MID TERM Syllabus for MFDS-III (MAT 3135)

NUMBER THEORY (CO1) (15marks)
1. Introduction to number theory including if and only if statements 2. Divisibility, greatest common divisors, division algorithm and Euclidean algorithm. 3. Prime numbers, co-primality, congruences and solutions of linear congruences 4. Complete residue systems and reduced residue systems 5. Euler-Fermat theorem, inverse modulo m 6. Chinese remainder theorem including cases when m_i need not be pairwise co-prime 7. Euler's phi function
GRAPH THEORY (CO4) (15 Marks)
Introduction to graphs and basic terminologies - Order, size, degree
Definition- Various Subgraphs, cliques, regular, cubic, complete graph. Complement, Isomorphism, self – complementary graphs and related results
Definition- Walks, paths, trail, cycles
Definition-Distance, eccentricity, centre, radius, diameter, girth, circumference self centred graphs and related results, cut vertex, bridge
Connectedness and connected components and related results
Path P_n , Cycle C_n related results
Bipartite graphs, complete bipartite graphs and results
Trees and related results. Centre of a tree
Spanning trees, weighted graph, minimal spanning tree

NOTE: All theorems that were proved in the class or left as exercises could be potentially asked for exam.