Ponce	Martin	10371381	Date 11/09/2014
Family name	Given name	Student number	

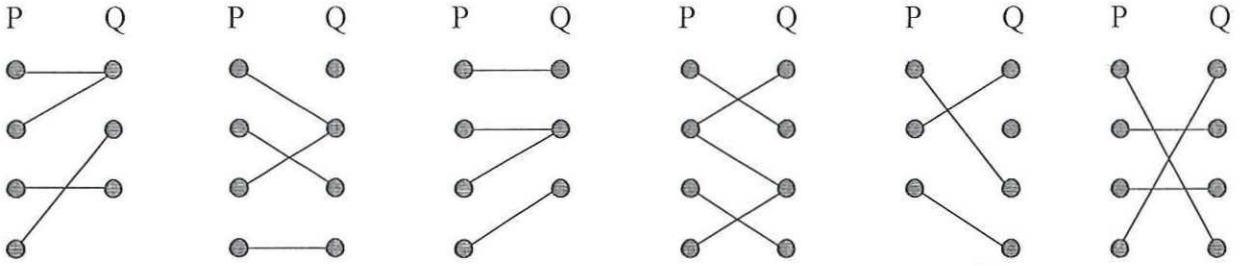
ENS1161 Computer Fundamentals

Test 6

9/10

(a) Each of the diagrams below shows a relation between sets P and Q. Your task is to determine whether the relation P → Q is a function, and if so, what type of function. For each diagram, use labels A, B, C, D or E to indicate whether the relation is:

A: not a function;
B: a function that is one-to-one but not onto;
C: a function that is onto but not one-to-one;
D: a function that is neither one-to-one nor onto;
E: a function that is both one-to-one and onto.



C D A C A B A E 2

(b) If $f(x)=\sqrt{10-x}$ and $g(x) = x^2+5$, find the value of g(f(1))

14 ✓ 1

(c) Let w be a function from set S = {a, b, c, d, e, f, g} to itself defined by:

w = {(a, d), (b, b), (c, g), (d, a), (e, e), (f, c), (g, f)}

(i) Is w one-to-one? (Answer Y or N) Y ✓

(ii) Is w onto? (Answer Y or N) Y ✓ 3

(iii) Does w have an inverse? (Answer Y or N) Y ✓

(d) State the rule for the inverse of $h(x) = \sqrt{4x-3}$

$h^{-1}(x) = \frac{x^2+3}{4}$ ✓ 1

(e) Let p be a function from A = {a, b, c, d} to B = {e, f, g, h} defined by:

p = {(a, e), (b, g), (c, f), (d, h)}

State the value of: (i) p(b) g ✓
(ii) $p^{-1}(e)$ a ✓ 2.

[3 + 1 + 3 + 1 + 2 = 10 marks]