Topics for Exam Harmonic Analysis

(1) Harmonic functions in unit disc, maximum principle, Dirichlet problem
(2) Wiener algebra
(3) Harmonic extensions of Radon measures
(4) L2 functions, Plancherel
(5) Spectral measures
(6) The dyadic model of harmonic functions, martingales
(7) Spectral resolution
(8) Decomposition theorems for measures
(9) Martingale average convergence theorems
(10) Martingale differences and dyadic paraproducts
(11) Outer measures, Outer Lp, Outer Hölder
(12) Marcinkiewicz interpolation.
(13) Embedding theorems
(14) Hilbert transform, boundedness
(15) BMO and Hardy space $H1$
(16) The Corona theorem
(17) The Cauchy integral along Lipschitz curves
(18) Grand embedding theorem
(19) Adapted Haar functions, $L2$ bounds
(20) Carleson theorem on convergence of Fourier series.
(21) Walsh Fourier series, convergence
(22) Walsh wave packets, Walsh phase plane
(23) Wave packet Embeddings into upper three space
(24) Maximal embedding theorem for wave packets
(25) The bilinear Hilbert transform