

- 1) a) Prove that  $\{\frac{\sin(\Omega t - j\pi)}{\Omega t - j\pi}\}_{j=-\infty}^{\infty}$  is an orthogonal system in  $L^2(\mathbb{R})$ .
- b) Prove that the series (23) in Theorem 2.23 (Shannon -Whittaker Sampling Theorem) converges also in  $L^2(\mathbb{R})$ . (See page 118 of the textbook).