



VETRI VINAYAHA COLLEGE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

MG 6088 SOFTWARE PROJECT AND MANAGEMENT
IV year/ VIII Sem CSE
(Regulation 2013)



UNIT 1- PROJECT EVALUATION AND PROJECT PLANNING

PART A

1. Define – project.

A unique planned temporary endeavor with definite start and end dates to achieve One or more goals with the constraints of cost schedule quality performance and resources

2. What are the common characteristic of a project?

- Planning
- Have a specific goal or objective or end point
- Have a definite time frame
- Work involving many people
- Requirement of people with different skill sets
- The resources are limited (most of the time)
- Involves non routine tasks
- Uncertainty regarding time, cost quality and performance

3. Define- software project'

A software project is a unique, planned temporary endeavour with definite star and End dates to conceive, design develop test and maintain a software to satisfy the customers, Need, A software project will have constraints link cost, schedule quality, performance, Resources in addition to the lack of complete knowledge on the domain in which the Developed software would work

4. List a few goals of a software project

- Software projects may involve one or more of the following goals
- Profit (money)
- To make a product for use by multiple customers.
- To improve existing product' quality
- To improve existing product's performance or
- Simply to satisfy a customer (in a small project in order to bag a bigger project

5. How IT projects are different from other projects?

- In an IT project,
- Software project are complex in nature
- The progress is not visible immediately
- customer would keep changing his requirements
- High degree or fiexbility is expected

- Limited knowledge on application domain

- Lack of quality standards and measures
- Lack of commitment from employees (during IT boom period)
- Limited technical expertise (new developments happening more frequently in technology)
- Whereas in other projects like for example, civil engineering projects these constraints do not happen.

6. Define- software project management.

The general management skills like planning, Organizing scheduling, directing, Controlling and tracking are applied in a project to achieve the project goal in a pre-determined Time frame and within the budgeted cost is called 'project management' software project Management is managing a software project with the above skills and in addition managing Its complex ever changing newer technology & multiple specialty nature.

7. Define – 'process' and 'software process'.

A structured set of activities required to develop a system is called 'processes' A software process provides the framework from which a comprehensive plan for Software development can be established.

8. What are the activities covered by software project management?

There are two types of activities covered by software project management.

1. Frame work activity (conceiving, Modeling, construction and deployment)
2. Umbrella activity (Planning, Tracking, Quality management etc.)

9. What is operational feasibility?

The new software which is proposed to be developed must support the current work Practices and procedures of the organization in which the software would be implemented The process to ensure this is called 'operational feasibility'.

10. Differentiate between validation and verification.

- **Validation;** set of activities to ensure that the software built meets the customer
 - Requirements (Are we building right product?)
- **Verification;** set of activities to ensure that the software correctly implements the specific
 - Function (Are we building the product right?)

11. What is meant at by setting objective in a SMART way ?

A workable goal/ objective setting must take care of 5 basic elements as below.

- S – Specific
- M – Measurable
- A – Achievable
- R – Relevant
- T – Time bound

This way of objectives setting is called SMART way?

12. What is project portfolio management?

A project portfolio is a group of projects carried out under a management. All these Portfolio of projects share the common resources. In addition to managing the mix of projects In a company, project portfolio Management must also determine whether (and how) as set of Projects in the portfolio can be executed by a company in a specified time, given finite Development resources in the company.

13. Give the significance of cost benefit analysis.

Cost benefit analysis looks at the benefits from the project in terms of income (profit) And expenses (Cost) Most importantly, benefits must exceed investment make the project Worth While taking up.

14. What are the two types of benefits , an Organisation looks for in cost- benefit analysis?

- a. Tangible benefits (financial return on investment)
- b. Intangible benefits (good will, investment for future projects)

15. What are the steps involved in cost benefit analysis?

Identify cost (development, setup, training, operating)

- a. Identify benefits (Tangible & intangible)
- b. Compare both costs and benefits (with a common unit – e.g MONEY)

16. What are the costs involved in software project?

- Development cost involves salaries, other employee benefit costs and all Associated costs.
- setup cost includes the cost of hardware, software, installation, ancillary equipment, data taken on/data conversion.
- Training cost involves the cost of trainer, equipments and needs of training.
- operational cost consists of cost of operating the system once it is installed .Help desk, hands on training and maintenance costs are to be considered.

17. How are benefit classified?

- . Quantified and valued – direct financial benefit obtained.
- . Quantified but not valued – for example, decrease in number of complaints.
- . Identified but not easily quantified – satisfying the mandatory government's new Regulations.

18. What are the economic evaluation techniques used in project selection?

- 1) Net profit
- 2) Payback period
- 3) Return on investment (ROI)
- 4) Net present value (NPV)

5) Internal rate of return (IRR)

19. Define 'Net profit'.

Net profit of a project is the difference between the total costs (cash outflow) and the Total income (cash inflow)

Define Return on Investment (ROI).

Return on investment is the percentage of the ratio of average annual profit to total Investment.

$$\text{ROI} = \frac{\text{Average Annual profit}}{\text{Total investment}} * 100\%$$

How will you find the present value of a future cash flow?

The ' NPV ' of a cash flow ' may be obtained by

1. Multiplying each year cash flow value (both positive and negative) by its appropriate discount factor and
2. Add up all discounted cash flow values.

In this , the initial investment in year ' 0 ' will have a discount factor of 1. Because this cash is available now (and it is not future cash). Only future cash needs to be Discounted.

PART B

1. Describe various activities covered by software project Management
2. Illustrate the problems associated with software project
3. Discuss the different ways of categorizing software project in detail
4. Illustrate the following
 - i) Setting objective of the project.
 - ii) Principal of project management process.
5. Explain project portfolio management in detail.
6. Write short notes on strategic programme management.
7. Describe the cash flow forecasting with different cost benefit evaluation techniques.
8. List the stepwise planning activities of project plan with an example.

UNIT – II PROJECT LIFE CYCLE AND EFFORT ESTIMATION

1. Define process.

A software process provides the framework from which a comprehensive plan for software development can be established.

2. Write any two goals of organizational process focus.

S/W process development and improvement activities are coordinated across the organization. The strength and weakness of the s/w processes used are identified relative to a process standard.

3. Write any four process standards.

IEE, SEI, ISO, PMI.

4. Write any two goals of organizational process definition.

1. A standard s/w process for the organization is developed and maintained.
2. Information related to the use of the organization's standard s/w process by the s/w projects is collected, reviewed, and made available.

5. Write the difference between project process and product process.

Project process-Describe and organize the work of the project. Defined by the PMI PMBOK.

Product process-Specify and create the project product. Defined by the life cycle used.

Defined by the American society of quality(ASQ), Certified Software Quality Engineer(CSQE)

6. What is milestone?

A milestone is a significant event in a project, usually associated with a major work product or deliverable. Stages or phases are not milestones but are collections of related product activities.

7. Name the six classes of product domain.

Customer, business, industrial, real-time, really timely, scientific.

8. Write the five processes of Project Management Institute (PMI) Initiating, planning, executing, controlling, closing.

9. What are the merits of incremental model?

- i) The incremental model can be adopted when there is less number of people involved in the project.
- ii) Technical risks can be managed with each increment.
- iii) For a very small time span, at least core product can be delivered to the customer.

10. List the task regions in the Spiral model.

- * Customer communication - it is suggested to establish customer communication.
- * Planning – All planning activities are carried out
- * Risk analysis – The tasks required to calculate technical and management risks.
- * Engineering – tasks required to build one or more representations of applications
- * Construct and release – tasks required to construct, test, install the applications
- * Customer evaluation - tasks are performed and implemented at installation stage based on the customer evaluation

11. What are the drawbacks of spiral model?

- i) It is based on customer communication. If the communication is not proper then the software product that gets developed will not be the up to the mark.
- ii) It demands considerable risk assessment. If the risk assessment is done properly then only the successful product can be obtained.

12. Name the Evolutionary process Models.

- i. Incremental model
- ii. Spiral model
- iii. WIN-WIN spiral model
- iv. Concurrent Development

PART B

1. Describe the water fall model in detail with neat diagram(8)
2. Explain the spiral model in detail.
3. Discuss the following in detail
 - i) Software prototyping.
 - ii) Different ways of categorizing prototype.
4. i) Demonstrate the incremental delivery with neat diagram.
 - ii) Give the advantages and disadvantages of incremental delivery
5. i) Describe the Rapid Application Development model.

- ii) What is agile method? Explain it in detail.
- 6. Discuss the Extreme programming in detail with its advantages and disadvantages
- 7. i) Describe the basis for software estimation in detail.
 - ii) Write short notes on
- 8. i) Expert judgment
 - ii) Estimation by Analogy
- 9. Explain the COCOMO II parametric productive model in detail.

UNIT III -ACTIVITY PLANNING AND RISKMANAGEMENT

1. Define – Activity Planning
 A detailed plan for the project, however, must also include a schedule indicating the start and completion times for each activity.
2. List out the objectives of activity planning.
 - Feasibility assessment
 - i. Resource allocation
 - ii. Detailed costing
 - iii. Motivation
 - iv. Co-ordination.
5. What are the three approaches that are used to identify the activities or tasks of a Project?
 - i. Activity-based approach- constraints stemming from the relationships between projects
 - ii. Product-based approach- instructor becomes an active member of the project team
 - iii. Hybrid approach- Decision support system for software project management
6. Define – Product Flow Diagram
 Product flow diagram deals with product design stages.
5. List out the categories of WBS .
 - Project- engineering resources has been developed by TASK
 - Deliverables- term for the quantifiable goods or services
 - Components- designing the floor plane
 - Work-packages- Models for the description of software artifacts
 - Tasks- Creation and distribution of organizing software

6. List out the main stages in a project schedule.

- Identifying activities
- Risk Analysis
- Resource Allocation
- Schedule

7. What are the types of network planning models?

- CPM
- PERT
- Precedence Network

8. Define – Forward Pass Rule

The forward pass is carried out to calculate the earliest dates on which each activity may be started and completed.

Significance- calculation method used in Critical Path Method

9. Define – Backward Pass Rule

The second stage in the analysis of a critical path network is to carry out a backward pass to calculate the latest date at which each activity may be started and finished without delaying the end date of the project. The calculating the latest dates, we assume that the latest finish date for the project is the same as the earliest finish date- that is we wish to complete the project as early as possible.

10. Differentiate Free Floats from Interfering Floats. How are they calculated?

Free float is free from fixed .Interfering floats have fixed contract time.

11. Define – Activity-on-arrow Network

Activity-on-arrow Network represent activities by links[arrows] and ime the nodes represent event of activities starting or finishing.

12. Define – Dangle

Dangle is an activity or network which has either no predecessors or no successors. It is referred to as an isolated activity.

13. Define – Brainstorming

Brainstorming is a group or individual creativity technique by which efforts are made to find a conclusion for a specific problem by gathering a list of ideas spontaneously contributed by its member[s].

14. Define – Knowledge Management

Knowledge Management deals with knowledge exploration techniques that are to be needed in working environment.

15. List out the factors that are used to identify the risk.

- Risk Identification- Organizations and project teams
- Risk Analysis- Includes a download demo and other decision analysis tools
- Risk Planning- assessment is an important part
- Risk Monitoring- identify Development Environment Risks.

16. Define – Risk Management

- Contingency
- Deciding on the risk action
- Creating and maintaining the risk register.

17. List out the advantages of PERT.

- Flexibility
- Easy to implement
- Reusability

PART B

1. Describe the various steps involved in activity planning with its objectives.

2. Describe the different approaches of identifying the project activities in detail with neat diagram.

3. Illustrate the network planning model. Explain rules for constructing precedence network.

4. Explain the identification of the critical path in details with neat diagram.

5. Develop an Activity-On-Arrow network. Explain rules and conventions for activity on arrow network.

6. Discuss different CPM forward and backward pass network in detail with neat diagram

7. i) Describe PERT network in detail with example.

ii) Using PERT evaluate the effects of uncertainty.

8. Describe an activity network using activity on node for office automation.

UNIT -IV PROJECT MANAGEMENT AND CONTROL

1. Define – Project Control

Project control uses the information supplied by the monitoring techniques in order to bring project actual results in line with stated project performance standards.

2. Define – Checkpoints

Check points are used to measure the project evaluation time.

3. Define – Review points

Review points are used to measure effectiveness of the project.

4. Write a note on project steering committee.

Project steering committee is used to keep track of projects on scheduled date and time.

5. List out the different categories of reporting

- RAG [Red, Amber, Green]
- Activity Assessment Sheet
- Time Sheet
-

6. Define – Gantt chart

Gantt chart is the simplest and oldest technique for tracking project progress. It is an activity bar chart indicating scheduled activity dates and durations , frequently augmented with activity floats.

7. Define – Slip chart

Slip chart provides a more sticking visual indication of those activities that are not progressing to schedule – the more slip line bends , the greater the variation plan.

8. Define – Ball Chart

Ball Chart is used to indicate whether the expected target is met or not.

9. Define – Timeline Chart

It is a method of recording and displaying the way in which targets have changed throughout the duration of the project.

10. List the popular visual tools that are used for monitoring and tracking the project progress. [M – 11, N - 12]

- Ball chart
- Gantt chart
- Timeline chart

11. What are the methods for assigning earned value in earned value analysis. [N - 11]

- 0/100 technique
- 50/50 technique
- Milestone technique

12. Define – Earned value analysis

- is a measure of progress
- enables us to assess the “percent of completeness” of a project using quantitative analysis rather than rely on a gut feeling
- “Provides accurate and reliable readings of performance from as early as 15 percent into the project.”
- A technique used to help determine and manage project progress and the magnitude of any variations from the planned values concerning cost, schedule, and performance.

13. Define - BCWS

It is the budgeted cost of work that has actually been performed in carrying out a scheduled task during a specific time period. NASA's definition of the BCWS is the sum of the budgets for completed work packages and completed portions of open work packages, plus the applicable portion of the budgets for level of effort and apportioned effort.

14. Define – BCWP

BCWP is the sum of the budgets for completed work packages and completed portions of open work packages, plus the applicable portion of the budgets for level of effort and apportioned effort.

15. Define – Milestone technique

A milestone is a significant event in a project, usually associated with a major work product or deliverable. Stages or phases are not milestones but are collections of related product activities.

16. Define – ACWP

ACWP is used to represent Actual Cost for Work Performed.

17. Define – Cost variance

The cost variance is measured in cost terms as EV-PV and indicates the degree to which the value of completed work differs from that planned.

18. Define – CPI

CPI stands for Cost Performance Index. It is the ratio between BCWP and BCWS.

19. Define - EAC

In finance the equivalent annual cost [EAC] is the cost per year of owning and operating an asset over its entire lifespan. EAC is often used as a decision making tool in capital budgeting when comparing investment projects of unequal lifespans.

20. Define- COTS

In the United States, Commercial Off-The-Shelf [COTS] is a Federal Acquisition Regulation [FAR] term for goods available in the commercial marketplace that can be bought and used under government contract. For example consumer goods and construction materials may qualify but bulk cargo does not.

21. Define - EVM

Earned value project/performance management [EVPM] is a project management technique for measuring project performance and progress in an objective manner.

22. Define Hazard analysis.

A hazard analysis is a process used to assess risk. The results of a hazard analysis are the identification of unacceptable risks and the selection of means of controlling or eliminating them. The term is used in several engineering specialties, including avionics, chemical process safety, safety engineering and food safety.

23. Define – Cost monitoring

Used to compare expected cost of development system and operation with its benefits.

24. Define – CCA

CCA stands for construction Association. Used to help project managers in developing the project

25. List out the contents of typical terms of contract.

- Areas
- Advantages
- Market Share
- To find new partners
- To distribute goods and services.

26. What are the stages of contract placement?

- Fixed price contracts.
- Time and materials contracts.
- Fixed price per delivered unit contracts.

PART B

- 1) Describe in details about creating the frame work for monitoring and control
- 2) Discuss the following in detail
 - i) Collecting the data.
 - ii) Project termination review.
- 3) Illustrate the use of Gantt and timeline charts in visualizing the project progress with suitable diagrams
- 4) Explain the various ways in visualizing the progress of the project with neat diagram
- 5) Describe the purpose of software configuration management
- 6) Explain in details about configuration management process
- 7) Discuss types of contracts with example (8)
- 8) Explain the stages in contract placement in detail (8)
- 9) List down the typical terms in contract and explain them in detail

UNIT – V STAFFING IN SOFTWARE PROJECTS

1. Differentiate project process with product process.

Project Process	Product Process
Used to describe and organize the work of the project	Specifies and create the project product.
Defined by PMI PMBOK	Defined by the lifecycle used
Defined by the American society of Quality [ASQ]	Certified software Quality Engineer[CSQE]

2. Write the six classes of product domain.

- a. Customer
- b. Business
- c. Industrial
- d. Real-time
- e. Really-timely,
- f. Scientific

3. List out the three individual personality models.

- a. The Myers Briggs Type Indicator
- b. Fundamental Interpersonal Relations orientation – Behavior[FIRO-B] model,
- c. The kersey Temperament sorter.

4. Define - Milestone

A milestone is a significant event in a project, usually associated with a major work product or deliverable. Stages or phases are not milestones but are collections of related product activities.

5. List out the Leader"s style.

- v. Telling
- vi. Selling
- vii. Participating
- viii. Delegating

6. List out the five process of Project Management Institute [PMI].

- Initiating
- Planning
- Executing
- Controlling
- Closing

7. Define – Mission Statement

Statement containing the mission of the project that is to be satisfied by project manager.

8. Define – Corporate culture

Corporate culture contains good communication, coordination and team work.

9. Define – Organizational behavior

Organizational behavior deals with organization structure, core planning and its objectives.

10. Define – Taylor' s View

Taylor the father of scientific management had three basic objectives to work out the most productive way of doing tasks. They are

- To select the best person for the job.
- To instruct such people in the best methods.
- To give incentives in the form of higher wages to the best workers.

Taylorism" is often represented as a crude and mechanism, as he emphasis on the exclusively financial basis of staff motivation.

11. Define – Maslow's Hierarchy of Needs.

- Self Actualization
- Self Esteem/ Recognition /Achievement
- Belongingness
- Safety/ Security
- Physiology

12. State Herzberg"s two-factor theory

Maslow's need approach has been considerably modified by Frederick Herzberg. His research purports to find a two-factor theory of motivation. In one group of needs are such things as company policy and administration, supervision, working conditions, interpersonal relations, salary, status, and job security. These were found by Herzberg and his associates to be only dissatisfies and not motivators. Their existence does not motivate in the sense of yielding satisfaction; their lack of existence would, however, result in dissatisfaction. Herzberg called them maintenance, hygiene or job context factors.

13. List out the methods for improving motivation.

- Set specific tasks
- provide feedback
- Consider job design.

14. List out the stages of team formation model.

- Forming- The members of the groups get to know each other and try to set up some ground rules about behavior
- Storming- one nice packaging, all for publishing need
- Norming- Asset Management is a powerful and complete asset management solution
- Performing- Optimize project delivery across the software

15. Write the five basic stages of development.

- Defining the product
- Documenting plan
- Estimating cost
- Estimating effort.

16. What are the advantages of functional team format?

- Complete the project on time
- Complete the project within budget.
- Meet requirements.
- Meet expectations

17. List out the categories of decisions.

- Planning
- Control
- Maintenance

18. List out the mental obstacles of good decision-making.

- Complete the project on time
- Complete the project within budget.
- Meet requirements.
- Meet expectations

19. Define – Stress

- Projects are about overcoming obstacles and achieving objectives. Almost by definition both the project manager and team members will be under pressure. Once a project gets rolling, you should expect members to be putting in atleast 60 hours a week.. the project must except to put in as many hours as possible.
- Stress can be caused by role ambiguity and role conflict.

20. Define – Health

Health is wealth that is to be maintained.

21. Define – Safety

The primary goal of safety engineering is to manage risk, eliminating or reducing it to acceptable levels. Risk is the combination of the probability of a failure event, and the severity resulting from the failure.

22. What are the risk factors of health and safety?

- a. Stress
- b. Timeliness
- c. Angry
- d. Disinterest

PART B

1. Describe the organizational behavior with example.
2. Discuss the factors to be considered in the Oldham-Hackman job characteristic model.
3. Demonstrate, How would you select a new staff into a project along with the recruitment process?
4. Write short notes on some Ethical and Professional concern
5. Develop the project and functional organization structure and list out the advantages functional team format
6. Describe in detail about Dispersed and Virtual Team
7. Write short notes on Communication Genres.
8. Discuss leadership models. Explain the functions of a leader with an example
9. Explain about communication plan in detail