If the space provided for an answer is not sufficient, please continue on the back or attach an additional sheet.

Name: . . . . . .

Term: . . . . . **Subject:** . . . . . **System Modeling & Control** . . . . . .

Teacher: A. Mhamdi

Do not write in this table.

Question:	1	Total
Points:	10	10
Score:		

1. (a) (1 point) Recall the definition of a first-order plant:

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(b) (1 point) Consider $k = 1$ and $\tau = 0.8$ sec. Define these two constants.

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(c) (1 point) Import the required modules.

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Numeric Integration: ODE

(d) (1 point) Build a function which reproduces the same behavior of the system.

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(e) (1 point) Consider an initial output 0.4. Simulate the previous model for a time span of 8 sec.

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Transfer Function

(f) (1 point) Using the transfer function class, instantiate an object *hTF*

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(g) (1 point) Display the step output of *hTF*.

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State Space

(h) (1 point) Define the system *hSS* using state space module.

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(i) (1 point) Display the step output of *hSS*.

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(j) (1 point) Superpose the three simulated outputs on the same graph.

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