Software Cost estimation Practical Exam First Term 2023/2024

1. The general effort equation is:
   PM = A* x *Size ^{B} **x *M,***
   where the exponent B is given by the equation:
   The exponent B = [(∑ scale factors) / 100] + 1.01,
   the scale factors are Precedentedness, Development flexibility, Risk resolution, Process maturity, and Team Cohesion.

   (a) Estimate the scale factors and calculate B in the following case: A company takes on a new project not in *a domain of its experience.* The client did not *define the process to be used and has allowed time for risk analysis*. The company has a *CMM level 3 rating* (Capability Maturity Model is a framework for *assessing how well organizations manage the development of their staff*).

   (b) If the multiplier M = 2 ***calculate the effort without cost drivers and with cost driver*** if the project size = 125000 LOC.

2. In a use case estimation method given that the unadjusted use case points (UUCP) = 85, Environmental Factor (EF) = 1.05, and Technical Complexity Factor (TCF) = 0.85. ***Calculate the Adjusted Use-Case Points.***

3. If you have ***275-function-point program*** were to be implemented *in* ***Java,*** calculate the range of the size estimate and the nominal value given that for Java: you would take the range of ***40*** *to* ***80 LOC per function point*** and the *expected value of* ***55 LOC per function point.***

4. Suppose you are creating an effort estimate for a desktop business application of 1,400 function points in Java and you have a maximum team size of 6 people. ***Calculate the effort for this application using the ISBSG Method,*** given that:
   The Desktop equation:
   $\boldsymbol{StaffMonths = 0.157 \times FunctionPoints^{0.591} \times MaximumTeamSize^{0.810}}$
   The Third Generation Language equation:
   $\boldsymbol{StaffMonths = 0.425 \times FunctionPoints^{0.488} \times MaximumTeamSize^{0.697}}$

5. Suppose you have an effort estimate of *21 to 28* staff months. ***Derive the estimated range for the schedule from a past project*** its estimated effort and schedule were 22 staff months and 9 months respectively, using the equation:
EstimatedSchedule = PastSchedule × (EstimatedEffort / Past Effort) $^{1/3}$