BNMIT

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Q1a

1	Define Software Engineering? Explain Software Engineering code of Ethics.	7	CO1	PO1, PO2, PO3, PO9, PO10, PSO1	Understand

Software engineering is an discipline that is concerned with all the aspects of software production.

Engineers find the solution for a problem by using theories, methods & tools which are under the constitutional & financial constraints

Software Engineering also deals with project management & development of methods & tools that support the software production

CODE OF ETHICS:

An Software engineer has responsibilities that go beyond the application of technical skills, they must follow a set of morally correct principles and work with honesty to gain respect

→ Confidentiality: Engineer should respect the confidentiality of the employer or client irrespective of whether a formal confidentiality agreement has been signed or not

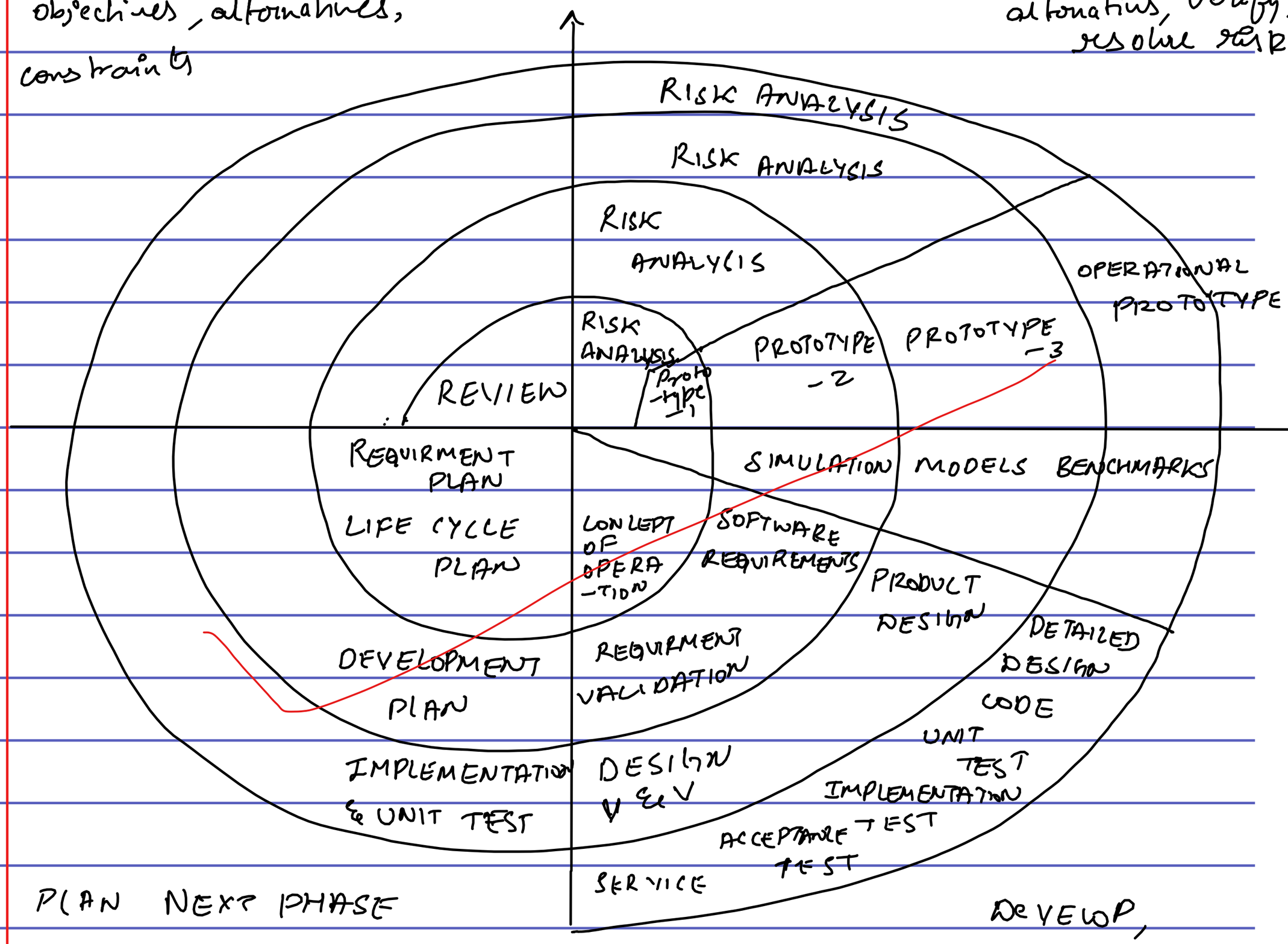
→ Competence: Engineer should not misrepresent his/her level of competence. They should not knowingly take up work that is outside the level of their competence.

→ Intellectual Property Rights : Engineer must be aware of the local laws that governs the intellectual property such as patents or copy rights. Engineer must be careful & ensure to protect the Intellectual property of the employer or the client.

→ Computer Risk : engineer must not use his technical skills to misuse @ somebody else's computer. This risk might be trivial (playing games) to very serious (dissemination of virus or malware).

Q4a

4	With a neat block diagram present the Spiral Process Model.	8	CO1	PO1, PO2, PO3, PO9, PO10, PSO1	Apply



This model represents the process in a spiral loop rather than in sequence activities which backtrack from one activity to another. In this model Each loop represents a phase, i.e, the innermost loop represents system feasability the next one requirements of system, the next loop to next system design and so on.

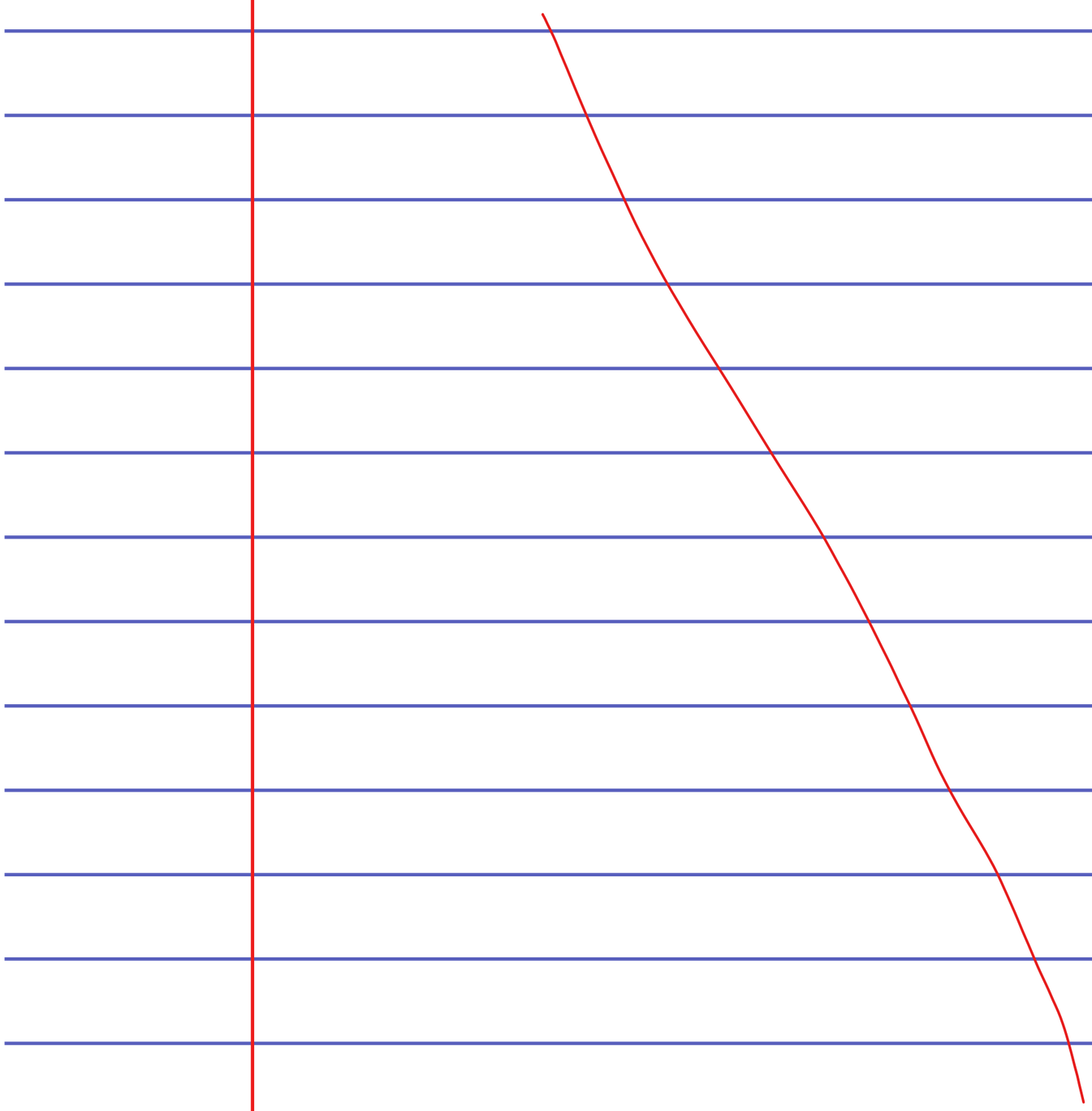
The loops are divided into 4 parts:

1) Determine Objective & scope : The particular objectives & scope for mat phase is identified. These are analysed in detail to get the system requirements. The constraints for the process & project are identified, project risks are identified, and alternatives are planned for the risks identified

2) Assessment of the Risk : The identified project risks are analysed in detail and steps are taken to reduce the risk. For example there is a risk of requirements of system not being appropriate, a prototype is developed for mat requirement.

3) Development of the system : After the risk evaluating phase, a new ~~system~~ development model is choosen for the system

4) Planning : After development of the model, the project is reviewed & desicion is taken to continue or not. If the desicion is to continue the project then the next loop phase will be planned out.



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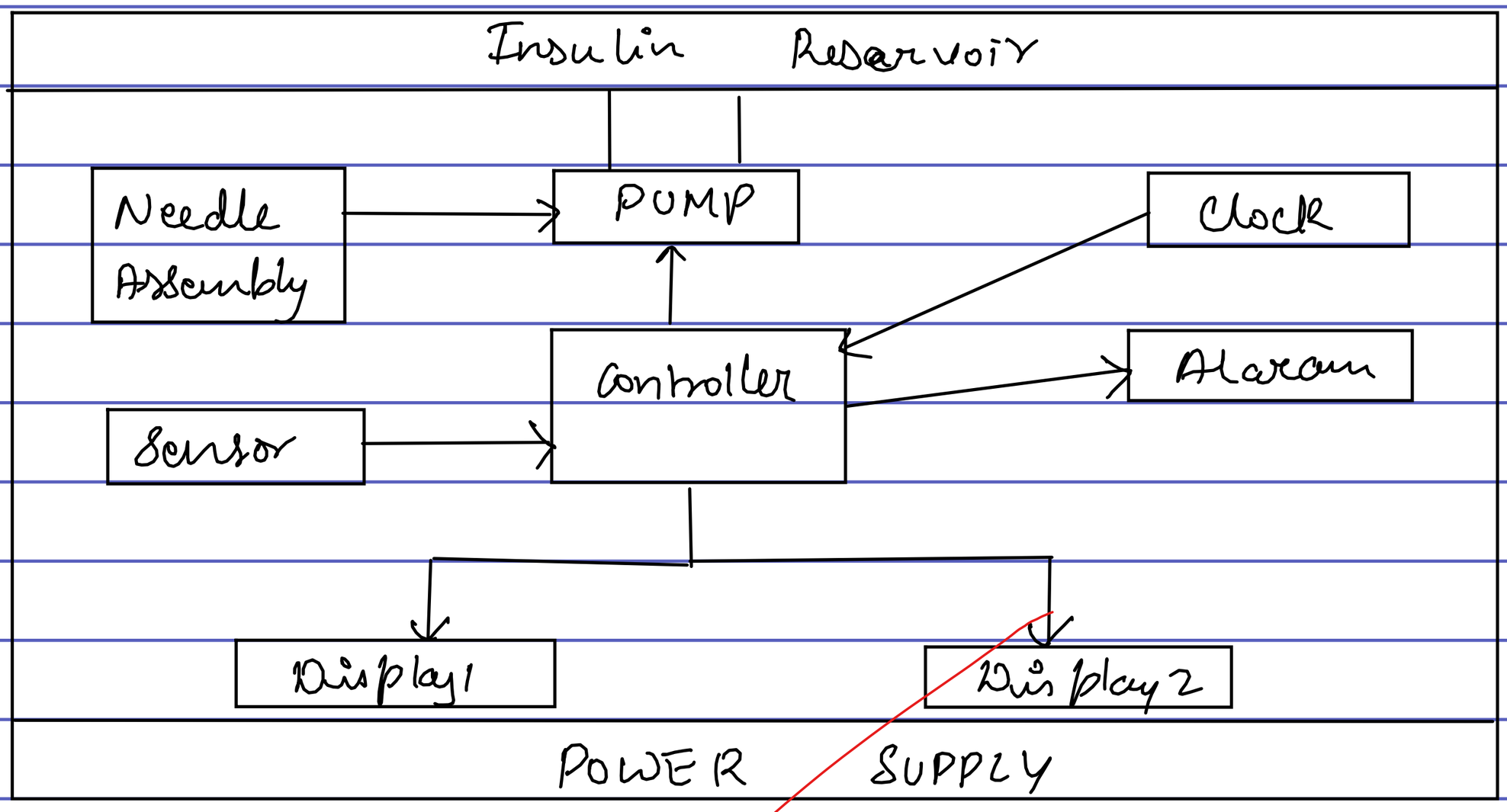
Q6a

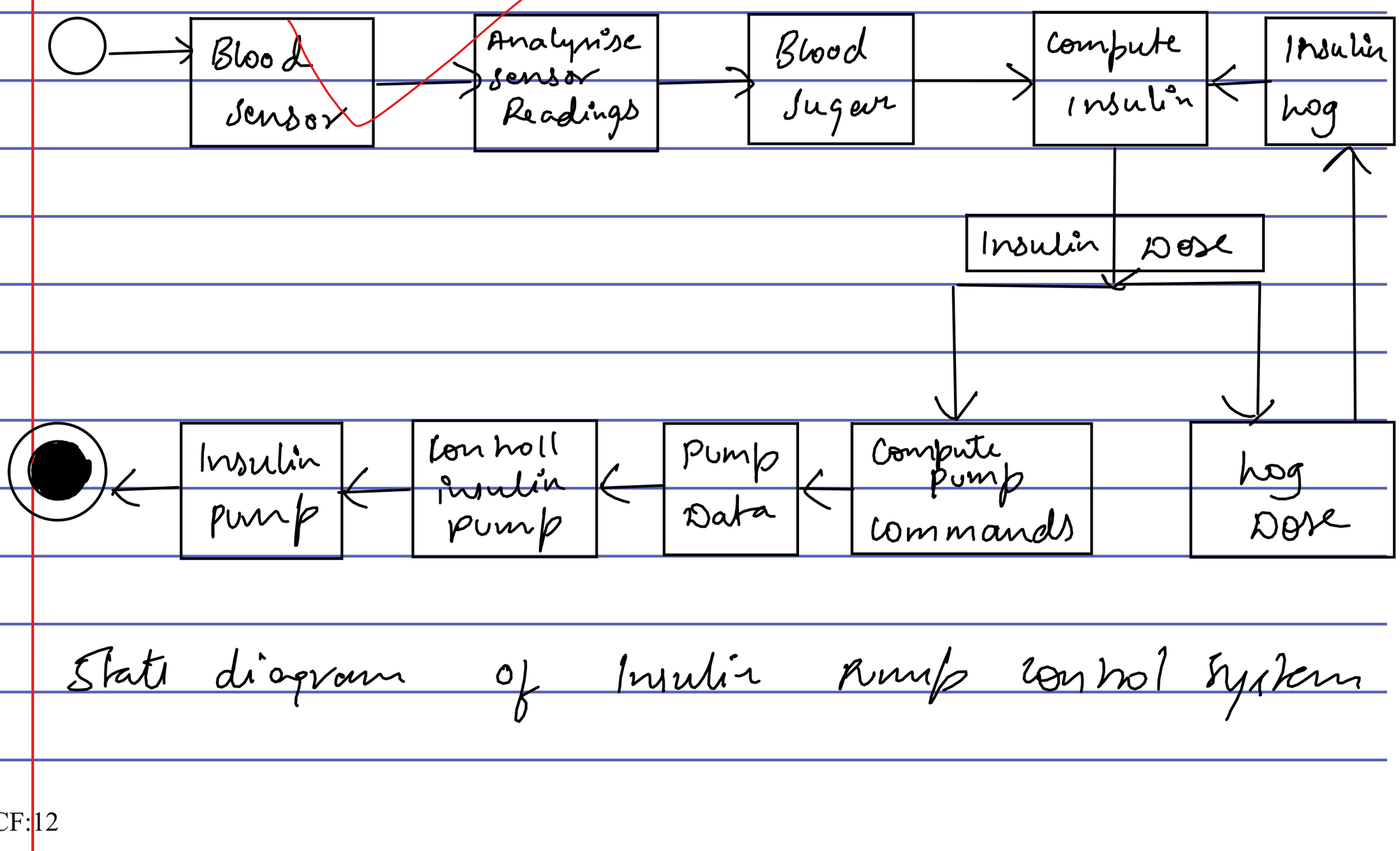
6	Develop a case study of Insulin pump control system.	7	CO1	PO1, PO2, PO3, PO9, PO10, PSO1	Apply

Insulin Pump Control System is an embedded device that stimulates the operations of the organ 'PANCREAS'.

It takes the input of sugar level & dispatches the needed amount of insulin to the patient.



COMPONENTS of Insulin PUMP control.



State diagram of Insulin pump control System

The way Insulin Pump Control System works is by implanting a micro sensor in a patient. This sensor collects data of blood and sends the data to the controller.

The controller computes the sugar level in the patients body

After the sugar level is computed the required amount of insulin for that particular patient is calculated.

The controller then sends the signal to the miniature insulin pump which dispatches the correct calculated amount of insulin

This is carried to the patients body through a attached needle assembly that connects the pump & the patients body.

The Absolute Requirements :

→ The device must be always available & working

→ It must be reliable & should give the correct amount of Insulin.

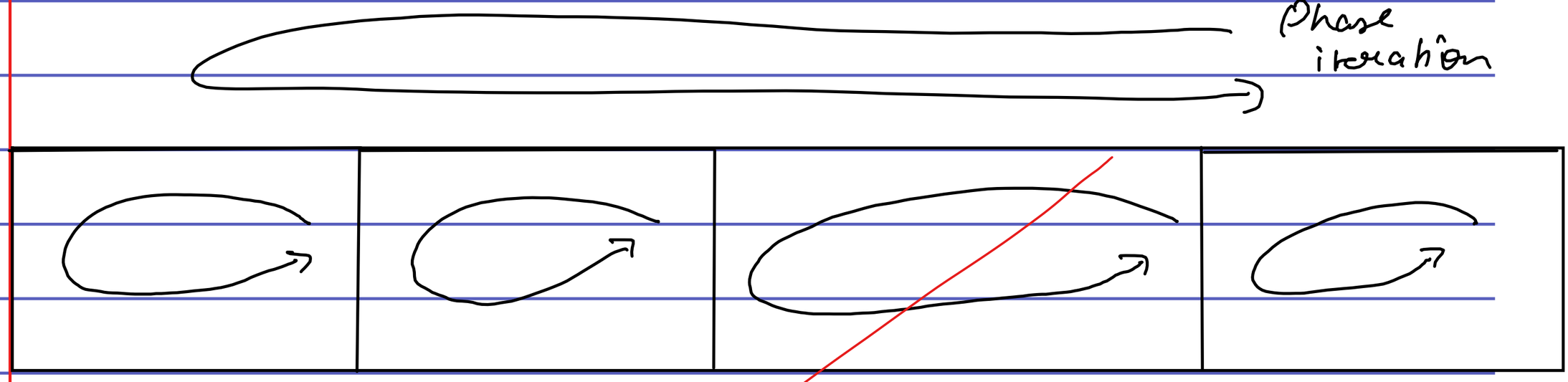
Q8a

8	Summarize the phases of Rational Unified Process Model.	8	CO2	PO1, PO2, PO3, PO9, PO10, PSO1	Understand

Rational Unified Process (RUP) is a modern process model that is derived from the work based on UML & Associated Unified Software management process.

RUP is a phased model which describes 4 phases :

i) Inception
ii) Elaboration
iii) Construction
iv) Transition



1) Inception : This phase is to develop a business case for the system. To identify all the ~~entities~~ external entities (system & people) that will interact with the system. and identify their interactions. This information will be to assess the contribution of the system to the Business. If the contribution is minor then the next phase of the project will be cancelled.

2) Elaboration: This phase consists of understanding the problem, building a architectural network, planning and identifying risks. After this phase the requirements of the system will be ready

3) Construction: This phase includes system design, programming and Testing. The parts are made in parallel and tested. After this phase a working Software system along with associated documents must be ready to deliver to the users.

4) Transition: This is the process of taking the system from development community to the user community and make sure it's works in real environment. This is a Expensive & something difficult process. After this phase a documented Software system must be working correctly in the operational environment