

INTRODUCTION TO ALGEBRAIC TOPOLOGY (MTH-507)

SURPRISE QUIZ (02/04/2018)

Time: 45 minutes

Maximum Marks: 10

Attempt all questions. Use separate page for each answer.

Problem 1. Show that neither the torus nor projective plane can cover the other. (4)

Problem 2. Identify $\pi_1(S^1 \vee S^1) = F_2 =$ Free group generated by $\langle a, b \rangle$ in the usual way. Construct the covering space corresponding to the subgroup H of F_2 which is the kernel of the map $F_2 \rightarrow Z_3$ given by sending $a \rightarrow 1$ and $b \rightarrow 2$. (6)