

Question for Mathematics Programme students: Full Marks = 10

G – CC – T – 04

10

Answer any 2 (Two) questions

2 × 5

1. If G be a non-commutative group with centre Z , show that the quotient group of G/Z is non-cyclic.
2. Show that the intersection of two normal subgroups of a group G is again a normal subgroup of G .
3. Show that in a ring $(\mathbb{Z}_n, +, \cdot)$ an element \bar{m} is a unit if and only if $\gcd(m, n) = 1$.

---- END OF QUESTION FOR MATHEMATICS GENERAL [PROGRAMME] COURSE ----

Question for students with Mathematics as SEC ; Full Marks = 05

G – SEC – T – 2A

05

Answer any 1 (One) question

1 × 5

1. G is a simple graph with n vertices, where $n \geq 3$ If $\deg(v) \geq \lfloor n/2 \rfloor$ for each vertex v , then the graph G is Hamiltonian graph.
2. Draw the following:
 - (a) A 3-regular graph of order at least 5;
 - (b) A bipartite graph of order 6.

[2+3]