Name: _____Prof. Penny_____   Student #:_____

CSC444F'10 Midterm Test

50 minutes – No Aids Allowed – 100 points total - 10 points per question

Answer all questions in the spaces provided. Use the backs if you run out of space.
Write your name and student number on each sheet.

1. In the CMM for Software, name levels 2 and 3 and identify the single most important characteristic of each.

    Level 2: Repeatable – Planning;
    Level 3: Defined - Written processes;

2. In Moore's technology adoption lifecycle model he draws a Bell curve. Describe the axes of the curve and in general terms what the vertical divisions overlaid on the curve represent.

    The X-axis is time. The area under the Y-axis represents the percentage of a community that adopts a particular technology. The vertical divisions indicate self-referencing market segments with different characteristics pertinent to technological adoption.

3. Briefly argue why a Gantt chart may be considered harmful in early release planning. What is important in release planning? What is the difficult question?

    The Gantt chart divides features into detailed tasks, says who in particular is doing each task, and specifies the order in which tasks must be performed. This level of detail is not necessary for early release planning purposes. What is important is "What are we building?", "By when will it be ready?", and "How many people do we have to do it". The difficult question is if we can reconcile these three.

4. In sizing features in ECDs, there are three contributing factors. What are they?

    The inherent size of the feature, who will be coding the feature, and the productivity of that coder on that feature.

5. Describe how it happens that a software company typically has to correct defects in three maintenance streams.

    It must fix it in the release under development; fix it in the release that is currently being shipped; and fix it in the prior release due to commitments to customers who have not yet upgraded to the currently shipping release.

6. What does the work factor, *w*, represent in release planning? Does *w* take into account the productivity of a worker, and why or why not?

   w represents the number of hours a coder can spend coding features into the next release per workday. It does not account for productivity, as that is already accounted for in the feature sizings.

7. If the estimate for F is considerably higher than the estimate for N*T, what release planning options are realistically available? Are there any options available that are less realistic, and if so, what are they and why are they less realistic?

   Realistically, we can cut features, reduce the scope of features, lengthen the release, or do any combination of the above.

   Less realistically, we can hope that the remaining features come in under their estimates, we can hire more developers (but they are unlikely to be productive on this release), we can ask everybody to work longer hours (but this is unlikely to be sustainable without losing productivity), or we can hope the test phase is relatively shorter than anticipated.

8. The capacity constraint is expressed as F=N×T. Explain under what circumstances this constraint holds true.

   It always holds true. After a release is done, the total time spent on coding features (F) is by definition exactly equal to the total time spent coding by developers (N*T).

9. What are the perceived shortcomings of other software development processes that agile processes are claimed to correct?

   Handling the Changing requirements; Heavy stress on documentation, and artifacts other than working software; Lengthy lifecycles; Late release of software; Lack of close contact with business people; Big Plan ahead, costly to change.

10. In Requirements Engineering, describe a Goal Model and indicate why it is useful, and how it is used.

    Captures non-functional requirements, showing how they may conflict, and providing a structure for determining what decisions will contribute to, or detract from, achieving the various non-functional requirements, thereby allowing the best choices to be made.