Software Economy and Project Management

Part 1

1. A project is deemed successful if ___
    a. Accomplished its goals and objectives.
    b. Achieves or exceeds the stakeholder's expectations
    c. Brings a product, service, or result that didn't exist before
    d. None of the above
2. Main difference between the spiral and rapid prototyping models is:
    a. Rapid prototyping produces a working product in a very short time, due to having prototype-experienced developers
    b. Spiral model does not use prototypes
    c. Spiral model supports iterative approaches while rapid prototyping doesn't
    d. There are no major differences
3. An organization has 3 types of relationships between its organizational units
    a. Upward, downward, and one-way communications
    b. Simplex, half-duplex, and full-duplex communications
    c. Command, report, and discuss paths
    d. Reporting, decision, and communication structures
4. A senior engineer in a consultation team can be considered as a ___ for his team and the project.
    a. Process promoter
    b. Knowledge promoter
    c. Power promoter
    d. None of the above
5. A fudge factor is a good approach when:
    a. You have a lot of uncertainty in the project
    b. You have a lot of risks in the project
    c. You want the project to fail
    d. You and your team are expecting new technologies to come out soon, which can help reduce the project duration

Part 2

Considering these SLC models: Waterfall, V-Shaped, Spiral, Evolutionary Rapid Prototyping, RAD, and Incremental; select the most suitable lifecycle models for the scenarios below:

a. A hardware project where the goal is to build a new smartphone based on a previous (but failed) model. The requirements are well known, and the deadline is within 8 months of the start of the project. There are a few high risks regarding the user interface and camera capabilities.

    RAD or Incremental:

RAD is more suitable as the company already has experienced personnel, previous experience, ready-to-use components, and the requirements are well known. The use of prototypes will reduce the risks associated with UI and camera. Also, both will insure a quick delivery

b. A complex software project that includes developing several parts of the software through iterative approach. Several concept prototypes are needed with high user engagement during all the phases of the life cycle.

   Evolutionary Rapid Prototyping or Spiral
   The best is the spiral. Both lifecycles support iterations and use prototypes to involve the users during the different phases of the project. However, the spiral suits such complex projects better, especially if it was adapted for iterations.

c. A construction project where a house is to be built using new technologies. The requirements are well known, and the deadline is within 6 months of the start of the project. The final product will be used as a proof-of-concept for these technologies and no actual residency will occur.

   Waterfall or V-shaped:
   Since no user feedback is required, the requirements are well- known, and this is basically a production of one prototype, these two lifecycles would the most suitable

d. A software project to introduce very new technologies that are never been used before. The software will be demoed in an upcoming consumer show after 5 months, then it will be released to the masses after 7 months from that show. The development platform is also new, and training is required for the developers.

   Evolutionary Rapid Prototyping (maybe RAD):
   The idea is that this is a first of its kind product. We need a working prototype in 5 months, and several prototypes after that within a 7 months period to get a fully working product.

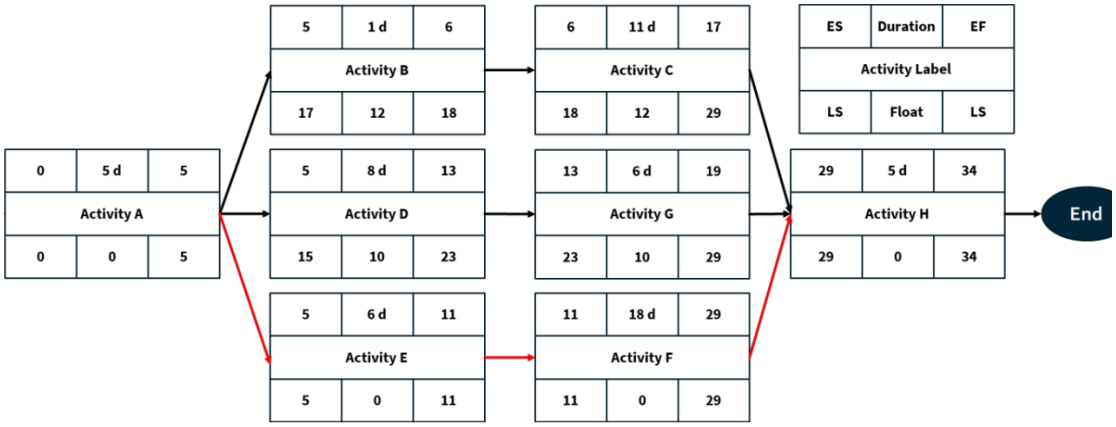
Part 3

In a project, the following activities have the following info (time in days):

Activity	Dependency	Duration	ES	EF	LS	LF	ST
A	None	5	0	5	0	5	0
B	A	1	5	6	17	18	12
C	B	11	6	17	18	29	12
D	A	8	5	13	15	23	10
E	A	6	5	11	5	11	0
F	E	18	11	29	11	29	0
G	D	6	13	19	23	29	10
H	C, F, G	5	29	34	29	34	0

a. Complete the table

b. Draw the activity network



c. What is the critical path and the project duration

Project duration = 34 days & Critical path = A → E → F → H