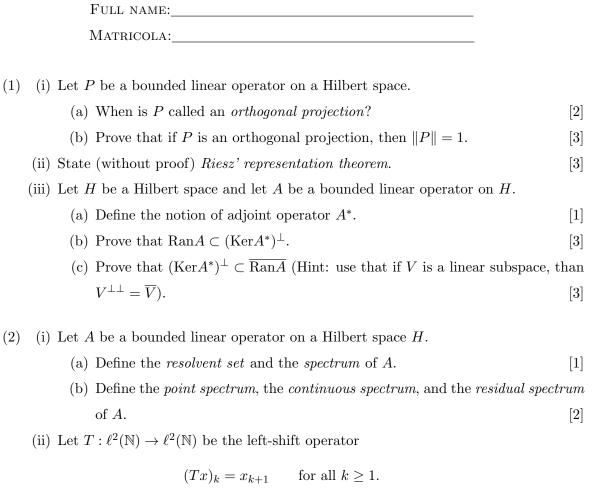
Functional Analysis in Applied Mathematics and Engineering: Final exam: part 3 - 20/02/2017



- (a) Prove that ||T|| = 1. [3]
- (b) Prove that the point spectrum of T coincides with (-1, 1). [3]
- (c) Prove that the spectrum of T coincides with [-1, 1]. [2]

(iii) Let $g \in C([0,1])$. Consider the operator $T: L^2([0,1]) \to L^2([0,1])$ defined by

$$(Tf)(x) = \int_0^x g(y)f(y)dy.$$

Prove that T has no eigenvalues.

[4]