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Q1) Explain Agile methodology and describe the phase of an Agile project litecycle with examples.

Agile Methodology :

Agile is a Software development methodology that focus on flexibility, customer collaboration and rapid delivery instead of completing the entire project at once.

Agile breaks the work into small, managable parts called iteration or sprints

Phase of an Agile project litecycle.

i) concept / project initiation

Identify the project goal, high-level requirements and feasibility.

example:

For Food delivery app, stackholders decide the main feature like resturant listing, order tracking, payment etc.

ii) inception / planning.

Team formation, roles planning assignment (scrum master, product owner) and creation of a product backlog

example:

The product owner lists tasks like "user login" "Add cart", "order confirmation".

iii) Iteration / Development (Sprints).

Actual design, Coding and testing take place in short cycles (usually 1-2 weeks).

examples:

In sprint 1 the team develops and test the login and registration feature.

iv) Testing / Review.

At the end of each iteration, the team tests the built functionality and conducts a Sprint Review with the customer to gather feedback.

examples:

Customer checks the login feature and says they want "Forgot password" added.

v) Release.

After several iterations, a stable version of the product is released to users.

example:

After completing all essential features, the first version of the food delivery app is released to the play store.

vi) Maintainance.

Fix bugs, enhance features, and work on new requirements in feature sprints.

example:

Customer want live chat support so the team adds this in a new sprint.

Q2) Describe the roles and responsibilities of a Scrum master in an agile team.

Scrum Master Roles:

    A Scrum master is a key role in Agile scrum who act as a facilitator, coach and servant leader for the team.

    The scrum master ensures the team follows scrum principles, remove obstacles and help the team work efficiently.

Main Responsibilities:

1) Faciliating Scrum events.
2) Removing Impediments.
3) Coaching the Team.
4) Protecting the Team.
5) Supporting the product owner.
6) Ensuring the continous Improvement.
7) promoting communication and Transparency.
8) plan work and future goals.
9) create tasks to achieve these goals.
10) organize tasks into sprint based on priority and dependencies.
11) Execute the tasks.
12) Review and analyze results to compare with goals.

plan work and future goals:
    First the team comes together to figure out what needs to be done and sets clear goals for the sprint.

create tasks to achieve these goals:
    once the goals are set the team breaks them down into smaller actionable tasks.

Organize tasks into sprint based on priority and dependencies:

The tasks are then sorted into sprints, ensuring that the most important and time sensitive tasks are handled first.

Execute tasks:

The team works on the task during the sprint, moving them forward as planned.

Review and analyse results to compare with goals:

After the sprint the team reviews how well they did compared to the initial goals. This helps identify what went well and what needs to be improved.

Q3) What is sprint Backlog? Explain how it's created from the product backlog with an example.

Sprint Backlog:

A sprint Backlog is a list of selected user stories, tasks and requirements that the scrum team committed to completing during a specific sprints.

It also includes the technical tasks testing activities and design work needed to finish these stories.

How sprint Backlog is created from product Backlog.

i) product owner prioritiee the product backlog.
ii) Team selects user stories for the sprint.

iii) Break stories into Tasks.

iv). Final sprints Backlog is prepared.

Example:

Product Backlog (sample items):
1. User login
2. View product list
3. Add item to cart
4. online payment
5. order history.

Sprint planning Example:

For a 2-week sprint, the team decides to pick high-priority Stories.
— User login
— View product list.

The team then breaks these into smaller tasks.

Story: 1. User Login.
- create login UI
- Build authentication API
- validate user credential.
- write test case.

Story: 2 view product list.
- Design product listUI
- Fetch product from database.
- Display products.
- Test product listing

	In progress.	Completed.	Closed.
	User Login.	view product list	online payment
Add item to cart.			
order history.			

sprint Backlog.