

**Assignment 01 – Fundamentals of Engineering Management**

1. Briefly explain the four functions of management.
2. Briefly explain the three main managerial roles proposed by Henry Mintzberg.
3. Select a company or industry for which the strategic management of technology is important. Describe some of the base, key, and pacing technologies that are important for their strategic management of technology.
4. Describe the process of SWOT analysis and discuss its contribution in strategic planning.
5. You must decide whether to buy new machinery to produce product X or to modify existing machinery. You believe the probability of a prosperous economy next year is 0.6 and of a recession is 0.4. Prepare a decision tree and use it to recommend the best course of action. The applicable payoff table of profits (+) and losses (-) is:

	N1 (prosperity)	N2 (recession)
A1 (buy new)	+\$950,000	-\$200,000
A2 (modify)	+\$700,000	+\$300,000

6. You are considering three investment alternatives for some spare cash: Old Reliable Corporation stock ( $A_1$ ), Fly-By-Nite Cargo Company stock ( $A_2$ ), and a federally insured savings certificate ( $A_3$ ). You expect the economy will either “boom” ( $N_1$ ) or “bust” ( $N_2$ ), and you expect that a boom is more likely ( $p_1 = 0.6$ ) than a bust ( $p_2 = 0.4$ ). Outcomes for the three alternatives are expected to be: (1) \$2000 in boom and \$500 in bust for ORC; (2) \$6000 in boom but -\$5000 (loss) in bust for FBN; and (3) \$1200 for the certificate in either case. Set up a payoff table decision matrix for this problem and show which alternative maximizes expected value.
7. Discuss under what conditions might each of the following logics of departmentation be desirable: functional, geographical, customer, product, and process.
8. Chart an organization with which you are familiar that has at least three organizational levels, and identify the number of people reporting to each manager at each level. How do the spans of control at the lowest level compare with those at higher level(s)?
9. For what kind of worker, in what type of environment, does McGregor’s Theory X make some sense? If you were structuring Maslow’s need hierarchy specifically for (a) scientists and (b) engineers, would you do it any differently? Why?
10. Job enrichment seeks to make work more meaningful and give employees more control over their work. Discuss the negative response of many blue-collar production workers toward this initiative. Why do you think workers have this attitude?