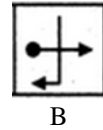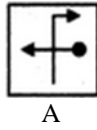This is a purely individual assignment. Prepare your answers to the following questions in a plain ASCII text file.
Submissions in any other format will not be graded. Submit your file to the Curator system by the posted deadline for this
assignment. No late submissions will be accepted.

You will submit your answers to the Curator System (www.cs.vt.edu/curator) under the heading OOC07.
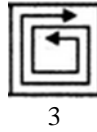
1. a) [10 points] Identify and clearly describe a relationship between the two figures, A and B given below:

A

B

  b) [15 points] Now consider the figure C given below:

C

  Figure C has exactly the same relationship as A has to B to exactly one of the following five figures. State which,
  and clearly explain why each of the other choices does not exhibit that relationship.

  1   2   3   4   5
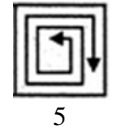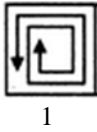
2. a) [10 points] Identify and clearly describe a relationship between the two figures, A and B given below:
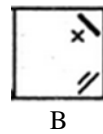

A

B

  b) [15 points] Now consider the figure C given below:

C

  Figure C has exactly the same relationship as A has to B to exactly one of the following five figures. State which,
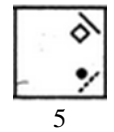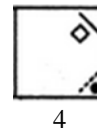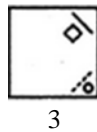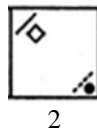 **and** clearly explain why each of the other choices does not exhibit that relationship.

  1   2   3   4   5

3. [25 points] Solve the following alphametric (a cryptarithm where the letters form words that form a sensible phrase):

```
 SPOT
    A
  TOP
-----
GHOST
```

Your solution must include a description of the logic you used to deduce the solution. Note: there is a unique solution to this one, and your description of your logic should make it clear why your solution is the only possible one.

4. [25 points] Decipher the following English cryptoquote (the coded name of the author is in the parentheses at the end). Remember that each letter used in the coded form consistently stands for the same letter of the alphabet, and that spaces and punctuation are not encoded.

```
F BXFSV BXPB F NXPUU SWIWY NWW

P HFUUHGPYL UGIWUO PN P BYWW,

KWYXPKN, ESUWNN BXW HFUUHGPYLN ZPUU,

F'UU SWIWY NWW P BYWW PB PUU.

(GJLWS SPNX)
```

While the process will likely not involve many strict logical inferences, you should write down the particular insights that led you to consider specific mappings; for example, "the only 1-letter words in English are 'a' and 'I' so X must stand for one of those").