MC 304 (Theory of computation)

Class Test 2

Max. Marks : 20

1. Find a reduced grammar equivalent to the grammar $S \rightarrow aAa$, $A \rightarrow bBB$, $B \rightarrow ab$, $C \rightarrow aB$.

2. Reduce the following grammar to Chomsky Normal form :
$S \rightarrow 1A/0B$, $A \rightarrow 1AA/0S/0$,
$B \rightarrow 0BB/1S/1$.

3. Consider the grammar $S \rightarrow SbS/a$. Find a left most derivation and a right most derivation of the string abababa. Is this grammar ambiguous?

4. Show that the language $L = \{ a^{n^2} / n \geq 1 \}$ is not context free.