CSE324 QUIZ # 10 NAME:----------**KEY**----------

I) True or False (questions about Lisp & ***pure*** functional oriented paradigm, **PFOP**): **(2 pts each)**

a) In Lisp, the function "**car**" always takes a *list* argument/parameter, and returns an *atom*. **F**

b) In **PFOP**, all built in functions will not change the memory state. **T**

c) **PFOP** is more secure than Lisp. **T** Lisp has *impure* functions and allows *aliasing*!

d) In **PFOP**, *recursion* replaces *iteration*. **T**

e) The following Lisp functions are ***pure***: ***car***, ***cdr***, ***cons***, ***append***, ***set***, and ***list***. **F (Not "set")**

Extra credit (+5 if correct -5 if wrong):

f) A **PFOP** HLL is definitely more *abstract, powerful,* and *efficient* than any Object Oriented HLL. **F**

Pure PFOP languages express more "What" than the imperative OOL "How", and *recursion* is power, **BUT**, recursion is NOT so efficient time&space in code execution!

II) Evaluate the following common Lisp S-expressions, if any is erroneous, just indicate that by writing "**ERROR**" as its evaluation result, then fix the error in the next line: (**2 pts each**)

i) **(** cdaar '(((a b) (b c d)) **)** ----------**(b)** ----------
Fix: N/A----------

ii) **(** cadddr '((a (b c) h ((4 5) p)) s k h (e f)) **)** ---------- **H** ----------
Fix: N/A----------

iii) **(** list '(a (b c) d) '((e f) g) x **)** ---------- **ERROR** ----------
Fix:---- (list '(a (b c) d) '((e f) g) 'x **)** ---[**or** write (setq x 'x) before the "**list**" call above].

iv) **(** append '(a (b c) d) 'h '((e f) g) **)** ------- **ERROR** ------
Fix: --------**(** append '(a (b c) d) '((e f) g) 'h **)**----------

v) (cadddr (cons '(a b) (append '(c d) (list '(e f) 'g)))) ------- **(E F)** ------
Fix: N/A ----------

III) Given the following ***property*** list (**PL**):
(name (Don Smith) Hire-Year 1989 age 45 Salary 70000 weight 240)

Answer the following: **(5 pts each)**

a) Write the lisp code that extracts and returns the **hiring** year ONLY (i.e., **1989**) from the '**Hire-Year**' property value.
(Hint: your code should include the application of one of the following functions to the **PL**:
cadadr , cdadar, cddaar, or **cddadr**)

(cadddr '(name (Don Smith) Hire-Year 1989 age 45 Salary 30000))

b) Without the use of ***putprop/addprop*** function defined in our class, write the lisp code that adds the following property pair **(address (POBOX 2373 CITY))** to the above property list.
The final output should be:

(name (Don Smith) Hire-Year 1989 age 45 Salary 30000 address (POBOX 2373 CITY))

(append '(name (Don Smith) Hire-Year 1989 age 45 Salary 30000) '(address (POBOX 2373 CITY)))