

ELEC-E8712 Design for Reliability (5 cr)

1st midterm exam 5.10.2017

1. With the help of Fig. 1, explain the basic principle of s.c “stress–strength” approach and how it can be utilized in reliability engineering. N.B. Pay special attention to the items/ details indicated with black arrows. In addition, describe what is “bath-tub” curve (i.e. what phases it is composed of?) and how it is related to Fig. 1. (8p)

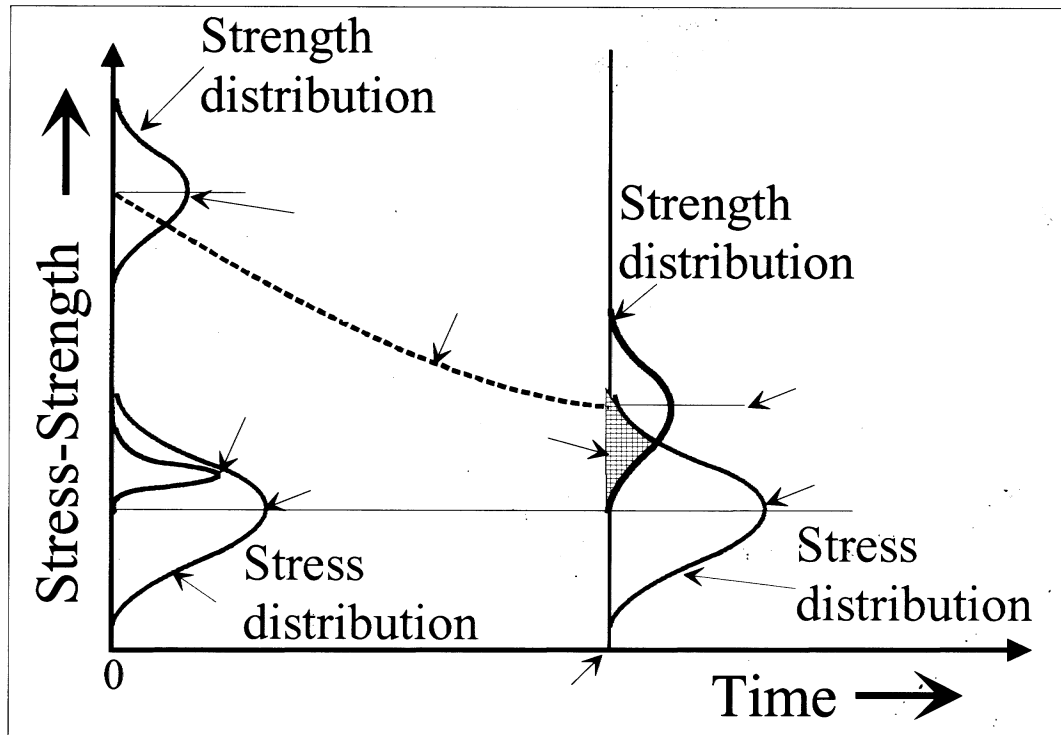


Fig. 1 “stress–strength” Design for reliability approach

2. Explain the basic method (e.g. MIL-HDBK-217, Parts Count Method) for calculating MTTF/MTBF value for an electronic product. Discuss shortly on the advantages and disadvantages of this kind of approach. (3p)
3. Discuss on the thermal stresses that an electronic device faces during its lifetime (life-cycle) and their effect on the reliability? (4p)

NB. You can give your answers either on English or Finnish.

Essay type answers are NOT required!