In this study, energy and exergy analyses and also parametric study of the solar and biomass-based energy system for multi-generation are conducted. The exergy analysis results have given that solar collector and biomass combustion chamber have the maximum exergy destruction rate of the integrated process parts. According to the thermodynamic analysis findings, energy efficiencies of the system parts for the solar and biomass-based integrated process change between 23.98-99.31% and 28.47-98.24%, respectively. Also, it is found that the integrated process for the solar and biomass mode has the maximum energy efficiency as 59.16% and 57.41%, respectively, and exergy efficiency as 54.23% and 52.47%, respectively.