

## **IT2403-SOFTWARE PROJECT MANAGEMENT**

### **2 MARKS QUESTIONS**

1. Define software project management.

Software Project Management has key ideas about the planning, monitoring, and control of software projects

2. What is a phase?

A phase is a collection of related activities or tasks that produce a deliverable or work product.

3. Define system.

A system is a group of elements organized and arranged so that the elements can act as a whole toward achieving a common goal; is a collection of interacting subsystems.

4. What is an activity?

An element of work performed during the course of the project.

5. Define method.

A method is a manner, means, or process for accomplishing something.

6. Write any five competencies of project management skills.

Documenting plans, estimating cost, estimating effort, managing risks, scheduling, tracking processes

7. What is software engineering?

Software Engineering is a practical application of scientific knowledge in the design and construction of computer programs and the associated documentation required to develop, operate, and maintain them.

8. Write two types of processes.

Product process, project process.

9. Define technology.

Technology is the application of scientific knowledge in industry or business.

10. Name five maturity levels of CMM.

Initial, repeatable, defined, managed, optimizing

11. Define process.

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

12. 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.

13. Write any four process standards.

IEE, SEI, ISO, PMI.

14. 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.

15. 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)

16. Name the six classes of product domain.

Customer, business, industrial, real\_time, really\_timely, scientific.

17. Name any three individual personality models.

The Myers\_Briggs Type Indicator, fundamental Interpersonal Relations Orientation – Behavior(FIRO-B) model, the Keirsey Temperament sorter.

18. What are the two kinds of stress in McFletcher Work style Patterns Inventory?

Personal, Organizational.

19. Mention the Leader's style

Telling, selling, participating, delegating.

20. Write the five processes of Project Management Institute(PMI)

Initiating, planning, executing, controlling, closing.

21. 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.

22. What is Work Breakdown Structure (WBS)?

A WBS is a hierarchical list of the work activities required to complete a project.

23. What are the three project activities that are needed for WBS?

Cost estimating, cost accounting, schedule performance.

24. Write the stages of Team Formation Model.

Forming, Storming, Norming, Performing, Adjourning.

25. Differentiate Leaders and managers.

Leaders- set direction, do the right thing Managers- Follow process, do things right.

26. Define charter.

A charter is a documentation that formally recognizes the existence of a project.

27. Give some unites for measuring the size of the software.

Lines of code (LOC), Function points, feature points, number of bubbles on the data flow diagram, number of entities on entity relationship diagram.

28. Write the any two advantages of LOC.

1. It is widely used and universally accepted.
2. LOC are easily measured upon project completion.

29. What are dependencies?

Dependencies are one form of constraints for any project. Dependencies are any relationship connections between activities in a project that may impact their scheduling.

30. Write the special types of relationship in dependencies.

1. Lag and lead relationship
2. Hard versus soft relationship

31. Define project portfolio?

Project portfolio is group of project carried out under this sponsorship and/or management.

32. What are the project charter contents?

Objectives, Functions, Performance, constraints, scope, cost or benefits.

33. Write the disadvantage of feature point analysis.

The disadvantage of feature point analysis is the subject to classification of algorithmic complexity.

34. What is modified code?

The code developed for previous application that is suitable for a new application after a modest amount of modification.

35. Write the goal of software project planning?

Software estimates or documented for use in planning and tracking the software project.

36. Give any two examples for product attributes.

Database size (DATA), Product complexity (CPLX)

37. Write the advantages of COCOMO.

1. It is repeatable process.
2. It is easy to use.
3. It is thoroughly documented.

38. Define gold plating.

The work that does not drive towards a deliverable is called gold plating.

39. Write the three COCOMO Modes.

Organic, Semidetached, Embedded.

40. What is Legacy code?

Code developed for a previous application that is believed to be of use for a new application.

41. Write the categories of cost drivers.

Product attributes, computer attributes, project attributes, personnel attributes

42. What are the characteristics of an organization?

Model, Maturity, Thickness, Size, Structure.

43. Short notes on Finish- to-Start(FS) Dependency Relationship

One activity can start only when the preceding activity finishes.

44. What is RISK management?

Risk management is the procedure that explains the process of managing risk through analysis.

This procedure does not provide solutions to perceived risks.

45. What is brainstorming?

Brainstorming refers to the process of a group of colleagues meeting and working collaboratively to generate creative solutions and new ideas.

46. What is knowledge management?

Knowledge management is the combination of activities involved in gathering, organizing, sharing, analyzing, and disseminating knowledge to improve an organization's performance.

47. How you can collect internal data and external data?

Internal data are collected within the organization, usually by transaction processing systems, but also through employee and customer surveys. External data is collected from a wide array of sources outside the organization.

48. What is unstructured data?

Unstructured data are the data drawn from meeting discussions, private conversations, textual documents, graphical representations and other "non uniform" sources.

49. What is structured data?

Structured data are numbers and facts that can be conveniently stored and retrieved in an orderly manner for operations and decision-making.

50. What are the phases in systems development life cycle (SDLC)?

1. Planning
2. Analysis
3. Design
4. Implementation
5. Support

51. What is ROI?

The Return on Investment is a calculation of the difference between the stream of benefits and the stream of costs over the life of the system, discounted by the applicable interest rate.

52. Write some ways to collect information for system requirements.

1. Interviews
2. Questionnaires
3. Examination of documents
4. On-the-job observation

53. Write the goals of project management.

1. Complete the project on time
2. Complete the project within budget.
3. Meet requirements.
4. Meet expectations

54. What is outsourcing?

Outsourcing-trusting all or part of an organization's IS operation to an outside company.

55. Write any four competencies to define goal and scope of the software project.

Defining the product, documenting plan. Estimating cost, estimating effort.

56. Write the characteristics of activities.

Label, size, source.

57. Differentiate product view and project view

Product view-hierarchical relationship among product elements Project view- hierarchical relationship among work activities.

58. Name any four guiding principles for selecting a project team.

Public, client and employer, product, judgment.

59. Write any two disadvantages of using LOC

LOC is difficult to estimate for new software early in the life cycle There are no industry standards for counting lines of code.

60. What is regression model?

A regression model is derived from a statistical interpretation of historical data to describe a mean or typical relationship between variables.

61. Write the three levels of COCOMO.

Basic, Intermediate, detailed.

62. Give basic COCOMO effort formula.

Effort (E) =  $a * (\text{Size})^b$

Where a, b are constants.

Size- thousand of lines of code (KLOC)

E-effort expressed in staff months.

63. Write the three models of COCOMO II.

The application composition model, the early design model, the post architecture model.

64. Write the putnam equation

$S = C * K^{1/3} * t_d^{4/3}$                       Where

S= software size in LOC

C=Environmental factor=  $S / K^{1/3} t_d^{4/3}$

K=Total effort for the overall project

td=Delivery time constraint in years

65. Give any two disadvantages of SLIM.

1. To use the model, the software size must be identified in advance.
2. Estimates are extremely sensitive to the technology factor.

66. Give any two advantages of SLIM.

1. Offers value-added effective planning, especially on large projects.
2. Simplifies decision making.

67. Write the types of roles.

Database designers, Configuration Management experts, Human interface Designers, Web Masters, Network Specialists, System architects, Programming language experts.

68. Characteristics of roles

Responsibility, authority, accountability.

69. What is Activity-on-arrow (AOA)?

One Representation of Network diagram puts the activity information on The arrows between the nodes are called an activity-on-arrow representation (AOA).

70. What is Activity-on-Node (AON)?

One Representation of Network diagram puts the activity information on nodes and is called an activity-on- node representation(AON).

71. Define Load Leveling.

Load Leveling is the process of rescheduling tasks that have available slack to achieve a more balances distribution of resource usage.

72. Name the three forms of presenting a project schedule

Table, Gantt chart, Network diagram.

73. What is Software Quality Assurance?

It is an ongoing process to ensure that the plan is being carried out according to the procedures laid down. The role of quality assurance is to ensure that the quality of the procedures and processes results in a product that fully meets users' requirements

74. Write any three network diagram methods.

PERT- Program evaluation and review Technique

CPM- Critical Path Method

ADM- Arrow Diagramming Method

75. Define Quality?

ISO provides the definition of Quality as “The totality of features and characteristics of a product or service that bear on its ability to satisfy specified or implied needs.

76. Define scope?

It defines the requirements of the company for software design and development work within the project.

77. What are the measures of software quality?

Correctness

Maintainability

Usability

Integrity

78. What is LOC?

A line of code is any line of program text that is not a comment or blank line regardless of the no. of statements or fragments of statements on the line.

79. Write the four basic requirements for an SCM System.

Identification, Control, Auditing, Status Accounting.

80. Draw the Software Configuration Management (SCM) Pyramid.

81 Write the legal issues in product development techniques.

Advertising and Consumer, Communications, Contracts, Privacy and Tort.

82. Name the six product component classes.

Software, Hardware, people, Database, documentation and Procedures.

83. Write any two advantages of function point analysis

1. It can be applied early in the S/W development life cycle.

2. It is dependent of programming language, technology & techniques except for the adjustments at the end.

84. Write the disadvantages of function point analysis

1. It requires subjective evaluation.

2. There is more research data on LOC than on function points.

85. Give any two examples for personnel attributes.

Analyst capability (ACAP), Programming language (LEXP)



86. Give any two examples for Computer attributes.

Execution time constraint (TIME), Main storage constraint (STOR).

87. Name any two external dependencies.

Supplier, Stakeholders

88. What is start-to-start relationship(SS)

It means that one activity can start if and only if another activity starts.

89. What are the uses of Nominal group techniques?

Problem solving, Creative decision making, ideas generating situations

90. Difference between earliest start and earliest finish.

The earliest time period that the activity can start.

The earliest finish means the earliest time period that the activity can finish.

91. Give any one example for Activity on Arrow.

92. Write the relationship between distance, time & speed.

Distance = Time

speed

93. What are three kinds of interfaces?

Personal, organizational, and system.

94. What is Critical path?

The path with Zero flexibility is called the critical path, because it will have zero float b/w all of its activities.

95. What are the Managerial activities?

Project planning, tracking, control, risk analysis.

96. What are the types of process communication model?

Dreamer, Rector, Rebel, workaholic

97. Difference b/w personal and organizational stress.

Personal stress include apathy low productivity, irritability, frequent complaints and health disorders Organizational stress include misunderstandings of work expectations, product quality and customer service problems.

98. Define tort.

A tort is defined as a wrongful act other than a breach of contract that injures another and for which the law imposes civil liability.

99. Name any four selection criteria for SCM tools.

Multi user support, Scalability, Easy to setup, Process management.

100. Write the legal issues for project Management skills.

Alternative Dispute Resolution, arbitration, Negotiation and mediation.

### **16 MARKS QUESTIONS**

1. Briefly explain about product development techniques.

Explain- Assessing processes, Awareness of process standards, defining the product, evaluating alternative processes, managing requirements, performing initial assessment, selecting methods and tools, Tailoring processes.

2. Briefly explain about project management skills.

Explain- Documenting plan, Building a work breakdown structure, estimating cost, estimating plan, estimating effort, Managing risks, Scheduling, Scheduling metrics.

3. Briefly explain about people management skills.

Explain- Appraising performance, Holding effective meeting, interaction and communication, leadership, managing change, planning careers, Recruiting, Selecting a team.

4. Explain about SEI CMM.

Define SEI CMM, five levels of maturity - Initial, repeatable, defined, managed, optimizing.

5. Short notes on the following.

1. process (8)

2. International organization for standardization. (8)

(1). process- definition, product process, project process, Organizational process focus, organizational process definition (8)

(2). Explain 12 engineering activities for International organization for standardization. (8)

6. Briefly explain about software size and reuse estimating

Explain- competencies, SEI CMM and estimating, WBS, size measures, LOC, function points as a unit of size, feature points as a unit of size

7. Briefly explain about the categories of cost drivers and advantages of a SLIM.

Categories of cost drivers -Product attributes, computer attributes, project attributes, personnel attributes Write advantages of SLIM.

8. Briefly explain about Individual Personality Type.

Explain- The Myers\_Briggs Type Indicator, fundamental Interpersonal Relations Orientation – Behavior(FIRO-B) model, the Keirsey Temperament sorter, process communication model.

9. Briefly explain about project planning.

Define - project planning.

Explain –project process, product process, explain the steps why, what, how, do it, did it.

10. Explain the following

(i). Work Breakdown Structure (WBS) (8)

(ii). Short notes on Leader's style (8)

Explain the following

(i). Work Breakdown Structure(WBS)-competencies, milestone, approaches to build a WBS.

(ii). Short notes on Leader's style -Telling , selling, participating, delegating.

11. Briefly explain about COCOMO: A Regression Model.

Explain -COCOMO: A Regression Model with examples

Modes of COCOMO, levels of COCOMO, Advantages and disadvantages of COCOMO.

12. Briefly explain about function points to measure the software size.

Guidelines for counting Function points

- Count number of function in each category
- Apply Complexity weighting factors.
- Apply Environmental factors
- Calculate Complexity Adjustment Factor (CAF)
- Compute Adjusted Function Points (AFP)
- Convert to LOC.
- Write the Formulas and explain with example.

13. (a). Intermediate COCOMO Example:

A10 KLOC embedded mode software product is to perform communications processing functions on a embedded mode. Find effort.-using the formula find effort.

Effort (E)= a\* (Size)<sup>b</sup>

Where a, b are constants.

Size- thousand of lines of code ( KLOC) (8)

E-effort expressed in staff months.

(b). Short notes on Effects of reuse on software size (8)

-new code, modified code, reused code, legacy code

14. (i) A development project is sized at 7.5 KLOC and is evaluated as being simple -in the organic mode. Find Effort, Development time, average number of staff members (6)

(ii)SEI CMM and estimating (10)

(i).Effort – 20 staff months

Development time - 8 months

Average number of staff members-2.5 staff members

(ii)SEI CMM and estimating-goals, activities

15. Briefly explain about PERT and CPM Scheduling

PERT-Program evaluation and review technique-draw graph and explain with example

CPM-Critical Path Method-explain forward pass and backward pass

Explain with example to find critical path

16. Explain about Assigning resources.

Explain- Organizational planning, Project roles, types of roles,Assigning responsibilities to individuals.

17. Explain the following

(i).Organizational form (8)

(ii).Map the schedule to a real calendar (8)

(i).Organizational form

(ii).Map the schedule to a real calendar –explain the four components -work, units, duration, dates

18. Briefly explain about Quality Function Deployment

-Explain QFD method, goals of QFD, Advantages of QFD.

19. Explain about Project charter and software project Management plan (SPMP).

Project charter- definition, Project charter contents.

Software project Management plan- it includes charter,organization, process , work breakdown structure, schedule, budget.

Explain the elements of SPMP

20. Explain in detail about the types of software development dependencies.

Explain- external versus internal dependencies, resource versus activity dependencies, possible dependency relationships, and special types of relationships.

21. Explain in detail about Building the quality assurance plan.

Explain- Purpose, Reference documents, Management, Documentation, Standards, practices, conversions and metrics, Reviews and audits, Risk Management, Problem reporting and corrective action, Tools, techniques and methodologies, Supplier Control, Training, record Collection, maintenance, and retention.

22. Explain in detail about Software Configuration Management (SCM) Principles.

Draw SCM Pyramid, explain- Understanding of SCM, SCM plan and policies, SCM processes, Metrics, Tools for SCM, SCM Configuration items.

23. Explain about Planning and Organizing for SCM.

Explain- Potential SCM problem Classes- Multiple developer syndrome, multiple releases, product family, requirements change, schedule change, software changes, staff change, documentation change

24. Explain the Benefits of SCM process and tools.

Explain- Control, Management, Cost savings, Quality.

25. Briefly explain about the legal issues in software.

Product development techniques - Advertising and Consumer, Communications, Contracts, Privacy and Tort.

Project Management skills- Alternative Dispute Resolution, Arbitration, Negotiation, and Mediation.

People Management skills- Contracts, handicap, Employment, Intellectual property.