CSC 325 SOFTWARE PROJECT MANAGEMENT

2021/2022 ACADEMIC YEAR

1.) Define the term project management

Project management is the practice of using knowledge, skills, tools, and techniques to complete a series of tasks and achieve a desired outcome.

A project is a series of structured tasks, activities, and deliverables that are carefully executed to achieve a specific outcome.

2.) why do we carry out monitoring and control on a project? [3 Marks]

Monitoring and control helps to ensure that the project stay on track, adopt to changes and achieve their objectives.

Monitoring and control are carried out in a project to ensure that it stays on track with its objectives, schedule, budget, and quality standards. It helps in identifying deviations from the plan and taking corrective actions to address them promptly.

c) Name FOUR criteria by which a project can be judged a success. [2 Marks]

1. Meeting project objectives within the defined scope.
2. Completing the project within the allocated budget.
3. Finishing the project within the scheduled timeframe.
4. Delivering the expected quality and meeting stakeholder satisfaction.

d) What are the three project activities that are needed for WBS? [3 Marks]

1. Identifying tasks: Breaking down the project deliverables into smaller, manageable tasks.
2. Sequencing tasks: Determining the logical order in which tasks should be performed.
3. Estimating resources: Assigning resources such as time, cost, and manpower to each task.

e) Describe THREE different algorithmic techniques for estimating effort for an IT system development project. [6 Marks]

1. Function Point Analysis: It quantifies the functionality provided to the user based on user interactions and data movement.

2. COCOMO (Constructive Cost Model): It estimates effort based on project size, complexity, and development environment.

3. Delphi Technique: It involves gathering expert opinions anonymously and iteratively to arrive at a consensus estimate.

f) Identify and explain TWO advantages of using a Gantt chart in comparison with a network diagram, and TWO advantages of using a network diagram compared with a Gantt chart. [6 Marks]

1. **Visualization of project schedule:** Gantt charts provide a clear visual representation of project tasks and their durations.

2. **Resource management:** They help in identifying resource allocation and dependencies.

Advantages of using a network diagram:

1. **Dependency management:** Network diagrams clearly illustrate task dependencies, facilitating better understanding of critical paths.

2. **Critical path identification**: They highlight the sequence of tasks that determine the project's overall duration, aiding in schedule optimization.

g) Explain what the difference is between project risks and business risks [2 Marks]

Project risks refer to uncertainties specifically related to project objectives, scope, schedule, and resources. Business risks, on the other hand, encompass broader uncertainties that may affect the organization's overall strategic goals, financial health, reputation, or market position.

h) Explain what in project management is meant by 'quality' [2 Marks]

In project management, 'quality' refers to the degree to which a project meets its specified requirements and fulfills the needs and expectations of its stakeholders. It involves delivering a product or service that is fit for its intended purpose, reliable, and free from defects or deficiencies.

i) In preparation for your meeting with your sponsor, you have developed an estimate using

the PERT method. Briefly describe this method. [4 Marks]

The Program Evaluation and Review Technique (PERT) method is a project management technique used to estimate the time required to complete a project. It involves identifying the critical path, estimating the duration of each activity, and calculating the expected duration of the project by considering optimistic, pessimistic, and most likely time estimates for each activity. PERT provides a probabilistic estimate of project duration based on these time estimates.

QUESTION TWO [20 MARKS]

You have been asked to assemble a project team for a development project. You will require analysts, programmers and testers. There is an IT Department at the company doing maintenance and support. You have been told that you will be able to get about half the team you require from here and the other half will be hired from outside.

a) Describe FIVE key steps in the recruitment process from a stalling vacancy being identified to putting a new effective team member in place. [10 Marks]

Five key steps in the recruitment process:

1. Job Analysis: Identify the specific skills, qualifications, and experience required for each role in the project team.

2. Job Posting and Advertising: Advertise the job vacancies internally within the organization and externally through appropriate channels such as job boards, social media, and professional networks.

3. Screening and Shortlisting: Review resumes and applications to shortlist candidates who meet the job criteria. Conduct initial screenings, such as phone interviews, to assess candidates' suitability.

4. Interviews and Assessments: Conduct interviews, both technical and behavioral, to evaluate candidates' skills, experience, and cultural fit. Administer relevant assessments or technical tests to assess candidates' competencies.

5. Selection and Onboarding: Make final hiring decisions based on interview performance, assessments, and references. Offer the position to the selected candidates, negotiate terms, and facilitate the onboarding process, including orientation and training.

b) List FIVE factors you would consider when deciding who should do which task in a plan. [5 Marks]

Factors to consider when deciding who should do which task in a plan:

1. Skills and Expertise: Assign tasks to team members based on their skills, knowledge, and experience relevant to the task requirements.

2. Availability and Workload: Consider each team member's current workload and availability to ensure tasks are distributed evenly and deadlines can be met.

3. Preferences and Interests: Consider team members' preferences and interests to motivate them and enhance job satisfaction.

4. Team Dynamics: Consider how task assignments may impact team dynamics and collaboration, ensuring a balanced distribution of responsibilities.

5. Development Opportunities: Assign tasks that provide opportunities for skill development and career growth, aligning with individual career goals and aspirations.

c) The team members from the IT Department have been working on their tasks for a month when the newly hired external analysts and programmers join. There is then a decrease in the productivity of the existing staff. What could explain this? 15 Marks]

Possible explanations for the decrease in productivity of existing staff after the newly hired external analysts and programmers join:

1. Training and Onboarding: The existing staff may be spending time and resources on training and onboarding the new team members, leading to a temporary decrease in productivity as they adjust to working with the new hires.

2. Integration Challenges: There may be integration challenges between existing staff and new hires, such as differences in work styles, communication preferences, or team dynamics, impacting productivity.

3. Workload Redistribution: The workload may be redistributed unevenly among the team, with existing staff taking on additional responsibilities to accommodate the new hires, leading to a strain on productivity.

4. Uncertainty and Anxiety: Existing staff may experience uncertainty or anxiety about their roles or future within the team due to the arrival of new team members, affecting their focus and productivity.

5. Lack of Clear Expectations: If roles, responsibilities, and expectations are not clearly communicated or defined during the transition period, it can lead to confusion and inefficiencies, impacting productivity.

QUESTION THREE 120 MARKS]

Conflict is inevitable in a project setting, and conflict resolution is part of a project manager's core responsibilities. But conflict resolution is more than just refereeing disputes. The root causes of conflict in a project setting are largely due to flaws in the project plan, process, or organization.

a) What is Conflict Management? [2 Marks]

Conflict Management refers to the process of identifying, addressing, and resolving conflicts that arise within a project team or between stakeholders.

b) As a project manager how do you prepare to manage conflict? [6 Marks]

1. Understanding Potential Sources of Conflict: Identify potential sources of conflict within the project, such as differences in goals, priorities, personalities, or communication styles.

2. Establishing Clear Communication Channels: Create an environment where team members feel comfortable expressing concerns and issues openly. Establish regular communication channels and encourage transparency.

3. Building Relationships: Foster positive relationships among team members and stakeholders through team-building activities, trust-building exercises, and open dialogue.

4. Developing Conflict Resolution Strategies: Equip yourself with various conflict resolution techniques, such as negotiation, mediation, collaboration, and compromise. Understand when and how to apply each strategy effectively.

5. Setting Expectations: Set clear expectations for behavior, performance, and conflict resolution within the project team. Establish ground rules for addressing conflicts constructively and professionally.

6. Being Proactive: Anticipate potential conflicts before they escalate by monitoring team dynamics, addressing underlying issues promptly, and intervening when necessary.

c) What are some of the root causes of conflict and how can you resolve them? [6 Marks]

- Differences in Goals and Priorities: Align project goals and priorities through effective communication and collaboration. Ensure that all stakeholders have a shared understanding of project objectives and expectations.

- Communication Breakdowns: Improve communication channels, clarity, and transparency. Encourage active listening, provide feedback, and address misunderstandings promptly.

- Resource Constraints: Allocate resources effectively, considering project requirements and constraints. Prioritize tasks, manage expectations, and seek alternative solutions to resource conflicts.

- Role Ambiguity: Clarify roles, responsibilities, and expectations within the project team. Define clear reporting structures and decision-making processes to minimize confusion and ambiguity.

- Personality Conflicts: Foster a positive team environment through team-building activities, conflict resolution training, and promoting mutual respect and understanding among team members.

d) Your design reviews in the project always get emotional-what can you do to avoid this conflict? [6 Marks]

1**. Establish Ground Rules:** Set clear ground rules for design reviews, emphasizing professionalism, respect, and constructive feedback. Encourage team members to focus on the objective evaluation of designs rather than personal opinions.

2. Provide Guidelines: Offer guidelines or templates for design reviews to ensure consistency and structure. Define evaluation criteria and expectations upfront to guide discussions and reduce subjectivity.

3**. Facilitate Discussions:** Act as a neutral facilitator during design reviews, guiding discussions and redirecting conversations if they become emotional or unproductive. Encourage active listening and constructive criticism.

4. Address Underlying Issues: Identify and address any underlying issues contributing to emotional conflicts, such as ego clashes, lack of trust, or unresolved disagreements. Provide opportunities for open dialogue and conflict resolution outside of design reviews.

5. Foster a Collaborative Environment: Promote a collaborative and supportive team culture where individuals feel valued and respected. Recognize and celebrate team achievements to boost morale and reduce tension.

QUESTION FIVE [20 MARKS]

a) i) Discuss six resources needed in software development projects [6 Marks]

1. **Human Resources**: Skilled personnel such as developers, testers, analysts, project managers, and other specialists required to carry out various tasks throughout the software development lifecycle.

2. **Hardware**: Physical equipment and infrastructure necessary for software development activities, including computers, servers, networking devices, and testing devices.

3. **Software Tools**: Development tools, integrated development environments (IDEs), version control systems, testing frameworks, and project management software used to facilitate software development processes.

4. **Budget**: Financial resources allocated for hiring personnel, acquiring hardware and software tools, training, licensing fees, and other project-related expenses.

5. **Time**: Adequate time allocated for planning, development, testing, deployment, and maintenance phases of the software development lifecycle.

6. **Information and Documentation**: Relevant data, documentation, requirements, specifications, design documents, and project plans necessary for guiding development activities and ensuring project success.

ii) Outline any FOUR Characteristics of a project. [4 Marks]

1. **Temporary**: Projects have a defined beginning and end, with specific objectives to be achieved within a finite timeframe.

2. **Unique**: Projects are unique endeavors that produce deliverables, outcomes, or results that are distinct from routine operations or previous projects.

3. **Cross-Functional**: Projects typically involve collaboration and coordination across different departments, teams, or disciplines to achieve project goals.

4. Progressive Elaboration: Projects evolve over time as more information becomes available, allowing for refinement and adjustment of project plans, scope, and objectives based on changing requirements or circumstances.

b) Explain how a project manager might use information generated as part of project control

reporting to identify situations that are behind schedule for each of the following reasons:

i. Staff who are intended to be working full-time on the project are taken off sometimes to help

resolve emergency situations on other projects,

- The project manager can identify this situation by monitoring resource allocation and utilization reports. If certain team members are consistently allocated to other projects or tasks outside of the project scope, it may indicate a resource conflict affecting project progress. The project manager should track the frequency and duration of such occurrences to assess their impact on the project schedule and take necessary actions to mitigate resource constraints.

ii. The original estimates of development times were too low

- This situation can be identified through project progress reports, particularly comparing actual progress against planned milestones and deadlines. If tasks are consistently taking longer than initially estimated, it may indicate that the original estimates were too optimistic or underestimated. The project manager should analyze the root causes of delays, reassess task durations, adjust the project schedule accordingly, and communicate revised timelines to stakeholders.

iii. The project scope has been extended to meet additional requests from users

- Project change control documentation and scope management reports can highlight any scope changes or additions requested and approved during the project lifecycle. If the project scope has expanded beyond the original baseline, it may impact project timelines and deliverables. The project manager should review change requests, assess their impact on project schedules, resources, and budgets, and communicate any schedule deviations resulting from scope changes to stakeholders.

iv. Staff productivity is lower than expected. [10 Marks]

- Productivity metrics, such as task completion rates, work hours logged, and deliverable quality, can indicate deviations from expected productivity levels. If team members are consistently underperforming or failing to meet productivity targets, it may indicate issues with workload management, skills gaps, or resource constraints affecting productivity. The project manager should investigate the root causes of low productivity, provide support or training as needed, reallocate resources if possible, and implement strategies to improve team efficiency and performance.