Name of student _____ **Group** _____

FP

Read CAREFULLY. Write your answers on this paper. Do not modify the name or parameter list for the functions you are asked to write. Terms and notations have the meaning in the lectures. Code is written in Haskell. Closed books, closed notes. No communication. No explanation will be offered during exam; if in doubt, write down a brief explanation. To leave the exam, you need to hand over the paper. Available time: 60 min. Default mark: 1.

1. For each item, circle *the best (=correct and complete)* answer. One correct answer =+3 points, one wrong answer =−1 point, 0 or more than answers =0 points. Your file score will be mapped the interval [1..10].

   (a) In Haskell, we do `x=1`. Which condition must be fulfilled by function `f` such that, after it is called, to notice that the value of `x` has been changed to `2`:

   A. `f` does not have `x` as a parameter and also returns `x+1`

   B. `f` does have `x` as a parameter, itsevaluation is strict and `f` returns `x+1`

   C. inside de body of `f`, expresion `x+1` gets evaluated; the returned value does not matter

   D. no answer, except this one, is correct

   (b) Se da `f n = filter (\ x -> x ‘div‘ n)`. Apelul `f 1 [2, 0, 1]` va returna:

   A. `[2, 1]`

   B. `[0]`

   C. apelul nu se poate efectua: in corpul lui `f`, utilizarea lui `div` este eronata

   D. no answer, except this one, is correct

   (c) Given `lis = [ [k..]  | k <- [2..]]`, what will `take 3 (map (take 2) lis)` be evalated to?

   A. nothing

   B. `[[2,3],[3,4],[4,5]]`

   C. `[[2,3,4,5,6,7,8,9,10 ...` (and so on ad infinitum)

   D. no answer, except this one, is correct

   (d) Given $C = \lambda\ x\ y\ z\ .\ (x\ z)\ y$ $I = \lambda\ x\ .\ x$ Expression $C\ I\ C\ I$ is equivalent to:

   A. $((C\ I)\ C)\ I$, as well as $\lambda\ a.\ \lambda\ b.\ \lambda\ c.\ (a\ c)\ b$

   B. $((C\ I)\ C)\ I$, but not to $\lambda\ a.\ \lambda\ b.\ \lambda\ c.\ (a\ c)\ b$

   C. $\lambda\ a.\ \lambda\ b.\ \lambda\ c.\ (a\ c)\ b$, but not to $((C\ I)\ C)\ I$

   D. no answer, except this one, is correct