Course Code: 1mscm1
Course: Advanced Abstract Algebra
Credit: 4
Last Submission Date: April 30 (For January Session)
October 31, (For July Session)

Max. Marks:-70
Min. Marks:-25

Note:-attempt all questions.

Que.1 Let H&K be two distinct maximal normal subgroup of G then G = HK and $H \cap K$ is a maximal normal subgroup of H as well as K.
Que.2 State & prove Jordan – Holder theorem.
Que.3 A subgroup of a solvable group is solvable.
Que.4 Homomorphic image of a nilpotent group is nilpotent.
Que.5 Let K be a finite extension of F and L be a finite extension of K. Then L is a finite extension of F i.e.

$$[L:F] = [L:K] \quad [K:F]$$

Que.6 Let $k/_F$ be a finite extension and suppose K is perfect then show that F is perfect.
Que.7 State & prove Cauchy's theorem for finite group.
Que.8 State & prove Lagrange's theorem.
Que.9 If D is an integral domain with unity in which every non- zero, non unit element is a finite product of irreducible element and every irreducible element is prime then D is a unique factorization domain.
Que.10 State & prove Fermat's theorem.