Quiz (2008. 6-10) (30 pts)   ①

☐ All problems are related to <u>Lectures 6,</u>   .

ANSWER with T (True) OR F (False)

Q1:   Topology optimization requires a baseline
(3pt)   design to begin with.   (   )

Q2:   In order not use explicit condition to
(3pt)   push the design variables to 0 or 1,
        the material or mechanical properties such
        as EI should be properly penalized functions
        of design variables.   (   )

Q3:   For Sensitivity calculation of the objective
(3pts) and constraint functions, the final form of
        the sensitivities are the same regardless of
        using the direct differentiation method or
        the adjoint method.   (   )

Q4:   If the number of design variable is larger
        than Constraint equations, the use of
(5pts) the adjoint method is computationally
        more efficient (   )

Q5. The system compliance $\underline{F}^T \underline{u}$ is
(3pts) proportional to the system strain energy. (   )

Q6. In the adjoint method, the governing
(5pts) equilibrium equation ($K\underline{u} - \underline{F} = 0$) is added
to the objective function. Therefore, the value
of the objective is changed.   (   )

Q7. To formulate the topology optimization method,
(3pts) the finite element method must be used,
i.e, other analysis technique cannot be
used.   (   )

Q8. If the structural state corresponding to
(5pts) a set of design variables having intermediate
values cannot be physically possible, the
resulting topology optimization formulation
is not valid.   (   )

~ END ~