

**COMPUTER ENGINEERING DEPARTMENT**

**SUBJECT: SOFTWARE ENGINEERING**

**COURSE: T.E.**

**YEAR: 2020-2021**

**SEMESTER: VI**

**DEPT: COMPUTER ENGINEERING**

**SUBJECT CODE: CSC601**

**EXAMINATION DATE: 02/06/2021**

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**SOFTWARE ENGINEERING  
ANSWER SHEET**

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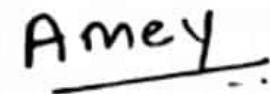
**EXAM : SEMESTER VI**

**SUBJECT : SOFTWARE ENGINEERING**

**DATE : 02-06-2021**

**DAY : WEDNESDAY**

**STUDENT SIGNATURE:**

A handwritten signature in black ink, appearing to read "Amey", enclosed in a thin black rectangular border.

Q 2.

A]

Spiral model.

Agile model.

① The main principle of the spiral model is risk handling.

① The main principle of agile model is to achieve agility by removing unnecessary activities.

② Spiral model mainly deals with various kinds of unanticipated risks but customer interaction is less.

② The agile focuses on the delivery of an increment to the customer after each time-box so customer interaction is more frequent.

③ The spiral model is suitable for those projects that are prone to various kinds of risks that are difficult to anticipate at the beginning of the project.

③ Agile model is suitable for large projects that are easy to divide into small parts that can be easily developed incrementally over each iteration.

④ Proper documentation is required for spiral model.

④ Agile model does not rely on documentation

Why Agile is best suitable for mobile applications.

- It follows combination of iterative and incremental approach where the entire SDLC is broken into small iterations which help the project to adapt to changes rapidly.
- It minimizes overall risk.
- It gives importance to customers and their feedbacks.
- It believes in self organizing teams and customer collaboration for developing an amply satisfied product.
- Numerous cycles of testing and quality assurance increases reliability.

Q2

B] SCM Process

### Software Configuration Management (SCM)

- SCM is a software engineering discipline consisting of standard processes and techniques often used by organizations to manage the changes introduced to its software products.
- SCM helps in identifying individual elements and configurations, tracking changes and version selection.
- SCM is also known as software (control) management
- SCM aims to control changes introduced to large complex software systems through reliable version selection and version control.
- Processes involved in SCM are:

- ① Identification and Establishment
- ② Version Control
- ③ Change Control
- ④ Configuration auditing
- ⑤ Reporting

- Participants of SCM Process:

- ① Configuration Manager
- ② Developer
- ③ Auditor
- ④ Project Manager
- ⑤ User

- Software Configuration Management tools:

- ① Concurrency Management
- ② Version Control
- ③ Synchronization

Popular tools: GIT, Team Foundation Server, Ansible, etc.

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## Version Control in SCM Process

### Version Control

- Software Version Control is a system or tool that captures the changes to a source code element: files, folders, images or binaries.
- A version control system (also known as Revision Control System) is a repository of files, often the files for the source code of computer programs, with monitored access. Every change made to the source is tracked, along with who made the change, why they made it and references to problems fixed or enhancements introduced by the change.
- Version control systems are essential for any form of distributed, collaborative development. Whether it is the history of a wiki page or large software development project, the ability to track each change as it was made, and to reverse changes when necessary can make all the difference between a well managed and well controlled process and an uncontrolled 'first come, first served' system.
- It can also serve as a mechanism for due diligence for software projects.
- Combines procedures and tools to manage the different versions of configuration objects created during the software process.

- Version control systems require the following capabilities.

① Project Repository:

- Stores all relevant configuration objects.

② Version Management Capability:

- Stores all versions of a configuration object  
(enables any version to be built from past versions).

③ Make facility:

- Enables collection of all relevant configuration objects and construct a specific software version.

④ Issues (bug) Tracking Capability:

- Enables team to record and track status of outstanding issues for each configuration object.

- Uses a system modelling approach (template - includes component hierarchy and component build order, construction rules, verification rules).

## Change Control in SCM process

### Change Control

- Change control is a systematic approach to managing all changes made to a product or system. The purpose is to ensure that no necessary changes are made, that all changes are documented, that services are not unnecessarily disrupted and that resources are used efficiently.
- Here's an example of a six-step-process for a software change request.

#### ① Documenting the change request:

- When the client requests the change, that request is categorized and recorded, along with informal assessments of the importance of that change and the difficulty of implementing it.

#### ② Formal Assessment:

- The justification for the change and risks and benefits of making / not making the change are evaluated.
- If the change request is accepted, a development team will be assigned.
- If the change request is rejected, that fact is documented and communicated to the client.

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③ Planning:

- The team responsible for the change creates a detailed plan for its design and implementation, as well as a plan for rolling back the change should it be deemed unsuccessful.

④ Designing and Testing:

- The team designs the program for the software change and tests it.
- If the change is deemed successful, the team requests approval and a date for implementation.

⑤ Implementation and Review:

- The team implements the program and stakeholders review the change.

⑥ Final Assessment:

- If the client is satisfied that the change was implemented satisfactorily, the change request is closed.
- If the client is not satisfied, the project is reassessed and steps may be repeated.

Q2.

B)

## Quality Assurance

## Quality Control

① QA is a process which deliberates on providing assurance that quality request will be achieved

② A QA aim to prevent the defect

③ QA is the technique of managing quality

④ QA does not involve executing the program

⑤ All team members are responsible for QA.

⑥ QA example: Verification

① QC is a process which deliberates on fulfilling the quality request.

② A QC aim to identify and improve the defects

③ QC is a method to verify quality

④ QC is a method to verify quality.

⑤ Testing team is responsible for QC.

⑥ QC example: Validation.