

رياضيات ٦ جزء أ (مميز) (chemistry third year (education))

Faculty of Science

Groups theory (نظرية المجموعات)

Department of Mathematic.

Second term exam

تناول بالبحث احد الموضوعات الاتية:

- (1) Permutation,  $(S_n, \circ)$ , even and odd permutation, order of permutation.
- (2) Congruent relation modulo  $n$  on  $Z$  is equivalence relation,  $(Z_n, \oplus)$  is group.
- (3) Subgroups, cyclic sub groups, Normal subgroups
- (4) Cosets and Lagrange's theorem, relation between order of a group and its subgroup.
- (5) Group homomorphism.
- (6) Isomorphism, isomorphic groups.
- (7)  $A_3, A_4$  The set of all even permutations of  $(S_3, \circ)$ ,  $(S_4, \circ)$  respectively and its subgroups.
- (8) how build subgroup for a cyclic group and how determine that a subset of a group is subgroup.
- (9) On the functions and the composition operation of the functions.
- (10) comparison between Lagrange's theorem and Cauchy's theorem.