SE3910 Review Questions (part 2 of 2)

1. In Gunfire at Sea, Morrison describes the Navy as going through three phases in the change management process. What are these three phases?
2. List and describe three key components of network centric warfare?
3. How has technology made network centric operations possible?
4. What is the nature of the relationship between military tactics and technology?
5. Does a new technology necessarily give the holder a military advantage?
6. Compare and contrast technology development during wartime and peacetime.
7. How fast can the military adopt new technologies and what can be done to facilitate the adoption of new technologies?
8. Define risk.
9. Why does diversification reduce risk in a portfolio?
10. In R&D portfolio management, aside from seeking to maximize portfolio value while managing risk, what other objectives are there?
11. What are two criteria to consider when deciding whether the DoD should lead, initiate, participate, or monitor a technology R&D project?
12. How does the Navy (the Office of Naval Research) categorize technology?
13. What does it mean to say a R&D project is aligned with the Army’s strategy?  
    It means there is a pathway to transition of the technology. (I am making this up based on the lecture notes for less on 8, slide 18).
14. Define technology transition.  
    From the lecture notes for lesson 8, “Technology transition is the process to adopt technology from a science and technology community to the operational military in the quantity and quality needed by the warfighter to carry out assigned missions at the best value as measured by the warfighter”
15. What are challenges of transition technology to military operations?  
    See “MANAGER’S GUIDE TO TECHNOLOGY TRANSITION IN AN EVOLUTIONARY ACQUISITION ENVIRONMENT” Chapter 4 (lesson 8).   
    From less on 8 lecture notes (slide 4):
    1. Rapid technological change
       1. Rate of technology change compared to development time of new systems
       2. Obsolescence
       3. Countermeasures
    2. Availability of commercial technology adaptable to military use
    3. Low barriers to adversaries developing defense technology
       1. Proliferation of military technologies beyond U.S. military
       2. Other countries have significant R&D and prowess in many technologies
16. What is a motivation for using an evolutionary acquisition process?  
    This response was derived from lesson 8 lecture notes.
    1. Slide 12 cites acquisition response time
    2. Slide 13 cites risk minimization vs. risk management
17. Explain how does system modularity accommodate technology evolution?
18. What are reasons for exponential growth in technology performance?
19. What are reasons a technology will converge to a small number of variants as it matures?
20. What aspects of technology are predictable and what aspects are not?
21. Ray Kurzweil argues for exponential growth in all technologies, not just semiconductors. What about his viewpoint seems reasonable, what seems unreasonable?
22. What is Augustine’s Law?
23. What is the difference between forecasting evolutionary technologies and disruptive technologies? What is a disruptive technology?
24. What is the technology readiness level? What does a value of 1 imply compared to a value of 9?
25. How is the technology readiness level used by the DoD?