1. Let G be a group and $a, b \in G$ then the equation $ax = b$ and $ya = b$ have unique solution for x and y in G

2. Let (i) $a^m a^n = a^{m+n}$, $m, n \in Z$

(ii). $(a^m)^n = a^{mn}$, $m, n \in Z$

3. The union of two subgroup of Group G is a group if and only if one is contained other.

4. Let A & B be two subgroups of a group G Then AB is a subgroup of G if and only if $AB = BA$.

5. Any subgroup of cyclic group is cyclic

6. Let G be a group and $a, b \in G$ then

(i). Order of a = order of a^{-1}

(ii). Order of a = Order of $b^{-1}ab$

(iii). Order of ab = Order of ba

7. Let H be a subgroup of G. The number of left cosets of H is the same as the number of right cosets of H.

8. A group G has no proper subgroup if its a cyclic group of prime order.

9. Let H and K be two subgroups of G of finite index in G. P.T $H \cap K$ is a subgroup of finite index in G.

10. S.T If a group G has exactly one subgroup H of given order then H is a normal subgroup of G.

11. If G is a group and G' is a set of the binary operation & there exist a one to one mapping f from G onto G' Such that

$f(ab) = f(a) f(b) \ \forall \ a, b \in G$ then S.T G' is also a group.

12. Explain Cayley's thm

13. Explain Fermat's thm

14. S.T $|H|$ divides $|G|$

15. Let G be a group. Then the order of a is Same as the order of cyclic group generated by a.

16. Let G be a group and H be a subgroup of G then

(i) $a \in H \Rightarrow aH = H$

(ii) $aH = bH \Rightarrow a^{-1} b \in H$

(iii). $a \in bH \Rightarrow a^{-1} \in Hb^{-1}$

(iv). $a \in bH \Rightarrow aH = bH$

17. Let H & K be two Subgroups of G of finite index in G. P.T $H \cap K$ is a Subgroup of finite index in G

18. Let N be a Subgroup of G. Then the following are equivalent

(i). N is a normal Subgroup of G.

(ii). $aNa^{-1} = N \ \forall \ a \in G$

(iii). $aNa^{-1} \subseteq N \ \forall \ a \in G$

(iv). $ana^{-1} \in N \ \forall \ n \in N \ \& \ a \in G$.

19. Let N be a normal subgroup of G then G/N is a group under the operation defined by $Na \cdot Nb = Nab$

20. Isomophism is an equivalence relation among groups.