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Internal Assessment Test 3– March 2022

Sub:	Software Engineering				Sub Code:	18CS35	Branch	ISE
Date:	05/03/2022	Duration:	90 min’s	Max Marks: 50	Sem/Sec:	III / A, B and C		OBE

		Answer any FIVE FULL Questions	MARKS	CO	RBT
1		With an appropriate block diagram, explain the system evolution process.	10	CO5	L2
2		With a neat diagram, explain the six stages of the acceptance testing process.	10	CO5	L2
3	a	What are the different types of interfaces to be tested during component testing? Explain	5	CO5	L2
	b	What are the strategic options involved in legacy system management? Explain	5	CO4	L2
4		Explain the Re-engineering process with a neat block diagram.	10	CO5	L2
5	a	For the set of tasks shown below, sketch the activity bar chart for the project schedule shown below.	10	CO5	L3

Task	Duration (Days)	Dependencies
T_1	10	
T_2	15	
T_3	15	T_1 (M_1)
T_4	10	
T_5	10	T_2, T_4 (M_3)
T_6	5	$T_{2,}$ T_1 (M_4)
T_7	20	T_1 (M_1)
T_8	25	T_4 (M_2)
T_9	15	$T_{3,}$ T_6 (M_5)
T_{10}	15	$T_{7,}$ T_8 (M_6)
T_{11}	10	T_9 (M_7)
T_{12}	10	$T_{10,}$ T_{11} (M_8)

	b	List the factors affecting software pricing.	2	CO4	L1
6		Explain the various section and supplements of the project plan.	8	CO5	L2

Faculty Signature CCI Signature HOD Signature

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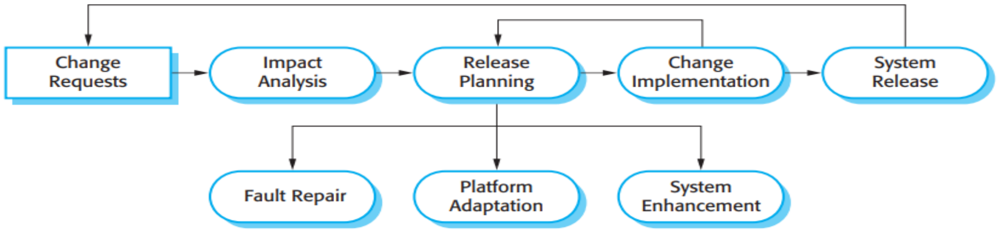
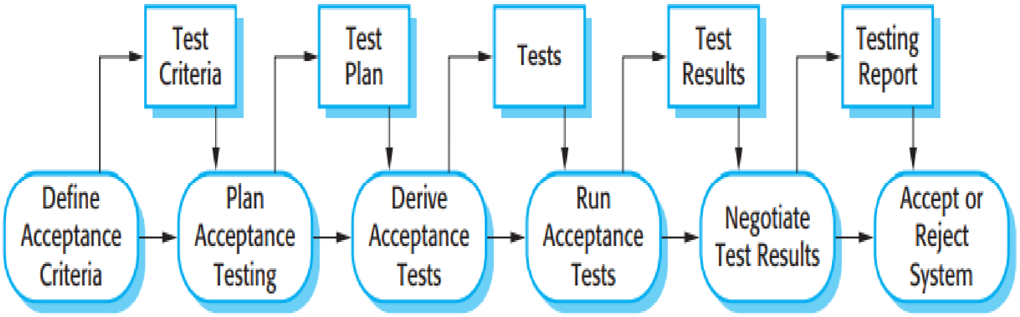
Date:	5/3/2022	Duration:	90 min’s	Max Marks:	50	Sem/Sec:	III / A, B and C	OBE

	Answer any FIVE FULL Questions	MARKS	CO	RBT
1	With an appropriate block diagram, explain the system evolution process. **Solution:** The process includes the fundamental activities of change analysis, release planning, system implementation, and releasing a system to customers. The cost and impact of these changes are assessed to see how much of the system is affected by the change and how much it might cost to implement the change. If the proposed changes are accepted, a new release of the system is planned. During release planning, all proposed changes (fault repair, adaptation, and new functionality) are considered. A decision is then made on which changes to implement in the next version of the system. The changes are implemented and validated, and a new version of the system is released. The process then iterates with a new set of changes proposed for the next release. Change implementation can be thought of as an iteration of the development process, where the revisions to the system are designed, implemented, and tested. However, a critical difference is that the first stage of change implementation may involve program understanding, especially if the original system developers are not responsible for change implementation. During this program understanding phase, it becomes necessary to understand how the program is structured, how it delivers functionality, and how the proposed change might affect the program. This understanding is required to make sure that the implemented change does not cause new problems when it is introduced into the existing system.  Change Requests Impact Analysis Release Planning Change Implementation System Release Fault Repair Platform Adaptation System Enhancement **Fig: System Evolution Process**	10	CO5	L2
2	With a neat diagram, explain the six stages of the acceptance testing process. **Solution:** There are six stages in the acceptance testing process, as shown in Figure. They are Define acceptance criteria: This stage should, ideally, take place early in the process before the contract for the system is signed. The acceptance criteria should be part of the system contract and be agreed between the customer and the developer. Plan acceptance testing: This involves deciding on the resources, time, and budget for acceptance testing and establishing a testing schedule. The acceptance test plan should also discuss the required coverage of the requirements and the order in which system features are tested. Derive acceptance tests: Once acceptance criteria have been established, tests have to be designed to check whether or not a system is acceptable. Run acceptance tests: The agreed acceptance tests are executed on the system.	10	CO5	L2

	Ideally, this should take place in the actual environment where the system will be used, but this may be disruptive and impractical. Negotiate test results: It is very unlikely that all of the defined acceptance tests will pass and that there will be no problems with the system. Reject/accept system: This stage involves a meeting between the developers and the customer to decide on whether or not the system should be accepted.  Test Criteria Test Plan Tests Test Results Testing Report Define Acceptance Criteria Plan Acceptance Testing Derive Acceptance Tests Run Acceptance Tests Negotiate Test Results Accept or Reject System **Fig: Acceptance Testing**			
3	a. What are the different types of interfaces to be tested during component testing? Explain **Solution:** Different types of interface error that can occur: * Parameter interfaces: These are interfaces in which data or sometimes function references are passed from one component to another. Methods in an object have a parameter interface. * Shared memory interfaces: These are interfaces in which a block of memory is shared between components. Data is placed in the memory by one subsystem and retrieved from there by other sub-systems. * Procedural interfaces: These are interfaces in which one component encapsulates a set of procedures that can be called by other components. Objects and reusable components have this form of interface. * Message passing interfaces: These are interfaces in which one component requests a service from another component by passing a message to it. A return message includes the results of executing the service.	5	CO5	L2
	b. What are the strategic options involved in legacy system management? Explain **Solution:** There are four strategic options: 1. Scrap the system completely: This option should be chosen when the system is not making an effective contribution to business processes. 2. Leave the system unchanged and continue with regular maintenance: This option should be chosen when the system is still required but is fairly stable and the system users make relatively few change requests. 3. Reengineer the system to improve its maintainability: This option should be chosen when the system quality has been degraded by change and where a new change to the system is still being proposed. 4. Replace all or part of the system with a new system: This option should be chosen when factors, such as new hardware, mean that the old system cannot	5	CO4	L2

continue in operation

4 Explain the Re-engineering process with a neat block diagram. 10 CO5 L2

Solution:

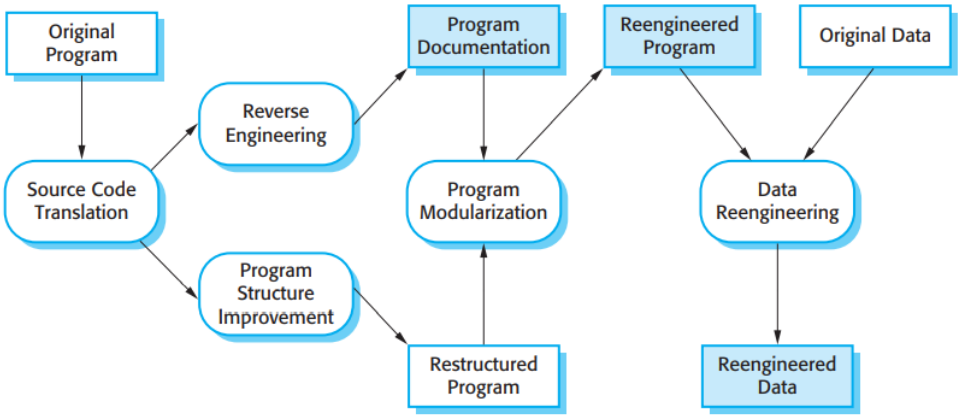


Fig: Re-Engineering Process

The activities in this reengineering process are as follows:

1. Source code translation: Using a translation tool, the program is converted from an old programming language to a more modern version of the same language or to a different language.

2. Reverse engineering: The program is analyzed and information extracted from it. This helps to document its organization and functionality. Again, this process is usually completely automated.

3. Program structure improvement: The control structure of the program is analyzed and modified to make it easier to read and understand. This can be partially automated but some manual intervention is usually required.

4. Program modularization: Related parts of the program are grouped together and, where appropriate, redundancy is removed.

5. Data reengineering: The data processed by the program is changed to reflect program changes. This may mean redefining database schemas and converting existing databases to the new structure.

5 For the set of tasks shown below, sketch the activity bar chart for the project schedule shown below. 10 CO5 L3

Task	Duration (Days)	Dependencies
T_1	10	
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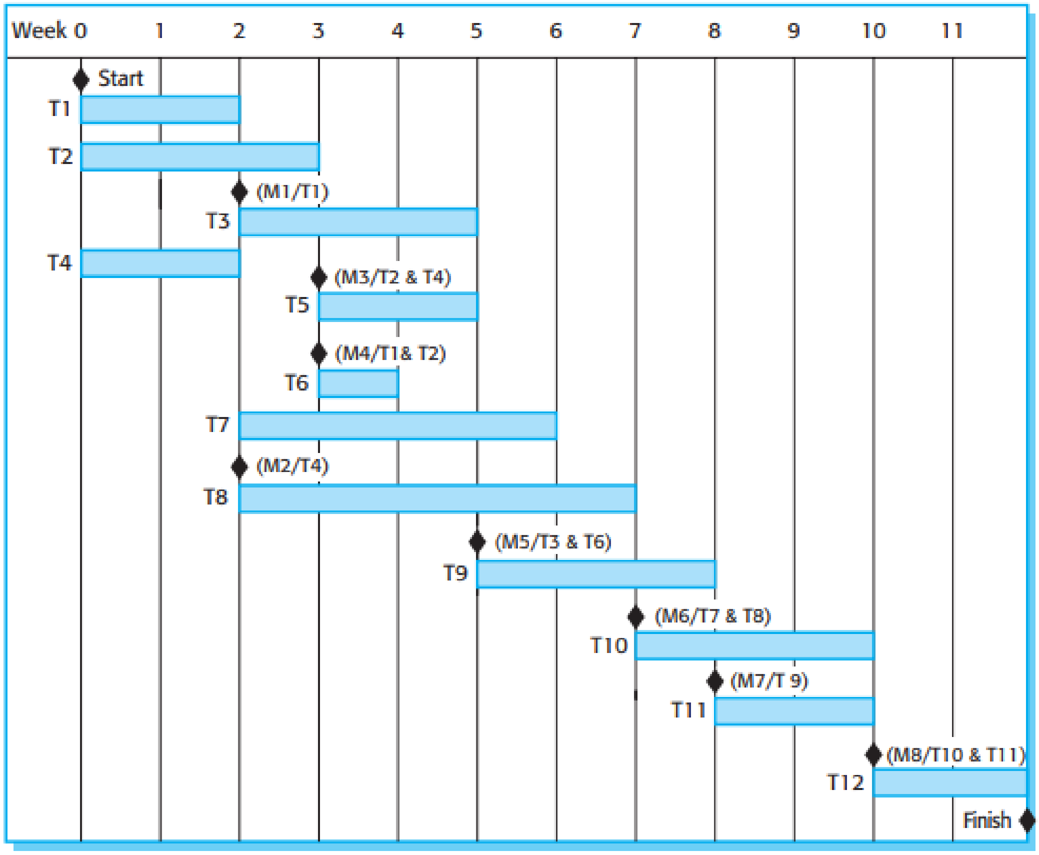
Solution:



6 a. List the factors affecting software pricing. 2 CO4 L1

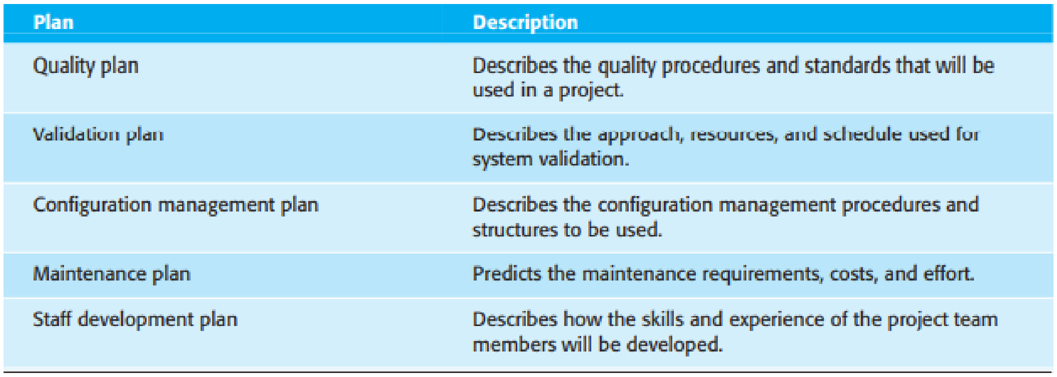
Solution:

The factors affecting software pricing are:

1. Market Opportunity
2. Cost Estimate Uncertainty
3. Contractual Terms
4. Requirements Volatility
5. Financial Health

b. Explain the various section and supplements of the project plan. 8 CO5 L2

Solution:



Plan	Description
Quality plan	Describes the quality procedures and standards that will be used in a project.
Validation plan	Describes the approach, resources, and schedule used for system validation.
Configuration management plan	Describes the configuration management procedures and structures to be used.
Maintenance plan	Predicts the maintenance requirements, costs, and effort.
Staff development plan	Describes how the skills and experience of the project team members will be developed.

Fig: Project Plan Supplements

The following are the project sections

1. Introduction This briefly describes the objectives of the project and sets out the constraints that affect the management of the project.

	2. Project organization This describes the way in which the development team is organized, the people involved, and their roles in the team. 3. Risk analysis This describes possible project risks, the likelihood of these risks arising, and the risk reduction strategies that are proposed 4. Hardware and software resource requirements This specifies the hardware and support software required to carry out the development. If hardware has to be bought, estimates of the prices and the delivery schedule may be included. 5. Work breakdown This sets out the breakdown of the project into activities and identifies the milestones and deliverables associated with each activity. 6. Project schedule This shows the dependencies between activities, the estimated time required to reach each milestone, and the allocation of people to activities. 7. Monitoring and reporting mechanisms This defines the management reports that should be produced, when these should be produced, and the project monitoring mechanisms to be used.			