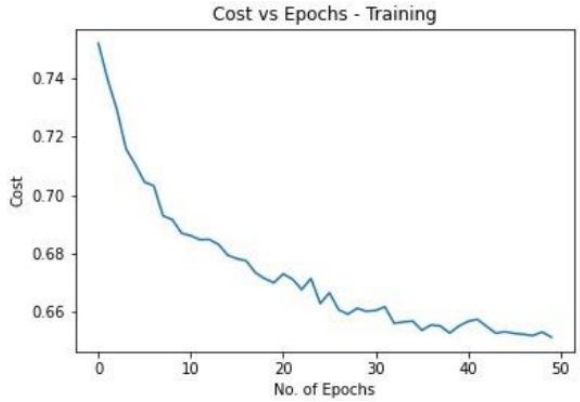


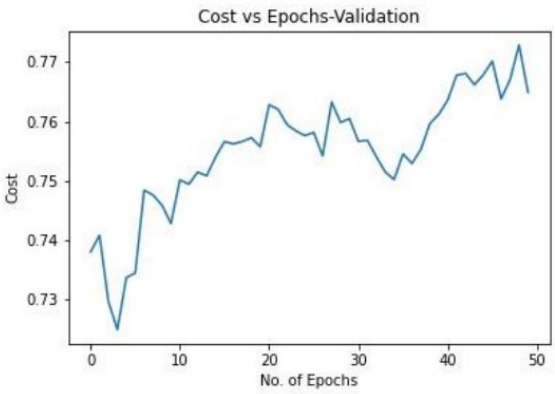
2. Batch size-64:





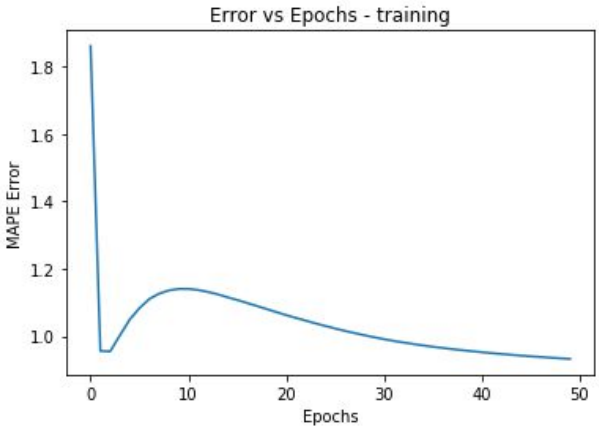
3. Batch size-1:

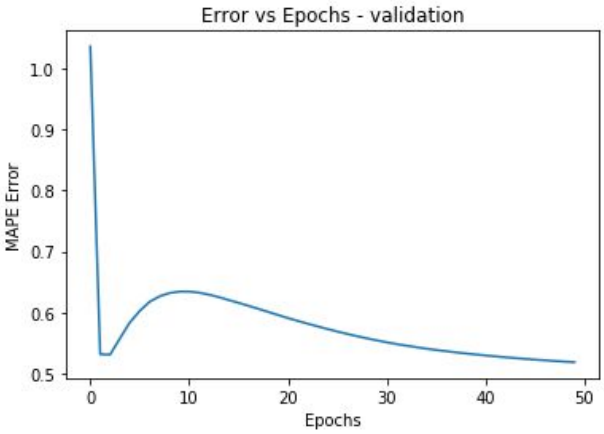




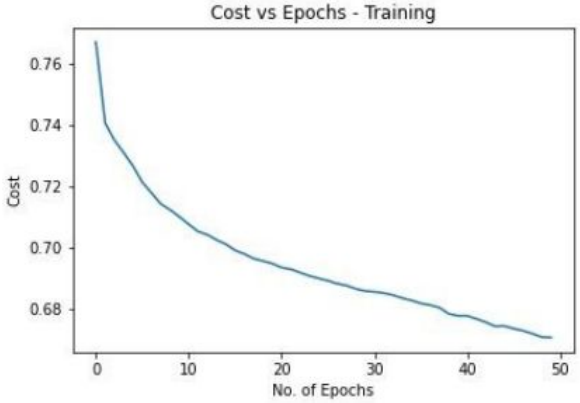
Architectures

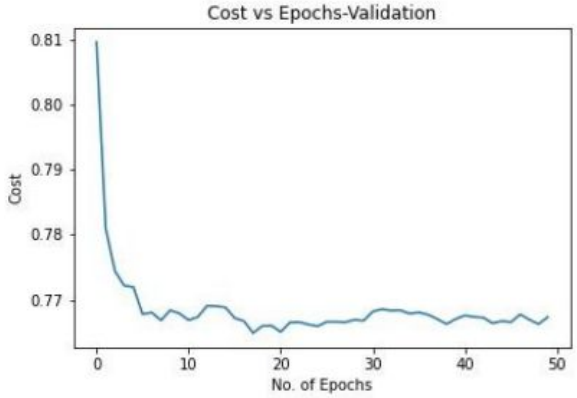
1. Architecture-1: 4x64x64x1



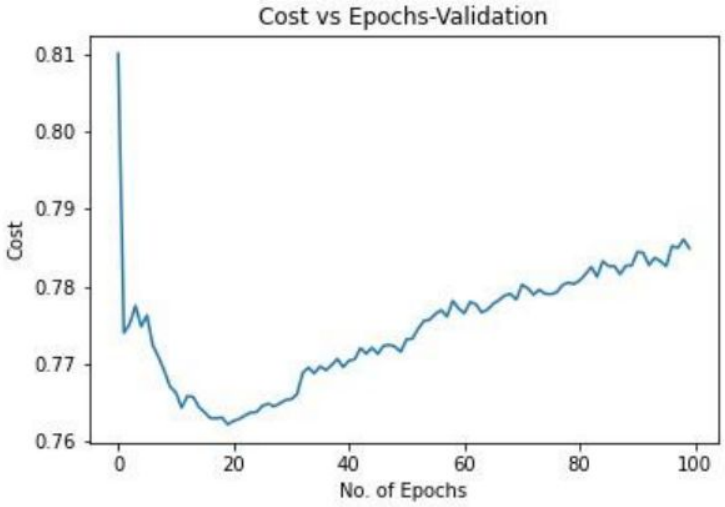


2. Architecture-2: 4x64x32x1





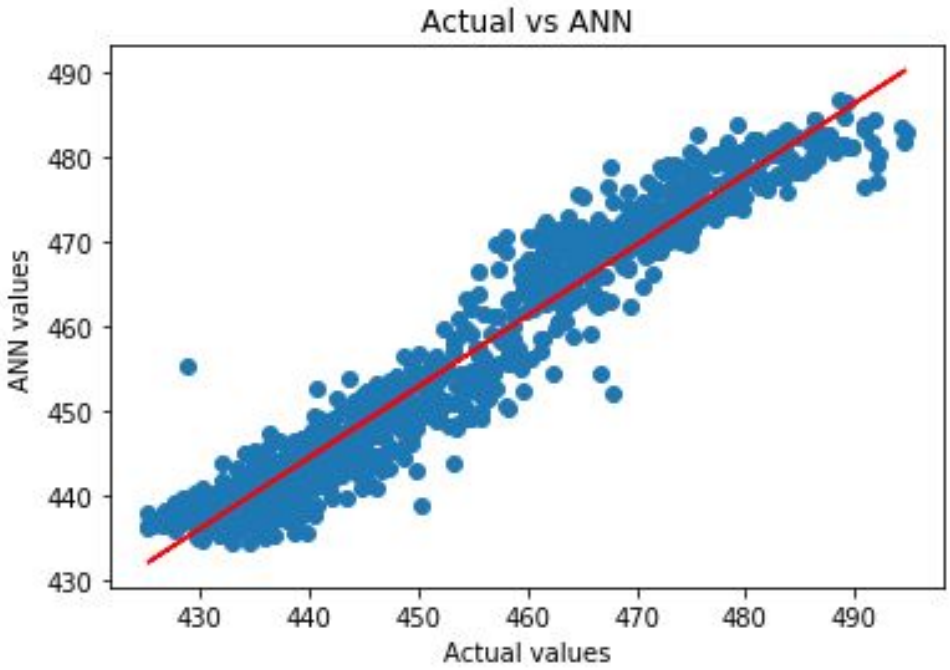
Early stopping: We can stop training after 20 epochs.



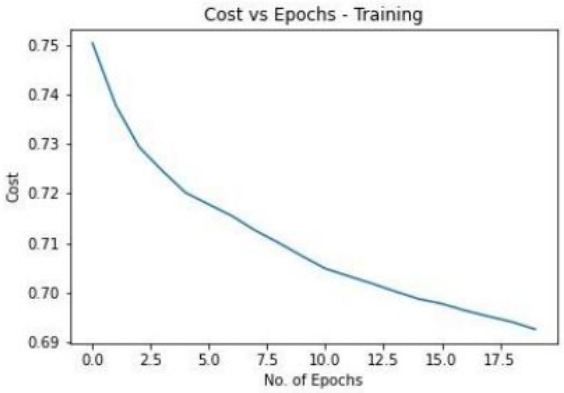
Final Parameter Setting:

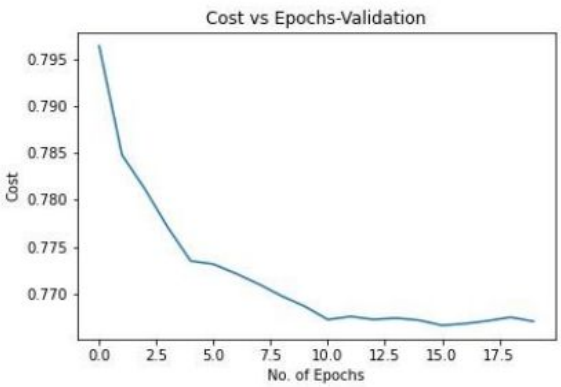
Architecture: 4x64x64x1
η = 0..0001
Activation: tan-hyperbolic
Training MAPE error = 0.944
Validation MAPE error = 0.526
Batch-size: 64

The actual energy output vs ann energy output plot:



R-squared value = 0.912


Cost vs Epochs - Training
Cost
No. of Epochs
0.75
0.74
0.73
0.72
0.71
0.70
0.69
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5


Cost vs Epochs-Validation
Cost
No. of Epochs
0.795
0.790
0.785
0.780
0.775
0.770
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5