## *Chapter 9 – Teams and Teamwork*

1. **Explain the difference between cross-functional and multi-disciplinary teams. [R]**

   A cross-functional team is comprised of people from organizational functions (i.e. engineering, marketing, and manufacturing) and is important in conceptualizing, marketing, and manufacturing a new product. On the other hand, the definition of a multi-disciplinary team is not in agreement among all engineers. It is, essentially, a team composed of people from different disciplines, such that complimentary skills and representation from multiple technical disciplines are achieved.

2. **Identify the characteristics of the forming, storming, norming, and performing stages in team development. [R]**

   Forming is the initial stage in which a team is created and the team's objectives and roles are not well defined. The storming stage is where team members work to develop objectives and define roles. This stage may propose some hostility as members contend for responsibilities and positions. The norming stage is a further maturation of the team, as the team's roles, objectives, procedures, and processes are defined clearly and accepted. Performing is the stage in which the team attempts to achieve the objectives created by collaborating on decisions and resolving any outstanding disagreements.

3. **Describe the distinction between and teams and teamwork. [R]**

   In order for a team to be successful, they must adhere to good teamwork principles. On the contrary, the application of good teamwork principles does not guarantee that a team will be successful. Another way to explain the relationship is by using logic - the converse ($q \rightarrow p$) of a given implication ($p \rightarrow q$) does not have the same truth value as the original implication. The contrapositive ($q' \rightarrow p'$) is the only other statement equivalent to the original. This would be stated as such:

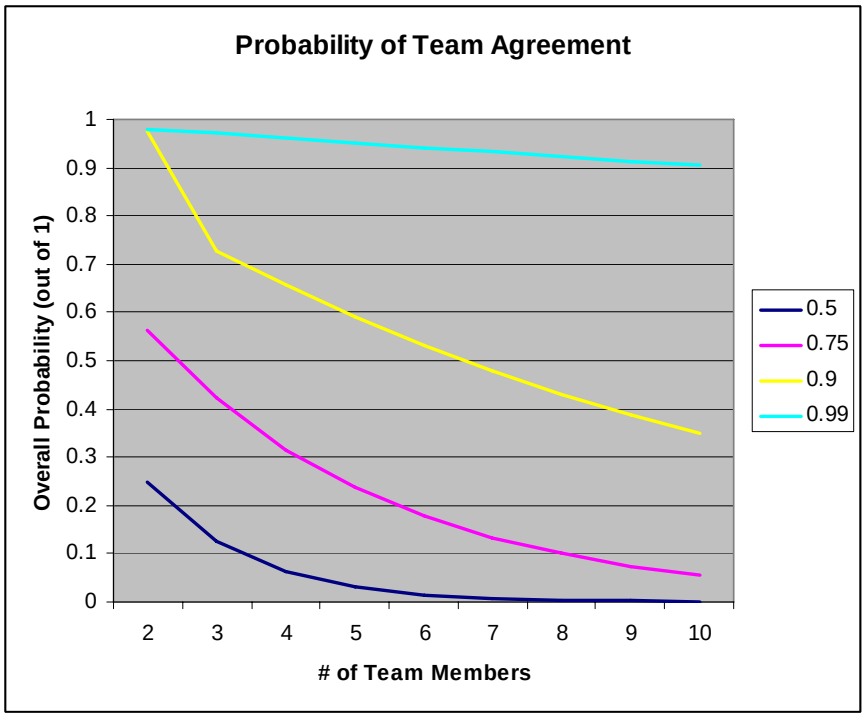
   ***"If good teamwork principles are not applied, then the team will be unsuccessful."***

4. **According to this chapter, it is difficult to develop a consensus as the number of team members increases. Consider the situation where a team needs to agree on a proposal. Furthermore, assume that each team member's vote is random with a 50% chance of agreeing with the proposal. Plot the probability of the team unanimously agreeing to the proposal versus the number of team members. Consider team sizes from 2 to 10. Overlay three additional plots for the situation where each team member has a 75%, 90%, and 99% chance of agreeing to the proposal. [R/A]**

   The probability values can be figured out by using the following equation:

   $$P \text{ (agreement)} = x^n .$$

   Where $x$ is the probability of each teammate agreeing, and $n$ is the number of total teammates. A plot of the overall probabilities is shown on the following page.




5. **Project Application. Develop Team Process Guidelines as proposed in Section 9.4. [P]**

   ***Note:*** *The guidelines should address those items request in Section 9.4. Effective guidelines have a good level of specificity. They will also have good approaches to solving team problems that will inevitably arise. We sometimes get those indicating that the team may resolve the problem by "having a beer" or "playing volleyball". They are often the teams that run into probems, but can't resolve them.*

   *Finally, the guidelines are just that – guidelines and they can be changed. Faculty members have great difficulty in resolving team problems (in fact, we can't effectively do it). We ask all teams to use the guidelines to resolve their problems. If they come to a faculty member with a problem, we first ask them if they have used the guidelines – that shows the teams that we are serious about use of the guidelines and that they should apply them.*

6. **Project Application. Complete the team self-assessment in Table 9.1. [P]**

   **Note:** *This a good exercise for teams to complete a self-assessment.*