PART 1

1. The data assimilation step aims to correct
    A. The model error
    B. The initial condition error
    C. Bor both of the above *

2. The Lorenz96 model, used as a benchmark, is said to be "chaotic" because:
    A. It is unpredictable
    B. It contains non-derivative functions
    C. It is non-physical
    D. It is very sensitive to initial conditions *

3. In the standard setup what is the approximate value of the root mean square error (RMSE) of the analysis (at 10^{-2} precision)?
    A. 0.20
    B. 50
    C. 2.71
    D. 0.14

4. If you change the observation error standard deviation to σ_{obs}= 0.1 (instead of the standard value of 0.1), what is the approximate value of the root mean square error of the analysis (analysis RMSE , at 10^{-2} precision)?
    A. 0.20
    B. 0.10
    C. 2.71
    D. 0.14 *

PART 2

5. In the standard configuration, how many parameters are optimised in the neural network?
    A. 80
    B. 5000
    C. 4783 *
    D. 500

6. In the standard configuration, what is the approximate value of the correlation (R2) computed on the validation set (at 10^{-2} precision)?
    A. 0.80
    B. 1.00
    C. 0.18 *
    D. 0.20

7. Change the neural network to have only one internal layer containing 5 units with a kernel size of 7 and a 'tanh' activation function. Run the whole training process again. What

is then the approximate value of the correlation (R2) computed on the validation set (at 10^{-2} precision)?

 A. 0.80

 B. 0.20

 C. 0.18

 D. 0.14 *

PART 3

8. What is the forecast lead time below which the hybrid model has a significant lower error than the physical model?

 A. 3.5 MTU

 B. 10.0 MTU

 C. By construction, the hybrid model is expected to always have a lower error.