

## HW 5

Pg 894

Sean Poston

1. a.) the happy hare runs

↓  
Sentence

(noun phrase) (intransitive verb phrase)

(article adj. noun) (intransitive verb)

(the happy hare) (runs)

valid ✓

b.) Same as above but [intransitive verb phrase] includes the adverb "quickly".

valid ✓

c.) (noun phrase) (trans. verb ph.) (noun phrase) ⇐ Sentence

(art. ~~the~~ noun) (trans verb) (art. noun)

(the tortoise) (passes) (the hare)

valid ✓

d.) same as above but with adjectives

valid ✓

2. 1. The happy hare runs slowly.

2. The tortoise passes the hare slowly.

3. The sleepy hare runs slowly.

4. The hare passes the tortoise

5. The happy tortoise runs quickly.

3. (the hare) (runs) (the sleepy tortoise)

(noun phrase) (intrans. verb) (noun phrase)

- A sentence is only:

1. (noun phrase) (trans verb ph.) (noun phrase)

2. (noun phrase) (intrans verb ph.)

The provided sentence isn't either of those.

4. a.) V T S P  
I T S P  
I I S P  
I I I S P  
I I I O A P  
I I I O O O

b.) V T S P  
I T S P  
I I S P  
I I O A P  
I I O O P  
- P can't terminate to 'I'

c.) context-free

Pg. 914

- |                    |                    |
|--------------------|--------------------|
| 13. a.) Recognized | d.) Recognized     |
| b.) Recognized     | e.) Not Recognized |
| c.) Recognized     | f.) Not Recognized |

Pg. 948

13. A set is regular iff it's recognized by a finite-state automaton.
16. A machine with read/write capabilities that operates on a tape with a head that performs the operations. They can recognize all phrase-structure generated languages.