**Chapter 7 RISK MANAGEMENT**

1. What are the objectives of Risk Management?

Objectives of Risk management are:

* decide whether a particular risk is important during completion of a project.
* evaluate high risk activities on a project’s critical path that are a cause for concern.
* Minimize risk, i.e. Minimized over the project and removed from critical path activities.
* Common risks in a project include project running late, allocation of staff or the process of identifying risks.

2. What are the various activities of Risk Engineering? Explain.

The various activities of Risk Engineering are:

* **Risk identification:** List of all the risks that can adversely affect the successful completion of a project.
* **Risk estimation:** Analyzing the likelihood and impact of each hazard.
* **Risk evaluation:** Ranking risks and determining risk aversion.
* **Risk planning:** Drawing contingency plans and adding these to the project's task structure.
* **Risk control:** Functions of the risk manager in minimizing and reacting to problems throughout the project.
* **Risk monitoring:** Ongoing activity to determine risk status.

3. What are the various factors of Risk Identification?

Various factors of risk identification are :

**Application Factors:** the nature of the application is a critical factor. The expected size is also important with greater being the likelihood for errors when the system is big.

* **Staff factors:** The experience and skills of the staff involved are clearly important to determine the success of the project.
* **Project factors:** Important that the project and its objectives are well defined and that they are absolutely clear to all the members of the team.
* **Project methods:** Usage of well specified and structured methods for project management will decrease the risks in the system.
* **H/W-S/W Factors**: A system developed on one type of h/w and s/w platform to be used on another might be an additional risk to the project.
* **Changeover factors:** Incremental or gradual changeover minimizes the risk involved. Parallel running can provide safety but is too costly.
* **Supplier factors:** The extent to which a project relies on external organizations that cannot be directly controlled influences the project.
* **Environment factors:** Changes in the environment can affect a project’s success.
* **Health and safety projects:** The effect of the health and safety projects should also be considered though not a major issue for the software projects.

4. How can you assess the importance of Risk?

Assessing the importance of the risks once identified.

* *risk likelihood*: The probability of a hazard’s occurrence.
* *risk impact:* The effect of the resulting problem on the project.
* *risk exposure/value:* The importance of the risk.

**risk exposure = risk likelihood \* risk impact**

* Risk impact is identified in monetary terms and risk likelihood is assessed as a probability. The estimation of these costs and probabilities is likely to be difficult, subjective, time-consuming and costly.
* Easy way to categorize the likelihoods and impacts as high, medium or low does not need the calculation of risk exposure.

5. How to prioritize risks?

Managing risks involves the use of two strategies;

* reducing the risk exposure by reducing likelihood or impact.
* drawing up contingency plans to deal with the risk should it occur.
* Factors to be taken into account while prioritizing risks are,
* **confidence of risk assessment:**  making good judgment.
* **compound risks:** risks dependent on other risks.
* **number of risks:** limit to the number of risks considered.
* **cost of action:**  risks can be avoided or reduced with little cost and effort.

RRL = (Original risk exposure – expected risk exposure)/(risk reduction cost)

6. What are the strategies for Risk Prevention?

There are five strategies for risk prevention,

* **Hazard prevention:** Some hazards can be prevented or their likelihood reduced to insignificant levels.
* **Likelihood reduction:** Though some risks cannot be prevented their can be likelihood reduced to insignificant levels.
* **Risk Avoidance:** Detailing certain methods to avoid methods and standards to avoid risks.
* **Risk transfer:** The impact of some of the risks can be transferred from the project.
* **Contingency planning:** Some risks are not preventable and contingency plans will need to be drawn to reduce their impact.

7. What is the difference between CPM and Precedence network?

* + Precedence Network uses boxes to represent activities also known as work items) and links to present dependencies.
  + The boxes may carry task description and duration estimates and the links may contain a duration denoting a lag between the completion of 1 task and the start of another.
  + The difference between CPM and Precedence Network is that CPM networks use links to represent activities and nodes to represent events**.**

8. How is the Precedence network better than CPM?

Advantages of Precedence Network

* + They are easier to draw, dummy activities are virtually redundant and also easier to interpret them.
  + They can also be used to represent parallel lagged activities

9. Match The following.

1. **Staff Inexperience**:
   * **Effect (i)**: Testing takes longer than planned due to inexperienced staff not following proper testing procedures or missing defects.
   * **Effect (ii)**: Planned effort and time for activities exceed expectations because inexperienced staff make more mistakes and require additional guidance.
2. **Lack of Top Management Commitment**:
   * **Effect (iii)**: Project scope increases when top management allows frequent changes or additions to requirements.
   * **Effect (iv)**: Time delays occur in getting changes to plans agreed upon because of inadequate support or approval from top management.
3. **New Technology**:
   * **Effect (i)**: Testing takes longer than planned due to new technology having more bugs or lacking established testing methods.
   * **Effect (ii)**: Planned effort and time exceed expectations as new technology introduces unexpected challenges.
4. **Users Uncertain of Requirements**:
   * **Effect (iii)**: Project scope increases when users change their minds or add new features during the project.
   * **Effect (iv)**: Time delays occur in getting changes to plans agreed upon due to unclear communication or lack of user consensus.

10) From the given Resource Histogram, find out how the schedule can be improved and draw the revised Histogram. Ensure that resources are used optimally.

Issues with the current plan:

Resource gap, and resource peaking

Suggested modifications:

Specifying module C appears to be a bottleneck in the given activity plan. The network can be modified to allow checking specifications and designing for the other modules(A, B and D) without waiting for module C. The corresponding activity plan and resource histogram would now become something like this.