1. What is project management?-Explain project management framework? (Mid Sem Exam), (End Sem 2023), (2013), (2017), (2019)

Project management is the ***application of knowledge, skills, tools, and techniques*** to project activities to meet project requirements.

Project managers ***aim to achieve specific scope, time, cost, and quality objectives*** in projects.

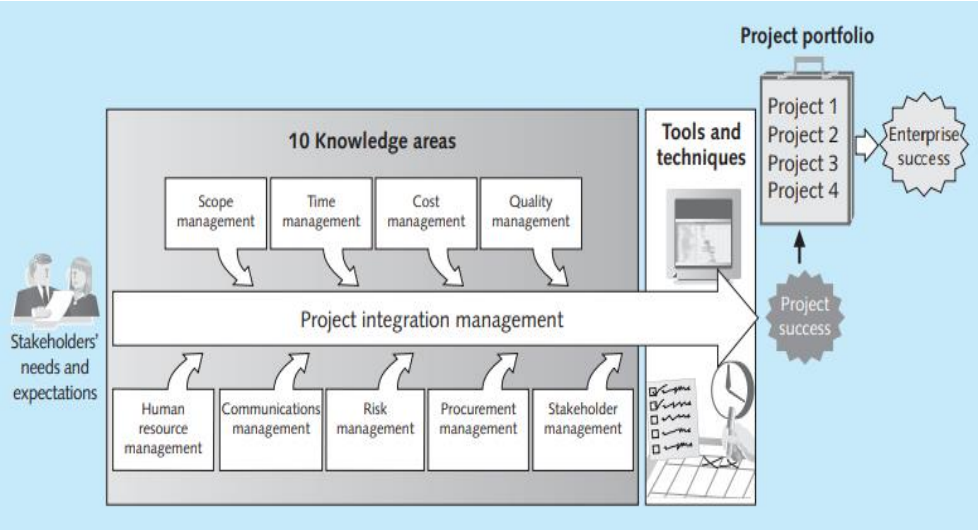
Beyond goals, project managers also focus on ***facilitating the entire process*** to ***meet the needs and expectations of individuals*** involved in or affected by project activities.

Project Management Framework

1. Project Stakeholders:

Stakeholders are ***individuals or groups who have an interest, involvement, or influence*** in the project. This includes ***project sponsors, team members, clients, end-users,*** and any other party affected by or affecting the project.

Understanding ***stakeholders' expectations, needs,*** and ***concerns*** is essential for ***effective communication, collaboration, and ultimately project success.*** Managing stakeholder relationships ensures alignment with project objectives.



2. Project Management Knowledge Areas:

Project management knowledge areas are ***specific domains of project management expertise*** defined by the ***Project Management Institute (PMI).*** Examples include ***scope management, time management, cost management, quality management, risk management,*** and more.

These knowledge areas provide a structured framework for ***organizing and managing various aspects of a project. Each area addresses specific challenges and requirements,*** contributing to a holistic approach to project management.

3. Project Management Tools and Techniques:

Project management tools and techniques ***encompass resources and methods*** used to ***plan, execute, monitor, and control project activities.*** These include ***software, methodologies, communication tools, risk analysis techniques, and various project management frameworks.***

4. Contribution to Enterprise:

The contribution of successful projects to the enterprise refers to the ***positive impact and value*** that ***well-executed projects*** bring to the overall organization. This can include ***improved efficiency, enhanced reputation, increased profitability,*** and ***strategic alignment*** with organizational goals.

Recognizing the broader impact of successful projects reinforces the importance of effective project management at the organizational level. It emphasizes the value of investing in project management practices to drive positive outcomes for the entire enterprise.

2. Explain the term managing the project team (Mid Sem Que Bank), (2018)

Managing the project team is a critical aspect of project management that ***involves overseeing and guiding*** the individuals or groups of people who are working together to accomplish project objectives. It encompasses ***various responsibilities and activities*** aimed at maximizing the team's ***performance, productivity,*** and ***cohesion*** throughout the project's lifecycle. Here are key aspects of managing the project team:

1. **Putting the Right People in the Team:** This means selecting individuals with the skills and experience needed for the project. It involves matching their abilities to the specific tasks and roles within the project. ***For example,*** if a project requires coding, you want team members who are skilled programmers.
2. **Leading and Motivating:** As a project manager, you need to ***provide guidance and encouragement to the team.*** You set the ***direction, provide clear goals, and keep everyone focused on the project's objectives.*** Motivation can come through ***positive reinforcement, acknowledging achievements, and creating a work environment*** where team members feel valued and empowered.
3. **Helping them Communicate:** ***Effective communication is crucial in a project.*** This means making sure team members ***share information, updates, and concerns with each other.*** It also includes ***ensuring that everyone understands their roles and responsibilities.***
4. **Solving Problems:** ***Conflicts or problems can arise in any team.*** Managing the project team involves ***resolving these issues in a fair and constructive manner.*** This might involve mediating disputes, finding compromises, or implementing solutions to address challenges that hinder progress.
5. **Keeping an Eye on Progress:** ***Monitoring the project's progress*** means tracking whether tasks are being completed on time and within the budget. If there are delays or problems, the project manager needs to take action to get things back on track. This may ***involve adjusting schedules, reallocating resources, or revising the project plan.***

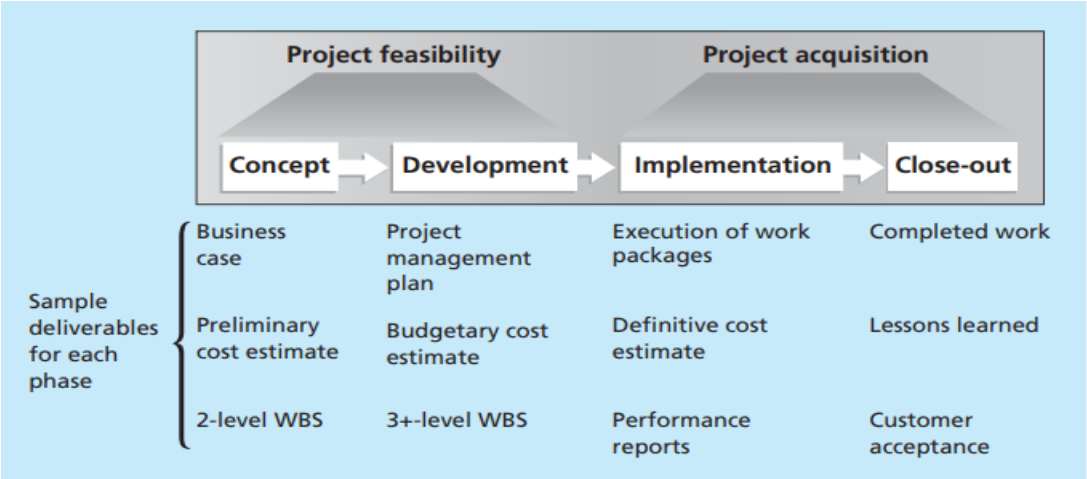
3. Explain phases of traditional project life cycle. (Mid Sem Que Bank), (Mid Sem 2022), (End Sem 2023), (2013), (2017), (2018), (2019)

Project Life Cycle:

A ***project life cycle consists of phases, breaking projects into smaller, manageable parts to reduce uncertainty.***

Organizations may have set life cycles or follow industry practices. ***Life cycles outline what work happens in each phase.***

Deliverables: These are ***products or services*** (e.g., ***reports, training sessions, hardware, software code segments***) produced or provided in each project phase.



The ***initial two project phases (concept and development) concentrate on planning and are termed project feasibility.*** The subsequent phases ***(implementation and closeout) centre on executing the actual work, known as project acquisition. Successful completion of each phase is crucial before progressing to the next,*** ensuring effective management control and alignment with the organization's ongoing operations.

1. **Concept Phase Overview:**
   - ***outlining the project need and underlying concepts.***
   - Generate a ***preliminary cost estimate.***
   - ***Create an overview of required work.***
   - Utilize a Work Breakdown Structure (WBS) to outline project work, ***decomposing activities into different task levels.***
2. **Development Phase Overview:**
   - ***Create detailed project management plans.***
   - Develop a ***more accurate cost estimate.***
   - ***Expand the Work Breakdown Structure (WBS) for thorough project understanding.***

3. Implementation Phase:

Complete the project's definitive cost estimate, deliver the required work, and provide performance reports to stakeholders.

3. Close-Out Phase:

Complete all project work, and obtain customer acceptance of the entire project.

The ***project team creates a lessons-learned report, summarizing experiences.***

4. WHAT IS PROJECT INTEGRATION MANAGEMENT? GIVE ITS PROCESSES. (2013), (2019), (MID SEM QUE BANK), (2017), (2016), (2018), (2018), (2019), (END SEM 2023)

Project integration:

Project integration management is an ***organized approach that ensures all processes within a project are synchronized and executed efficiently,*** and ***resources remain on track*** to achieve the project goals. It helps project managers to ***balance stakeholder expectations*** and ***customer needs*** while ***optimizing tasks and resources,*** steering the project toward success.

Processes:

1. **Creating a project charter**
    - Crafting an official document specifying ***key stakeholders, contacts, project goals, timelines, budget, deliverables, and processes.***
    - Serves as a ***foundational blueprint,*** guiding managers throughout the project lifecycle.
2. **Establishing a project management plan**
    - Creating a ***master plan*** with project deliverables, benchmarks, timelines, and essential details.
    - Includes breaking down the project into milestones, forming a ***work-breakdown structure.***
3. **Managing Project Execution**
    - Involves the team executing the project plan to achieve ***timely and budgeted results.***
    - Overseeing ***task management, stakeholder meetings, communication, coordination, and resource management.***
4. **Managing project knowledge**
    - Using ***existing information and acquiring new data*** to meet business goals.
    - Ensures that ***every team member has timely and relevant information.***
5. **Monitoring and Controlling Project Work**
    - Aligns with the project management plan, including regular earned value analysis to track budget and schedule compliance.
    - Ensures harmony across project areas.
6. **Integrated Change Control**
    - Mitigating change requests regarding ***budget, duration, and resources.***
    - ***Evaluating alternatives, considering impacts,*** and ***integrating changes*** seamlessly into ongoing project activities.
7. **Closure of the Project**

- Conducting a formal review to ***define successes, issues, and lessons learned*** after completing project work and gaining client acceptance.
- Informs future projects and enhances the integrated project management system for subsequent implementations.

5. What are the project attributes, explain with triple constraints. (Mid Sem Exam), (2 Times)

Explanation of the attributes that help define a project:

- **Unique purpose:** Every project has a well-defined objective or goal. This objective should be ***specific, measurable, achievable, relevant, and time-bound*** (SMART).
- **Temporary nature:** A project has a ***definite beginning and end.*** It ***is not an ongoing activity, but rather a series of tasks*** that are undertaken to achieve a specific goal.
- **Progressive elaboration:** Projects are often defined broadly at the outset, and as more information is gathered, the specific details of the project become clearer. This is why ***projects are often developed in phases.***
- **Resource requirements:** Projects require resources, such as ***people, equipment, materials, and money.*** These resources may come from various departments or organizations.
- **Primary customer or sponsor**: Most projects have a ***primary customer or sponsor who is responsible for the project's success.*** This person or group provides the project with direction and funding.

These attributes help to distinguish projects from other types of work, such as ***ongoing operations or maintenance activities.*** By understanding these attributes, project managers can better plan, execute, and control their projects.

The **triple constraint** in project management refers to the ***three key limitations*** that every project face: ***scope, time, and cost.*** These ***limitations are often interrelated, meaning that a change in one factor can have a ripple effect on the others.***

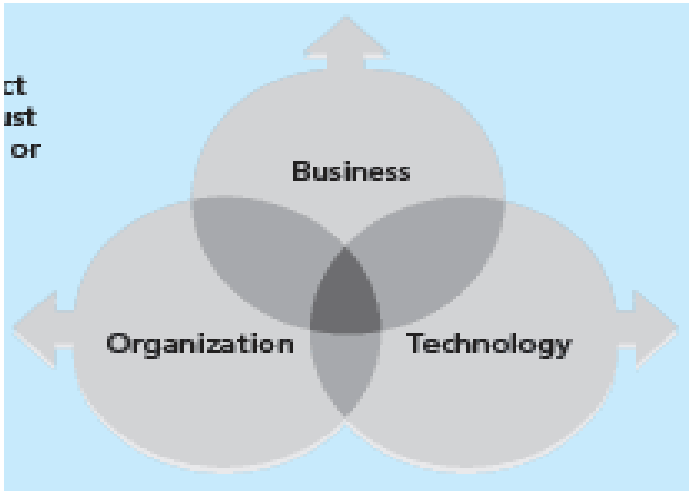
- **Scope:** Scope defines the ***boundaries of the project, outlining the deliverables that will be produced and the work that will be done.*** A well-defined scope is crucial for preventing ***scope creep,*** which occurs when additional features or requirements are added to the project without proper authorization.
- **Time:** Time refers to the ***duration of the project,*** encompassing the ***start and end dates.*** Managing time effectively involves ***creating a realistic project schedule, breaking down the project into manageable tasks,*** and ***tracking progress against the plan.***
- **Cost:** Cost represents the ***financial resources required to complete the project.*** Cost management involves ***estimating project costs, budgeting for expenditures, and monitoring expenses*** throughout the project lifecycle.

Balancing these three constraints is a fundamental challenge for project managers. As changes occur in one area, it's often necessary to adjust the others to maintain overall project success. For instance, ***if the scope of the project expands, it may require additional time and resources, affecting the project schedule and budget.***

6. What is system approach? Explain three sphere model for system management. (Mid Sem Que Bank), (Mid Sem 2022), (2016)

The systems approach is a ***way of looking at things as a whole,*** rather than as a collection of individual parts. It is a way of thinking about ***how the different parts of a system interact with each other and how they contribute to the overall performance of the system.***

The systems approach can be applied to any kind of system, from a simple machine to a complex organization. It is a ***useful way to understand how systems work*** and ***how to improve their performance.***



The three spheres of system management are:

Business: The business sphere is about the ***goals and objectives of the system,*** and how it will help the organization to achieve them. It also ***includes the consideration of the financial aspects*** of the system, such as the ***cost of development and operation,*** and the ***return on investment.***

Organization: The organization sphere is about the ***people, processes, and structure of the organization, and how the system will impact them.*** It also includes the consideration of the ***cultural and political aspects*** of the organization.

Technology: The technology sphere is about the ***hardware, software, and network infrastructure*** that the system is built on. It also includes the consideration of the ***security and reliability*** of the system, as well as its ***performance and scalability.***

The three spheres are **interrelated**, and **effective system management** requires a ***holistic approach*** that considers all three spheres.

Here is a simple analogy to help you understand the three spheres of system management:

Imagine that you are building a house.

> The **business sphere** is about the goals of building the house, ***such as to create a comfortable place to live or to sell the house for a profit.***
>
> The **organization sphere** is about the people who will be involved in building the house, ***such as the architect, the contractor, and the construction workers.***

The **technology sphere** is about the ***materials and tools*** that will be used to build the house, such as ***concrete, lumber, and power tools.***

All three spheres are important for building a successful house. If the business sphere is not clear, it will be difficult to build a house that meets the needs of the homeowner. If the organization sphere is not well managed, the house will take too long to build and will cost too much money. And if the technology sphere is not sound, the house will not be safe or comfortable.

7. What is a project scope management? Explain all its processes (Mid Sem Exam), (2019)

Scope management is about making sure that the ***project delivers what it is supposed to deliver, and nothing more.*** It involves defining what the ***project will do, what it will not do, and how it will be done.***

The six processes involved in scope management are:

1. **Plan scope management:** This involves developing a plan for ***how the project's scope will be defined, managed, and controlled.***
2. **Collect requirements**: This ***involves gathering information from stakeholders to understand their needs and expectations for the project.*** The collected requirements should be ***documented and analysed*** to ensure that they are ***complete, consistent, and feasible.***
3. **Define scope:** This involves ***developing a detailed description of the project's scope,*** including its ***deliverables, features, and functions.*** The scope statement should be ***clear, concise, and unambiguous.***
4. **Create a work breakdown structure (WBS):** This involves ***breaking down the project's scope into smaller, more manageable pieces.*** The WBS should be hierarchical, with each level of the hierarchy representing a ***smaller and more specific piece of work.***
5. **Validate scope:** This involves reviewing the project's scope with stakeholders to ensure that it is ***complete, accurate, and meets their needs.***
6. **Control scope:** This involves managing changes to the project's scope. ***Any changes to the project's scope must be approved by stakeholders*** and ***documented in a change management process.***

The scope management processes are ***interrelated and should be performed iteratively*** throughout the project lifecycle.

Here is an analogy that may help you understand scope management:

Imagine that you are building a house. The scope of the project is to build a house with three bedrooms, two bathrooms, and a garage. The requirements are the specific details of the house, such as the ***type of flooring,*** the ***style of the kitchen cabinets,*** and the ***colour of the paint.*** The WBS is a breakdown of the project into smaller tasks, such as ***building the foundation, framing the walls, and installing the roof.***

The scope management process helps you to ensure that the house is built according to the requirements and that the project stays on track.

Scope management is an important part of any project, ***regardless of size or complexity.*** By following the scope management processes, you can increase the chances of project success.

8. How scope control is responsible in project scope management (2 Times)

Scope Control When Requirements Are Unclear

Scope control is ***essential for managing changes to the project scope,*** even when the requirements are unclear. Here are some steps you can take to control scope in this situation:

1. **Gather and Document Requirements:** Work with stakeholders to gather and document as much information about the project requirements as possible. This may involve conducting interviews, workshops, and surveys.
2. **Establish a Change Management Process:** Implement a ***formal change management process to evaluate and approve all proposed changes to the project scope.*** This process should include ***clear guidelines for submitting, reviewing, and approving change requests.***
3. **Communicate and Manage Expectations:** Clearly communicate the project scope and expectations to all stakeholders. This helps to ***avoid misunderstandings*** and keep everyone aligned on the project's goals.
4. **Monitor and Control Changes:** ***Continuously monitor changes to the project scope and take corrective action when necessary.*** This may involve ***negotiating changes with stakeholders, re-evaluating priorities, or adjusting the project schedule.***
5. **Seek for Sponsor Approval:** Ensure that all significant changes to the project scope are approved by the project sponsor. This ***helps to maintain control over the project and prevent unauthorized changes.***

Additional Tips for Scope Control

1. **User Inputs:** Get user input early in the project to ensure that the project is meeting their needs.
2. **Define Clear Requirements:** ***Clearly define the project requirements before starting work.*** This will help to prevent scope creep later on.
3. **Validate Requirements with Stakeholders:** Validate requirements with stakeholders throughout the project to ensure that they are still meeting the needs of the project.
4. **Communicate Changes to Stakeholders:** Communicate changes to the project scope to all stakeholders in a timely manner. This will help to ***avoid misunderstandings and keep everyone informed.***

9. What is WBS? Give brief explanation on approaches to develop it.

A Work Breakdown Structure (WBS) is like a ***project's to-do list that breaks down the big tasks into smaller, more manageable parts.*** It helps to ***organize the work needed for a project*** and is crucial for ***planning, scheduling, and managing resources.***

Approaches to Develop a Work Breakdown Structure (WBS):

1. **Using Guidelines:**

- **Description:** Follow ***specific rules or guidelines*** when creating a WBS, often ***provided by organizations or project standards.***
- **Example:** The U.S. Department of Defence may have guidelines for creating a WBS, to ***estimate costs.***

2. **The Analogy Approach:**
   - **Description:** Use a ***similar project's WBS as a starting point for the current project.*** It ***leverages past structures to create a foundation.***
   - **Example:** McDonnell Aircraft Company used a WBS from a previous aircraft design as a starting point for a new fighter aircraft project.
3. **The Top-Down Approach:**
   - **Description:** Begin with the ***big project task or deliverables*** and ***break them down into smaller tasks, refining the details progressively.***
   - **Example:** For an intranet project, start with major components and progressively ***break them down into more detailed tasks.***
4. **The Bottom-Up Approach:**
   - **Description:** Team members ***identify specific tasks,*** then group them into higher WBS levels. It ***starts with listing detailed tasks and grouping them.***
   - **Example:** Creating a WBS for an ***e-commerce application*** involves listing detailed tasks, grouping them into categories, and then organizing these categories into higher-level ones.
   - Although it takes time, the ***bottom-up approach is effective for complex projects,*** ensuring a ***detailed understanding of tasks and promoting collaboration within the team.***
5. **The Mind-Mapping Approach:**
   - **Description:** Mind mapping is a ***visual, creative, and non-linear technique*** where ***branches radiate from a central idea,*** visually representing tasks.
   - **Application:** Project managers use mind mapping to develop WBSs, encouraging creativity, participation, and team morale.

In simple terms, creating a WBS involves ***following guidelines, using past projects as examples, starting from the big picture and get into more detail, breaking tasks down from the bottom up***, or even using a creative ***mind-mapping approach to visually organize tasks.*** Each approach has its benefits, depending on the project's complexity and the team's preferences.

10. How to create WBS? Explain WBS organized by product & phase. (2013), (2016), (2017), (2018), (2019), (Mid Sem 2022), (End Sem 2023)

To create a Work Breakdown Structure (WBS), inputs include the ***project scope management plan, scope statement, requirements documentation, environmental factors, and organizational assets.*** The primary technique is ***decomposition***—***breaking project deliverables into smaller parts.*** Outputs comprise the ***scope baseline and updates to project documents.***

A Work Breakdown Structure (WBS) is typically illustrated as a ***task-oriented tree***. It is organized around **project products, phases**. Many organizations prefer to create a chart form to ***visualize the entire project and its key components.***

WBS Organized by Product

In a WBS organized by product, ***tasks are grouped based on the deliverables or products of the project. Each branch of the WBS represents a different product.*** This approach helps in focusing on the specific ***products*** of the project and ***provide a clear understanding of the work required for each product.***

WBS Organized by Phase

In a WBS organized by phase, ***tasks are arranged according to the different phases of the project life cycle.*** Each branch of the WBS ***corresponds to a distinct phase,*** such as ***initiation, planning, execution, monitoring, and closure.*** This structure provides a ***chronological view of the project,*** making it ***easier to manage and track progress*** throughout each phase.

Sample intranet WBS organized by product

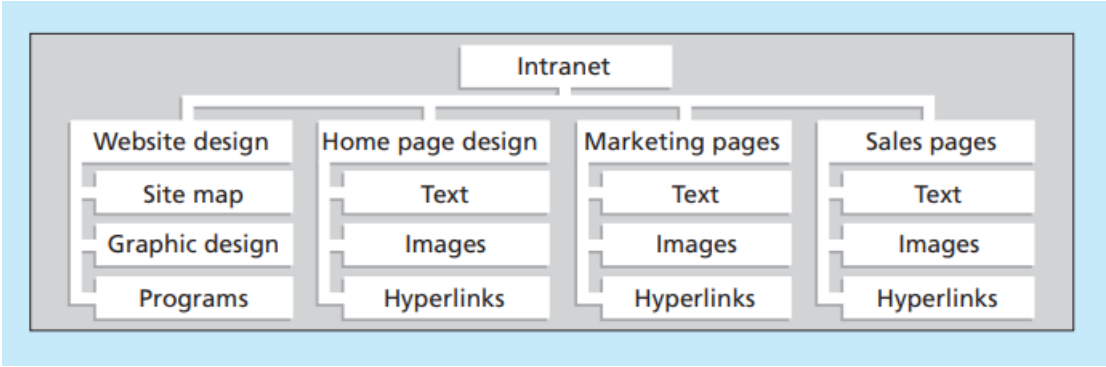
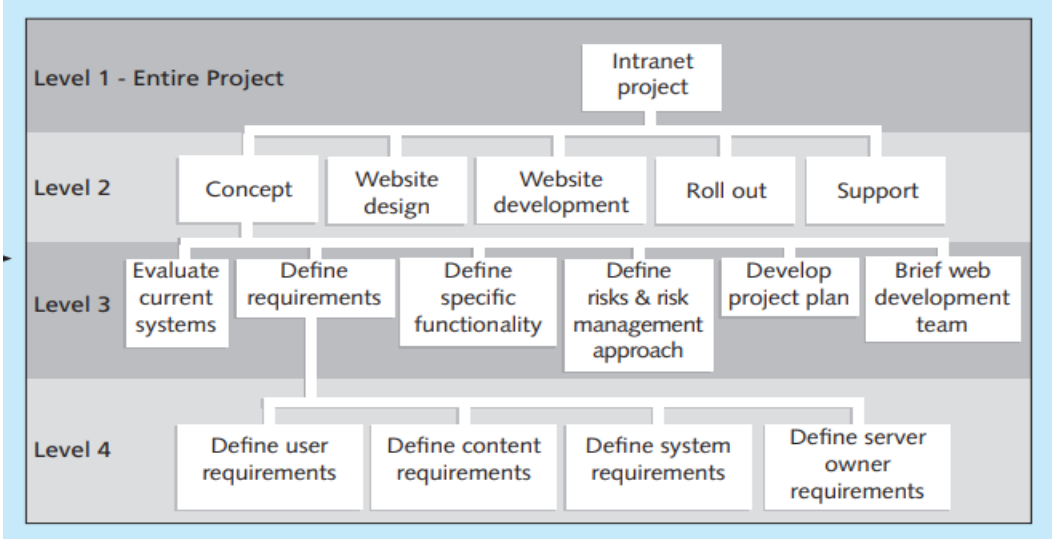


Figure shows a WBS for an intranet project. Notice that product areas provide the basis for its organization. In this case, there are main boxes or groupings on the WBS for developing the website design, the home page for the intranet, the marketing department's pages, and the sales department's pages.

Sample intranet WBS organized by phase



WBS for the same intranet project can be organized around project phases, as shown in Figure. Notice that project phases of concept, website design, website development, rollout, and support provide the basis for its organization.

The ***name of the entire project is in the top box, called Level 1,*** and the ***main groupings for the work are listed in the second tier of boxes, called Level 2.*** Each of these boxes can be broken down into subsequent tiers of boxes to ***show the hierarchy of the work.***

11. What is the importance of project schedules?

Project schedules are an important part of project management. At a basic level, a project schedule outlines the ***key activities, milestones, and deliverables*** for a project and ***maps out the intended timeline for when each element should be completed.***

Some key reasons why project schedules are important include:

- **Planning -** The ***schedule requires breaking down the project into individual tasks and steps*** that need to be completed to finish the project. This upfront planning helps ***ensure important activities aren't missed.***
- **Timeline -** A ***schedule identifies the expected duration of the project and each phase or activity.***
- **Communication -** The schedule serves as a common reference to ***inform all project stakeholders of timelines and deliverables.***
- **Coordination -** With task dependencies, schedules facilitate coordination of sequencing activities.
- **Monitoring -** The predefined schedule allows monitoring of ***progress versus plan*** to ***identify and address any issues proactively.***

In summary, ***schedules promote careful planning, clear communication, optimized task coordination, and progress tracking*** - all critical to successfully managing projects and programs.

The schedule brings order to what could otherwise become a chaotic effort by clarifying what needs to happen when.

12. State and explain Activity sequencing with its different types of dependency. (Mid Sem 2022), (2018), (2019)

Activity sequencing is the ***process of determining the order in which project activities should be completed.*** It involves ***identifying dependencies between activities and arranging them in a logical sequence*** that ensures efficient project execution.

Here are the key steps involved in activity sequencing:

- Identify dependencies
- Analyse dependencies
- Develop a sequence
- Validate the sequence
- ***Communicate the sequence***

Dependency in Project Management:

In project management, a ***dependency is like a relationship between tasks.*** It's about ***figuring out the order of activities*** – ***what needs to happen before something else can start.*** This is crucial for ***making and managing a project schedule.***

Three Types of Dependencies:

Mandatory Dependencies:

Example: Some things just have to happen in a specific order. Like, you can't test computer code until it's written. This is called ***"hard logic."***

Discretionary Dependencies:

Example: Sometimes, the project team decides on the order. For instance, not starting detailed design until users approve analysis work. It's like ***"soft logic,"*** but be careful because it might ***limit scheduling options.***

External Dependencies:

Example: There are ***relationships with things outside the project.*** Let's say you're installing new software, but it depends on hardware from an external supplier. Even if that delivery is not part of the project, it ***affects the project schedule.***

Why Identify Dependencies:

To Make a Plan: Helps in creating a schedule by understanding which tasks need to happen before others.

To Use Tools: Let's say project managers use tools like ***network diagrams and critical path analysis.*** These tools are like maps that ***show the best route for completing the project on time.***

13. What is cost? Explain cost management with its processes. (2018), (2018)

Cost is something ***you give up or sacrifice*** to achieve a specific goal. ***It's often measured in money*** (like dollars) that you need to pay to get things done or acquire goods and services.

Why It Matters:

- **Project Cost Management:** For project managers, ***understanding project cost management is vital because projects require money,*** and managing those costs is crucial.
- **Realistic cost Estimates:** It's ***essential to have realistic cost estimates*** from the beginning to avoid surprises and keep the project on track.

What Is Project Cost Management?

Project Cost Management is all about making sure a ***project team finishes a project within an approved budget.*** It's one of the ***three key aspects, along with scope and time, in the triple constraint*** of project management.

Processes in Project Cost Management:

- **Planning Cost Management:**
  - Figuring out the ***rules, procedures, and documents*** for planning, executing, and controlling the project cost.
  - The main result is a ***document called a cost management plan.***
- **Estimating Costs:**
  - ***Making an educated guess about how much resources (like time, money, etc.)*** the project will need.
  - You get ***activity cost estimates.***
- **Determining the Budget:**
  - ***Dividing the overall estimated cost among different tasks to create a baseline*** for measuring performance.
  - You establish a ***cost baseline, figure out project funding needs.***
- **Controlling Costs:**
  - ***Making sure the project sticks to the budget and dealing with any changes*** that might affect it.
  - You get information on ***how the work is performing, cost predictions, change requests, updates to project plans and documents,*** and updates to organizational processes.

14. Explain in brief cost estimates, with its types. (Mid Sem 2022), (End Sem 2023), (2013), (2017),

Cost estimate, in simple terms, is ***an approximate calculation of the amount of money*** required to complete a project or produce a product. It involves ***predicting and allocating costs based on available information, historical data, or expert judgment.*** The cost estimate ***provides a preliminary understanding of the financial resources needed for the project,*** helping in ***budgeting and decision-making processes.***

let's break down the three types of cost estimates in simple terms:

1. Rough Order of Magnitude (ROM) Estimate:

Purpose: To get a ***general idea of how much a project might cost.***

When: Done very early in a project, ***often before it officially starts.***

Accuracy: ***Quite broad,*** ranging from ***-50% to +100%.***

Example: If the ***ROM estimate is $100,000,*** the ***actual cost could be between $50,000 and $200,000.*** It's like a ***rough guess.***

2. Budgetary Estimate:

Purpose: To ***allocate money in an organization's budget*** for a project.

When: ***Made one to two years before project completion.***

Accuracy: More ***refined than ROM,*** with a range of ***-10% to +25%.***

Example: If the budgetary estimate is $100,000, the actual cost could be between $90,000 and $125,000. It's a ***more educated guess used for budget planning.***

3. Definitive Estimate:

Purpose: To provide an ***accurate estimate*** for making ***purchasing decisions and final project costs.***

When: ***Made one year or less before project completion.***

Accuracy: The ***most accurate among the three,*** with a range of ***-5% to +10%.***

Example: If the definitive estimate is $100,000, the actual cost could be between $95,000 and $110,000. It's a ***precise estimate used for critical decisions.***

In summary, ROM is like a rough guess used very early, budgetary is a more refined estimate for ***budget planning,*** and definitive is the most accurate estimate used for ***critical decisions*** close to project completion.

Type of Estimate	When Done	Why Done	How Accurate
Rough order of magnitude (ROM)	Very early in the project life cycle, often 3–5 years before project completion	Provides estimate of cost for selection decisions	−50% to +100%
Budgetary	Early, 1–2 years out	Puts dollars in the budget plans	−10% to +25%
Definitive	Later in the project, less than 1 year out	Provides details for purchases, estimates actual costs	−5% to +10%

15. What is project cost management? Explain earned value management. (2016)

What Is Project Cost Management?

Project Cost Management is all about making sure a project team finishes a project within an approved budget. ***It's one of the three key aspects, along with scope and time, in the triple constraint of project management.***

What Is Earned Value Management (EVM)?

Definition: Earned Value Management is a technique ***used to measure how well a project is doing in terms of scope, time, and cost*** by ***integrating data on what was planned with actual progress.***

In Simple Words:

Triple Check: EVM looks at three important things in a project - ***what was planned, what was actually done, and how much it all costs.***

How It Works:

- **Planned Value (PV):**
  - The ***amount of money planned to be spent on an activity*** according to the project plan ***during a specific time.***
  - **Example:** If installing a new web server was planned to take one week and cost $10,000, then $10,000 is the planned value for that week.
- **Actual Cost (AC):**
  - The ***total direct and indirect costs incurred in doing the work*** during a specific time.
  - **Example:** If it actually took two weeks and cost $20,000 to install the web server, with $15,000 in Week 1 and $5,000 in Week 2, then those are the actual costs for each week.
- **Earned Value (EV):**
  - An estimate of the value of the ***physical work actually completed, based on the original planned costs and the rate at which the team is completing the work.***
  - **Example:** If the web server installation was halfway done by the end of Week 1 (50% complete), then the earned value would be $5,000 (50% of the planned $10,000).

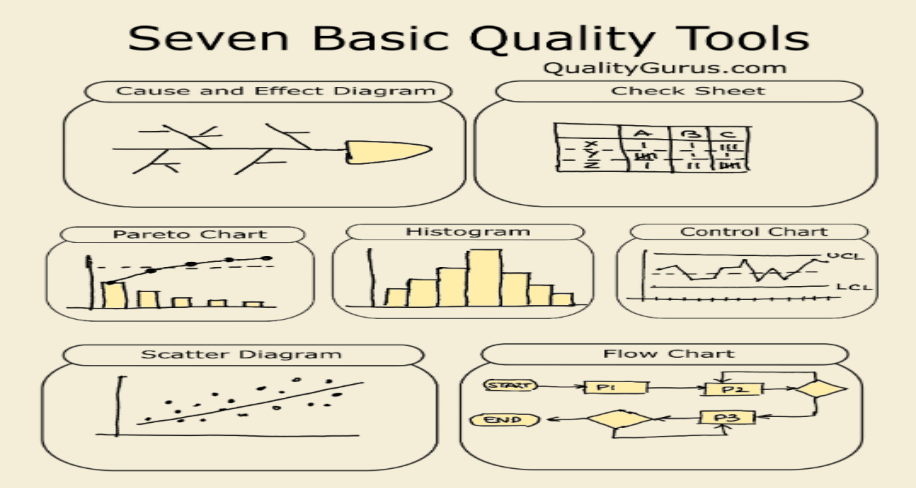
Advantages:

1. **Performance Measurement:** EVM helps project managers see how well the project is progressing compared to the original plan.
2. **Control Costs:** It's a valuable tool for controlling costs and making sure the project stays on track.

16. Give tools and techniques required for quality control. (4 Times), (Mid Sem 2022), (End Sem 2023)

Quality control in project management is an essential aspect of ensuring that ***projects are delivered to the required standards and meet the expectations of stakeholders.*** It involves ***identifying and preventing defects,*** as well as ***monitoring and improving project processes.***

Here are some of the key tools and techniques used for quality control in project management:



Tools and Techniques for Quality Control:

1. Pareto Charts:

- **Description:**
  - Special type of histogram ***prioritizing problems by frequency.***
  - ***Shows a small number of causes accounting for a large proportion of issues.***
- **Example:**
  - Use a Pareto chart ***to identify major causes of customer complaints.***
  - Reveals that a few issues (e.g., poor customer service, product defects) contribute significantly to complaints.

2. Statistical Sampling:

- **Description:**
  - ***Technique collecting data from a sample to estimate characteristics*** of the entire population.
  - Types include ***probability sampling (known chances)*** and ***non-probability sampling (no known chances).***
- **Use Cases:**
  - **Probability sampling:** Simple random, stratified, systematic sampling.
  - **Non-probability sampling:** Convenience, purposive, quota sampling.

3. Six Sigma:

- **Description:**
  - Comprehensive system for achieving business success ***through understanding customer needs and disciplined use of data and statistical analysis.***
  - **Goal:** ***Reduce defects to 3.4 per million opportunities.***

- **Benefits:**

- **Improved Quality:** Enhances product/service quality.
- **Reduced Costs:** Minimizes expenses through process improvement.
- **Increased Customer Satisfaction:** Ensures products meet or exceed customer expectations.

These tools and techniques are essential for quality control, ***helping identify, address, and prevent defects*** while continuously improving project processes.

17. Explain in brief processes involved in procurement management. (2013), (2019), (2017), (2018), (2019), (End Sem 2023)

Procurement is getting goods or services from outside sources. It's widely used in government and private companies ***(often called purchasing or outsourcing). Suppliers, vendors, or contractors provide these services.*** In IT projects, organizations often rely on external sources. Good procurement practices, like defining needs and bids, apply regardless of whether services come from within the organization or external vendors.

Successful IT projects using external resources often rely on ***effective project procurement management.***

4 Processes in Procurement management

Planning Procurement Management

This phase ***involves deciding what, when, and how to procure.*** It includes determining ***outsourcing needs, contract types, and outlining work for potential sellers.*** Outputs encompass a ***procurement management plan, procurement statements, procurement documents.***

Conducting Procurements

This step is about ***obtaining seller responses, selecting sellers, and awarding contracts.*** Outputs consist of ***selected sellers, agreements, resource calendars, change requests,*** and updates to the project management plan and other project documents.

Controlling Procurements

In this phase, the ***focus is on managing seller relationships, monitoring contract performance, and making necessary changes.*** Key outputs include work performance information, change requests, and updates to the project management plan, project documents, and organizational process assets.

Closing Procurements

The closing phase ***involves completing and settling each contract or agreement,*** addressing any outstanding issues. Outputs include closed procurements and updates to organizational process assets.

18. How to manage conflicts using communication skills. (2013), (2016), (2017), (2018), (End Sem 2023)

Conflicts are non-removable in project management, but effective communication skills can play a pivotal role in resolving and mitigating conflicts. Here's how communication skills can be leveraged:

Active Listening:

Actively listen to the ***concerns, perspectives, and emotions*** of all parties involved.

Helps in ***understanding the root causes of conflicts.***

Clear and Transparent Communication:

Reduces ***misunderstandings and ensures everyone is on the same page,*** minimizing potential conflicts.

Open Communication Channels:

Creating an environment where team members feel comfortable for expressing concerns.

Encourages ***early identification of potential conflicts,*** allowing for timely resolution.

Effective Feedback:

Provide ***constructive and specific feedback,*** focusing on ***behaviours and actions,*** not personalities.

Promotes a culture of continuous improvement and ***helps address performance-related conflicts.***

Conflict Resolution Meetings:

Conduct structured meetings ***to address conflicts openly and collaboratively.***

Provides a platform for all parties to ***voice concerns, discuss solutions, and reach consensus.***

Negotiation Skills:

Develop negotiation skills to find ***mutually agreeable solutions.***

Facilitates compromise and helps in finding win-win solutions to conflicts.

Emotional Intelligence:

Be aware of and manage emotions, ***both yours and those of team members.***

Fosters a ***positive and respectful team culture,*** reducing the likelihood of conflicts escalating.

19. Write a short note on

- **Draw and explain Risk breakdown structure. (4 Times), (End Sem 2023)**

What Is a Risk Breakdown Structure (RBS)?

Definition: A Risk Breakdown Structure is a helpful tool for project managers to ***think about potential risks in different categories.*** It looks like a ***hierarchy and breaks down the various types of risks*** a project might face.

RBS ***breaks down project risks into different groups or categories.***

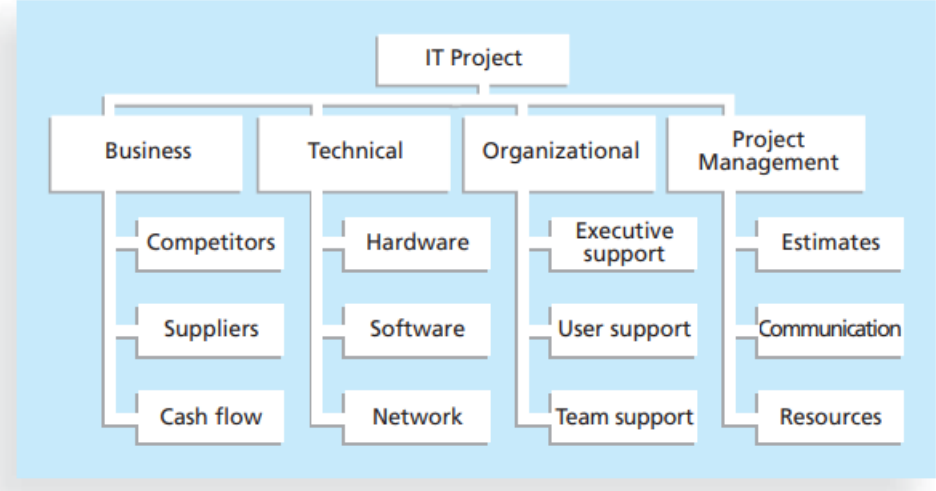
Visual Guide: It's like a ***one-page chart*** that helps the project team ***think about and organize the risks*** related to the project.

How It Works:

- **Categories Example:** In the sample RBS for IT projects, the ***highest-level categories are business, technical, organizational, and project management.***
- **Subcategories:** Under business risks, you might have competitors, suppliers, and cash flow. Under technical risks, you could have hardware, software, and network.
- **Detailed Risks:** For example, hardware risks could be broken down further into malfunctions, availability, and cost.

Why It's Useful:

Consider All Risks: It helps ***ensure that the project team thinks about all possible risk categories*** related to the project.



- **Project portfolio management (3 Times)**

Project Portfolio Management (PPM) is a strategic process that ***involves managing and overseeing a collection of projects as a cohesive portfolio.*** It ***aims to align projects with organizational goals, optimize resource allocation, and maximize return on investment.***

- **Strategic Alignment:**
  - Ensure that ***projects align with the organization's strategic objectives and contribute to its overall mission.***
- **Prioritization:**
  - Prioritize projects ***based on their alignment with organizational goals, potential benefits, and resource availability.***
- **Resource Optimization:**

  - Efficiently allocate resources across the portfolio to ***maximize productivity and minimize bottlenecks.***
- **Risk Management:**
  - ***Identify and manage risks at the portfolio level,*** ensuring a balanced approach to risk across all projects.
- **Performance Measurement:**
  - ***Establish metrics and key performance indicators (KPIs)*** to ***monitor the progress and success*** of individual projects and the overall portfolio.
- **Decision Making:**
  - ***Facilitate informed decision-making*** by ***providing a comprehensive view of the entire project portfolio.***

- **Gantt charts (3 Times)**

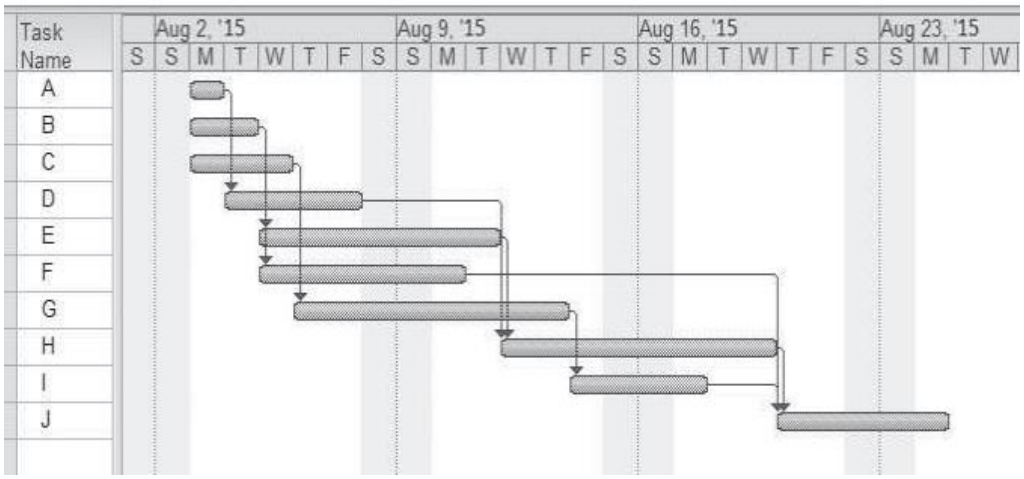
A Gantt chart is a visual project management tool that provides a ***timeline view of tasks, activities, and their corresponding durations within a project.*** It allows project managers ***to schedule, coordinate, and track progress over time.***

Key Features:

- **Timeline Representation:**
  Gantt charts present tasks and activities along a timeline, displaying the ***start and end dates.***
- **Task Dependencies:**
  Dependencies between tasks are indicated, showing the sequence in which tasks should be completed.
- **Task Durations:**
  Each task is represented by a horizontal bar, the length of which corresponds to the task's duration.
- **Milestone Identification:**
  Milestones, significant points in the project, are often marked with specific symbols on the chart.
- **Resource Allocation:**
  Gantt charts can indicate resource allocation ***by assigning specific colours or patterns*** to different resources.

Benefits of Gantt Charts:

1. Visualization:
2. Resource Management:
3. Timeline Tracking:
4. Communication Tool:
5. Planning and Scheduling:



20. What are different motivational theories in HR management? Name it and explain. (3 Times), (End Sem 2023)

1. Intrinsic Motivation:

Engaging in an activity for personal enjoyment.

Example: Reading, writing, or playing an instrument for the joy it brings.

2. Extrinsic Motivation:

Performing an ***activity for a reward or to avoid punishment.***

Example: Children playing an instrument for a reward or to avoid a penalty.

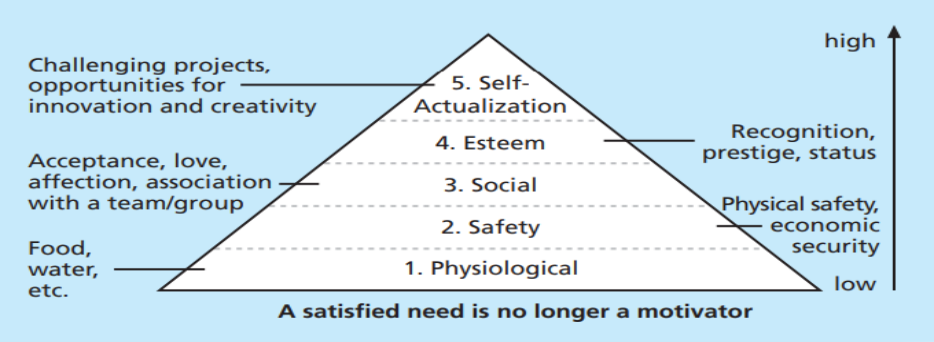
A ***basic understanding of motivational theory will help anyone who works or lives with other people to understand themselves and others.***

3. Maslow's Hierarchy of Needs:

Maslow's Hierarchy of Needs is a ***psychological theory by Abraham Maslow*** that ***explains what motivates people.*** It's like a pyramid with different levels, and each level represents a different need that we try to fulfil.

- **Physiological Needs:** These are the basic things we need for survival, like food, water, and sleep. ***If these needs aren't met, they become our top priority.***
- **Safety Needs:** Once our basic survival needs are satisfied, we focus on safety and security. This includes ***having a stable job, a safe home,*** and ***protection from dangers.***
- **Social Needs:** After safety, we seek ***social connections and relationships.*** We want to belong to a group, have friends, and feel loved and accepted.
- **Esteem Needs:** Once we feel connected, ***we look for recognition and respect from others.*** This involves gaining confidence, achieving goals, and feeling competent.
- **Self-Actualization:** This is the pinnacle of the hierarchy. ***It's about personal growth, realizing our potential, and becoming the best version of ourselves.*** It includes ***creativity, problem-solving, and a deep understanding of life.***

Maslow suggests that we move up the pyramid step by step. Each level builds on the one below it. For example, it's hard to focus on personal growth (self-actualization) if we're hungry (physiological need) or feel unsafe.



4. Herzberg's Motivation-Hygiene Theory

Herzberg's Motivation-Hygiene Theory ***differentiates between motivators and hygiene factors*** in the workplace:

1.Motivators

Factors that lead to ***job satisfaction and motivation.***

Examples: Achievement, recognition, growth.

Effect: ***Stimulate individuals to perform well and find satisfaction*** in their work.

2.Hygiene Factors:

Elements that, when absent, cause dissatisfaction, ***but their presence doesn't motivate.***

Examples: ***Salary, supervision, work environment.***

Effect: ***Address dissatisfaction but do not inherently drive motivation.***

3.Research Basis:

Herzberg conducted studies ***among 1,685 employees*** to analyse factors influencing productivity.

Challenged to beliefs, that ***larger salaries or better work environments*** were the primary motivators.

4.Ineffective Positive Factors

Herzberg argued ***against increased wages or benefits,*** considering them hygiene factors.

These ***factors prevent dissatisfaction but do not serve as strong motivators.***

McClelland's Acquired-Needs Theory

McGregor's Theory X and Theory Y

21. What is importance of HR management? (3 Times)

"People are our most important asset."

People ***play a crucial role in determining the success or failure of organizations and projects.***

Managing human resources is often considered one of the most challenging aspects of project management.

HR management plays a critical role in project management by ensuring the ***optimal utilization of the most important resource - the people!*** Here are some key reasons why HR management is important for project success:

1. **Planning -** HR works with project leadership to properly forecast labour requirements in terms of headcount and skills needed. This ensures capacity meets project demands.
2. **Recruiting -** HR sources, screens and onboards qualified project resources with the core capabilities required of the roles.
3. **Development -** By analysing competency gaps, HR provides training interventions to uplift skillsets of project personnel.
4. **Motivation -** HR implements performance management, reward schemes and incentive programs to drive engagement and motivation levels of teams.
5. **Retention -** Through ***career mapping support and work culture nurturing,*** HR focuses on retaining top talent assigned to projects.

In essence, ***strategic HR alignment ensures optimized staffing continuity,*** enhanced capability building, and ***maximized productivity*** - enabling the project management processes ***centred on efficient execution.***

22. Importance of project risk management.

Explain qualitative and quantitative risk analysis.
What is risk response planning?
What are different processes involved in project risk management.

23. Give the details of how to monitor and control processes with outputs. (3 Times), (End Sem 2023)

Large projects often emphasize that a significant portion of project management involves communication and managing changes. To effectively handle changes, a structured monitoring and control process is crucial:

1. Monitoring Project Work:

- Involves collecting, measuring, and disseminating performance information.

- Assess measurements and analyse trends to identify areas for process improvements.

- Continuous monitoring assesses overall project health and identifies areas needing attention.

2. Inputs for Monitoring and Controlling:

- Project management plan, schedule, cost forecasts, validated changes, work performance information, enterprise environmental factors, and organizational process assets.

3. Baseline and Changes:

- The project management plan serves as a baseline, representing the approved plan plus approved changes.

- Types of baselines (e.g., cost or schedule baseline) clarify project goals and performance.

4. Forecasting and Work Performance Information:

- Schedule and cost forecasts, validated changes, and work performance information provide insights into project execution.

- These details alert the project manager to current or potential issues.

5. Continuous Monitoring and Control:

- The project team continuously monitors and controls work, deciding on corrective or preventive actions.

- Outputs include change requests, work performance reports, and recommendations for improvements.

6. Outputs - Change Requests:

- Change requests arise from monitoring and may include corrective actions, preventive actions, and defect repairs.

- Corrective actions aim to improve project performance, while preventive actions reduce risks. Defect repairs bring deliverables in line with requirements.

7. Olympic Games Example:

- The 2002 Olympic Winter Games exemplify effective project management.

- Planning involved Primavera software, cascading WBS, and Venue Integrated Planning Schedule for resource integration.

- Budget challenges were addressed by prioritizing expenses, leading to a surplus.

- Tools like an Executive Roadmap ensured executives were informed, and a change request process managed alteration efficiently.

8. Formal Change Request Process:

- Many organizations use a formal change request process and forms to document and track project changes.

- Work performance reports, including status and progress reports, communicate project performance.

In summary, monitoring and controlling processes involve continuous evaluation, adapting to changes, and utilizing effective communication methods. The Olympic Games example illustrates how meticulous planning, effective tools, and proactive change management contributed to project success.

24. Give sample project charter, with factors responsible for it. (3 Times), (End Sem 2023)

A project charter is like a special paper that officially says a project exists. It gives the project a clear direction, saying ***what it's supposed to achieve and how it will be managed.*** The important part is that it lets the person leading the project (the project manager) use the company's resources to get the job done.

Here's a simple breakdown:

1. What's a Project Charter?

- It's a formal document that says, ***"Hey, we're doing this project, and here's the plan."***

2. Who Creates It?

- Ideally, the person leading the project (the project manager) has a big role in making it.

3. Different Forms:

- Some use ***a project charter,*** some a ***letter of agreement,*** and some even use ***formal contracts*** to start projects.

4. Signing In Agreement:

- Important people in the project (stakeholders) sign the project charter to show they agree with the project's purpose.

5. Inputs for Project Charter:

- Things like a project statement of work (what the project will make), a business case (why the project is worth it), agreements (if it's for an external customer), and information about the organization's plans and rules.

6. Environmental Factors:

- Things outside the company, like industry standards and marketplace conditions, are considered.

7. Organizational Assets:

- It also looks at what the company already has—plans, policies, lessons learned—to help make the project successful.

So, in simple terms, a project charter is like the official starting point for a project, and it helps everyone understand what's going on and why it's important.

Project Charter: Next-gen DNA-Sequencing Instrument

- Date of Authorization: Feb 1

- Project Start Date: Feb 1

- Projected Finish Date: Nov 1

Key Schedule Milestones:

1. Complete 1st software version by June 1

2. Complete production software version by Nov 1

Budget: $1.5M allocated, more available if needed. Majority of costs for internal labour, hardware outsourced.

Project Manager: Nick Carson, (650) 949-0707, ncarson@dnaconsulting.com

Objectives: Complete 1st software version in 4 months, production version in 9 months.

Success Criteria: Software meets specs, passes thorough testing, and is completed on time. CEO approval based on key stakeholders' advice.

Approach:

- Hire replacements for Nick Carson ASAP.

- Develop work breakdown, scope, and Gantt chart within a month.

- Purchase hardware upgrades in two months.

- Hold weekly progress reviews.

- Conduct thorough software testing.

Roles and Responsibilities:

- Ahmed Abrams (Sponsor/CEO)

- Nick Carson (Project Manager)

- Susan Johnson (DNA Expert)

- Renyong Chi (Testing Expert)

- Erik Haus (Programmer)

- Bill Strom (Programmer)

- Maggie Elliot (Programmer)

Sign-off:

(Signatures of stakeholders)

Comments:

"I want to be heavily involved in this project. It is crucial to our company's success, and I expect everyone to help make it succeed." — Ahmed Abrams

18. Maslow's Hierarchy of needs (2 Times)

Refer Qs No. 9

19. **What is the importance of top management commitment (2 Times)**

Imagine a ship trying to sail the ocean. Without a captain at the helm, setting the course and making sure everyone is working together, the ship will likely go off course or even sink.
That's similar to how project managers are like captains of their own ships. They need the support and guidance of a strong leader, like a captain's owner or a company's top management.
Top management commitment means that the leaders of the organization are fully behind the project and will provide whatever resources and support are needed to make it successful. This is like the captain's owner giving them the best ship, crew, and supplies to ensure a smooth and successful voyage.

Here's why top management commitment is so important for project managers:

- **Resources:** Just like a ship needs fuel and sails, projects need money, people, and visibility to succeed. Top management commitment ensures that project managers have what they need to do their job well.
- **Quick decisions:** Sometimes projects hit unexpected bumps in the road, like bad weather or pirate attacks for our ship analogy. Project managers need someone to make quick decisions and approve necessary changes. Top management commitment ensures that these decisions can be made quickly and efficiently.
- **Cooperation:** Just like different parts of a ship need to work together, different departments in a company need to cooperate for a project to succeed. Top management commitment helps break down barriers and ensure that everyone is working towards the same goal.
- **Leadership guidance:** Sometimes even experienced captains need advice from seasoned sailors. Top management can mentor and coach project managers, helping them develop their leadership skills and tackle tough challenges.
- **Value and standards:** Just like a captain needs to be confident in their ship and its crew, project managers need to know that their work is valued by the organization. Top management commitment shows that the company believes in project management and sets high standards for its success.

Without the full support and commitment of top management, project managers are like captains without a rudder or sails. They'll struggle to navigate the stormy seas of project challenges and may never reach their destination.