

Department: Computer Science
&
Engineering

Course No: CSE 3223

Examination: Semester final

Student ID: 170204070

Program: BSc. in CSE

Course Title: Information
System Design and Software
Engineering.

Semester (Session): Spring 2020

Signature & Date: 
05.06.21

Ans to the Question no - 011(a)

Q) Answer: Pert diagram of given project & draw below with ES, LS, EF & LF —

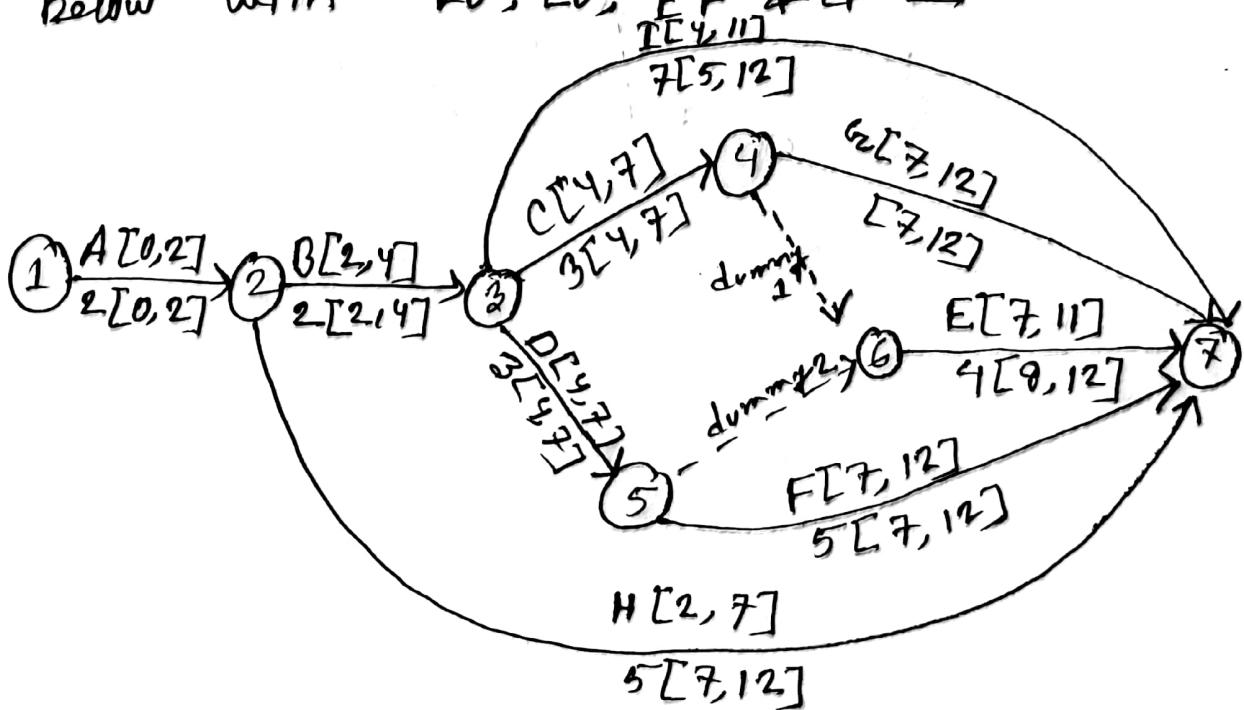


fig: Pert diagram with (ES, EF, LS, LF)

In My pert diagram there are two dummy activities which I named dummy 1 and dummy 2. Here dummy activities needed for starting node of activity E

Since, if we don't use dummy activity the ~~end~~ starting node of E ^{have} ~~need~~ to be the ending node of activity C & D. But since the starting node of C & D are same so, we cannot ~~not~~ draw the same ending node for C & D.

Because, the starting and ending node for two different activities can not be same.

Again ^{Activ.} Note ~~be~~ only

Again Predecessor of activity E is C and F is D. So, if we use only one dummy node then we cannot make the PERT draw the pent diagram. Since we have to use dummy1 activity & and dummy2 activity to ^{draw} express this pent diagram.

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Activity	ES	LS	EF	LF	slack (LS - ES)	Critical path
A	0	0	2	2	0	yes
B	2	2	4	4	0	yes
C	4	9	7	7	0	yes
D	4	9	7	7	0	yes
E	7	8	11	12	1	
F	7	7	12	12	0	yes
G	7	7	12	12	0	yes
H	2	7	7	12	5	
I	4	5	11	12	1	

So, critical path is ~~A → B, C, D, E, F, G, H~~, A, B,

So, critical path is A, B, C, D, G, and H.

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Gantt chart:

Duration

Activity	Completion Time	0	1	2	3	4	5	6	7	8	9	10	11	12
A	2													
B	2													
C	3													
D	3													
E	4													
F	5													
G	5													
H	5													
I	7													

1(b)

1) b) Answer: UML class diagram given below —

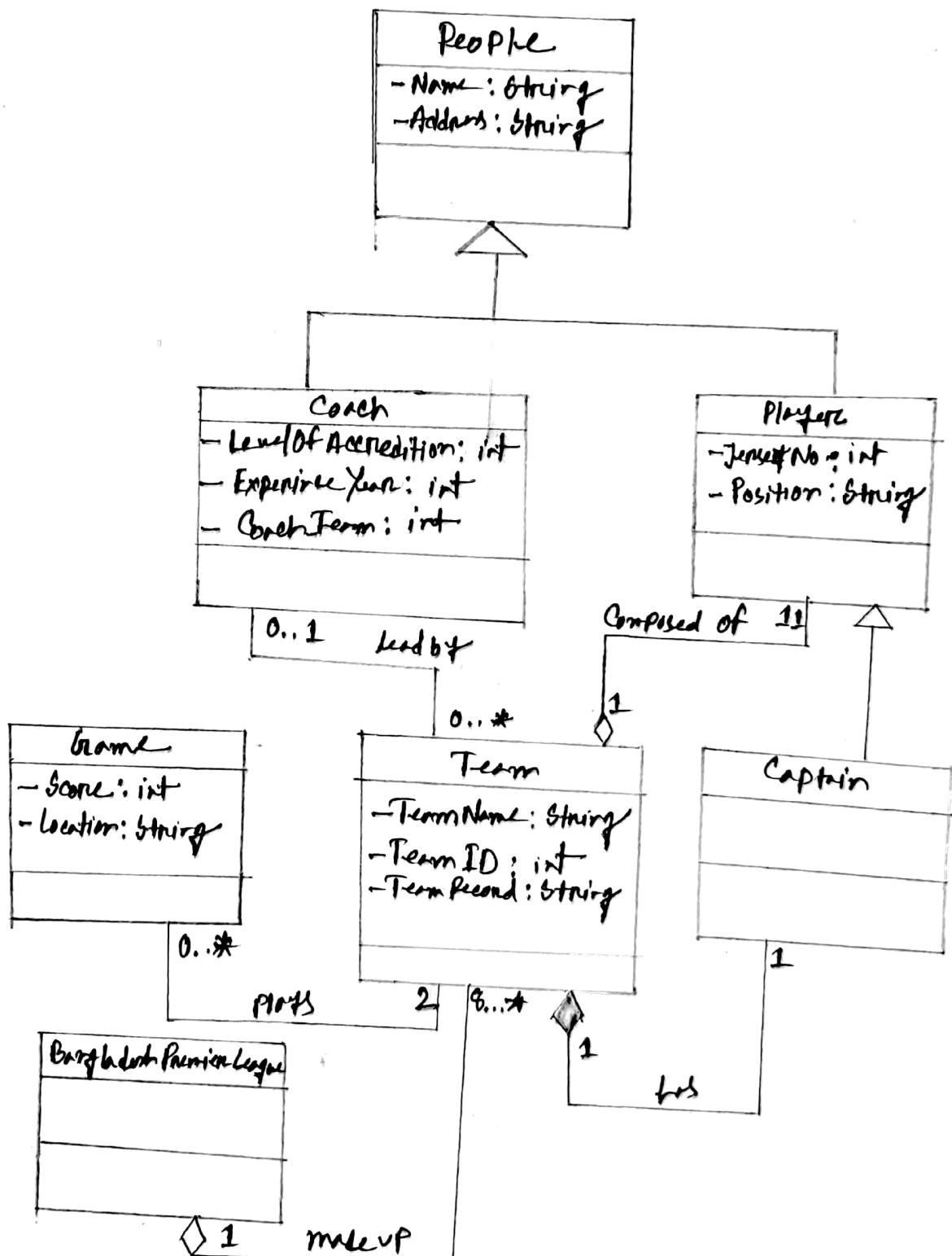


fig: class diagram.

Ans to the Question No-02

Soln:

Waterfall Model: The waterfall model ~~refer~~ referenced to as a linear-sequential life cycle model. The waterfall model is the earliest SDLC approach that was used for software development. In waterfall model, the workflow is in a linear fashion. The phases of waterfall model below

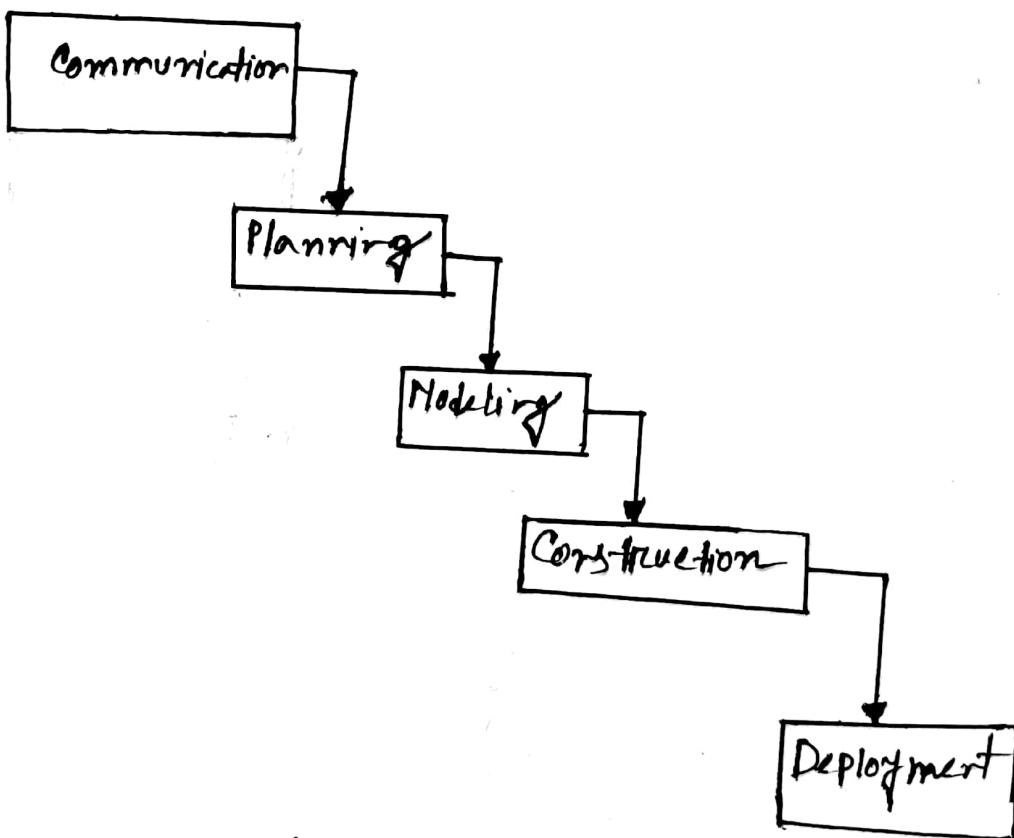


fig: Phases of waterfall Model

a. Communication: In this phase project initiation and requirements are gathered and they are

analyzed by the team.

b. Planning: In planning major activities like Planning for Schedule, keeping tracks on the process and the estimation related to the project are done.

Planning is used to find the types of risks involved throughout the projects. Planning describes how technical tasks are going to take place and what resources are needed and how to use them.

c. Modeling: An analysis is carried out and depending on the analysis a software model is designed. Different models for developing software are created depending on the requirements gathered in the first phase and the planning done in the second phase.

d. Construction: The actual coding / programming of the software is done in this phase. This Coding is done based on the model designed in the modeling phase. So, in this phase software is

developed and tested.

e. Deployment: This is the last phase of waterfall model. In this phase the system is rolled out or delivered & installed at the customer's end and support is given if required. Feedback is taken from the customer to ensure the quality of the system.

Q The problems faced in waterfall model are given below:—

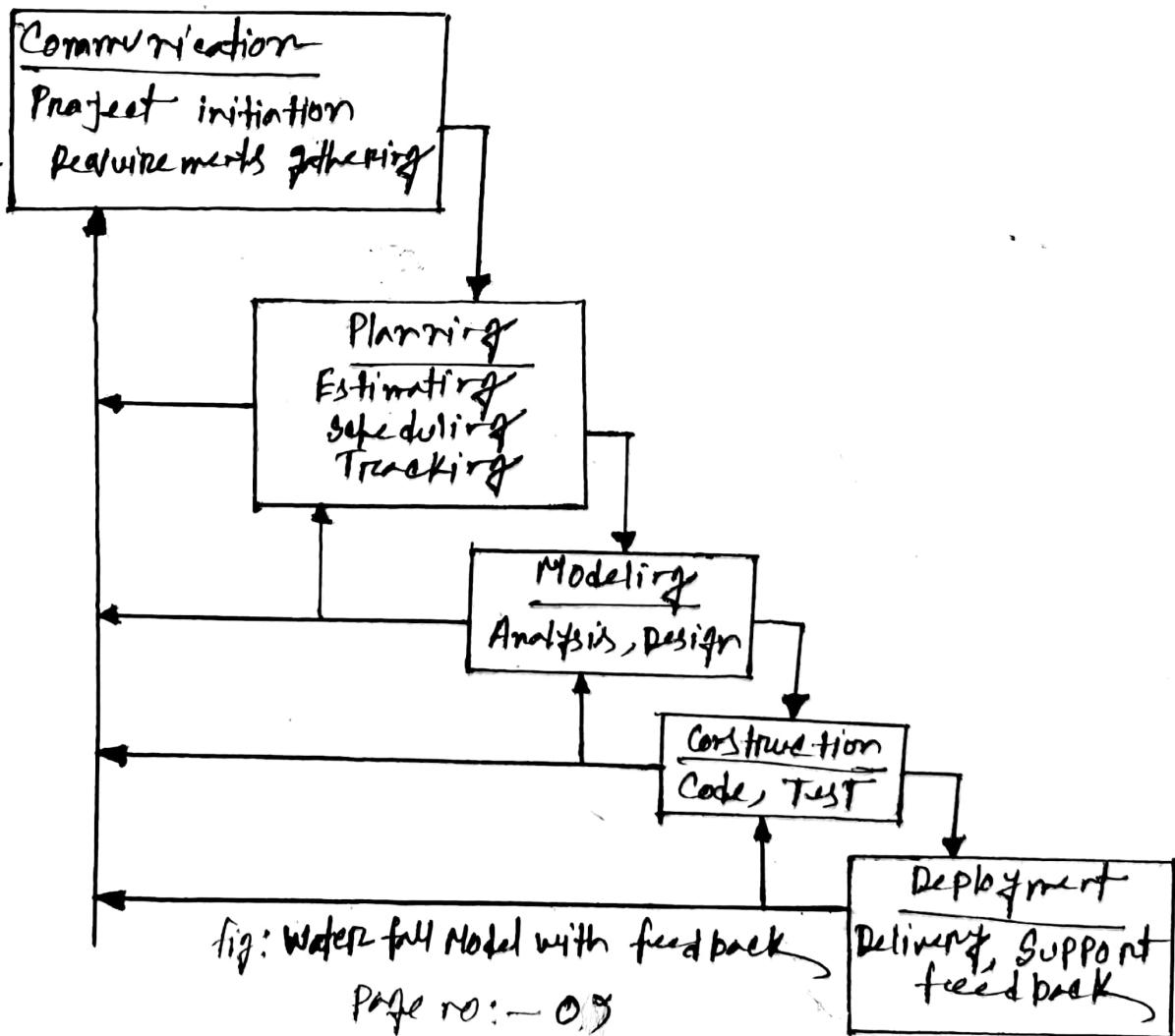
- (i) It is a linear-sequential life cycle model so it doesn't support iteration, so changes can cause confusion.
- (ii) Difficult for customers to state all requirements explicitly and up-front.
- (iii) Often, the client is not clear of what he exactly wants from the software. So, any changes that he mentions in between, may cause lot of confusion.
- (iv) Until the final stage of development cycle is complete, a working model of the software

does not lie in the hands of the client.

Thus, customers is hardly able to inform the developers, if what has been designed is exactly what he had asked for.

(v) Problems can be somehow arise in the model through the addition of feedback loops.

We can resolve the problems of waterfall model by adding feedback. Waterfall model with feedback given below —



Real life example of water-fall model -

In ~~the~~ tailor shop, customer comes with cloths, they give the instruction how he/she want to design the cloth or what is his/her requirement, that is the Communication phase.

Now the tailor plan his activities like when will be delivered desired cloth, how he design this, is this cloth enough for design according to customer desire. That is Planning phase.

Then the tailor cut the cloth according to ~~the~~ customer requirement/design... and according to his plan he cut the cloths, that is Modeling phase.

Then he sewing the cloth according to the model. And finally complete the cloth. That is the Construction phase.

Then the customer comes to the ~~the~~ given date and the tailor delivered the final dress to the customer. and asking he/she like the design. If size does not match, he make the dress fit. So, here Delivery, feedback & support. This is the Deployment phase.

2(b)

2(b) Answer: Considering the given scenario, Class Responsibility Collaboration (CRC) card below →

Maik Theile	
iTune Account NO	iTune Account
Credit of Account	Library
Purchase history	
Download in Library	
Debit on account	

fig: CRC Card

2(c)

2(c) Answer: Regression testing: Regression

Technique is a black box testing technique. It is used to authenticate a code change in the software does not impact the existing functionality of the product.

Regression Testing is making sure that the product works fine with new functionality, bug fixes, or any change in existing feature.

Example of Regression testing —

Consider a product A, in which one of the functionality is to trigger confirmation, acceptance, dispatched emails. It also needs to be tested to ensure that the change in code not affected them.

Regression testing method ensure that any change in a product does not affect the existing module of the product.

—

Ans to the Question no - 033(a)

3(a) Answer: This structure used in this given interview is Dimond Structure.

Dimond structure is the combination of funnel structure & Pyramid structure. This structure is basically starting with a specific easy question. Since, starting with warmup question obviously have the specific answer.



fig: Dimond structure

Then gradually move and ask for opinion or other general question with no specific/right answer. finally ended with Yes/No, agree/disagree or any specific question.

So, in given interview the first question is, what kind of document do I require to open a bank account. So, obviously this question have a specific right answer.

then ; how can I operate my account, Can you Please explain online banking system etc. Question have no specific answer. So, this is general Question with no right answer.

Then finally till this interview end up with a ~~or~~ yes/no question. Can, I send money Overseas through your bank? So, this interview structure is diamond structure.

Now, rearrange the interview and make this like pyramid structure -

- (i) What kind of documents do I require to open a bank account?
- (ii) Can I send money overseas through your bank?
- (iii) How long it take to get my cheque book?
- (iv) What are the charges of debit card?
- (v) What loan I am eligible for?

(vi) How can I apply for a loan?

(vii) How do I repay for a loan?

(viii) Could you please explain your online banking system?

here, in my modified interview that starts with a specific warm up question with specific answer that is, what kind of documents do I require to open a bank account, then

(ii), (iii), (iv) question also specific right answer

then, other question is general & some have

no right answer. The last question of

my modified interview is, (viii) Could you

Please explain your online banking system,

this question have no specific right answer;

So, I can say my modified structure of the question is Pyramid structure.

3(b)

3(b) Answer: Difference between alpha and beta testing are below—

Alpha Testing	Beta Testing
(i) Alpha testing is performed by a team of highly skilled testers who are mainly the employee of the organization	(i) Beta testing is basically performed by clients or end-users in a real time environment
(ii) Alpha testing performed at the developer's site. It always needs to testing environment or lab environment.	(ii) Since, beta testing performed in client's or end-user location, so, it doesn't need any testing environment or lab environment.
(iii) Reliability or security testing not performed in-depth alpha testing	(iii) Reliability or security testing checked during beta testing
(iv) Long execution cycle required for alpha testing	(iv) Only few weeks are required for the execution of beta testing

(V) Alpha testing is performed before the launch of the product into the market	(V) At the time of software product marketing.
(VI) Alpha testing focuses on the product's quality before going to beta testing	(VI) Beta testing not only concentrates on the product quality but also gathers user input on the product and ensure that the product is ready for real time users.
(VII) Alpha testing performed nearly the end of the software development.	(VII) Beta testing is the first test before shipping a product to the customer.

The example of alpha and beta testing given below —

When a new mobile phone software ~~launched~~ developed, the developers testing the quality of the software & find out if the software is ready for launched or not. This is alpha testing

Then after alpha testing when the product is ready for launch, user or client gather user input on the software to ensure

That this software is ready for the real time user. This is beta testing

Ans to the Question no - 5

5(a)

5(a) Answer: Agile: Agile is an iterative approach to project management and software ~~management~~ development that helps teams deliver value to their customers faster and with fewer lead times. Instead of betting everything on a "big bang" launch, an agile team delivers work small, but consumable, increments. Requirements, plans, results are evaluated continuously so teams have a natural mechanism for responding to change quickly.

The difference between Extreme Programming (XP) and Adaptive Software Development (ASD) given below—

ASD	XP
(i) Central Undisputed agent is human role	(i) Here also human beings are central undisputed agents
(ii) Developers steer product, adapt it to changing requirements	(ii) Developers here steer products, use pre-defined techniques to do so
(iii) Customer provides input to steer products; provide input to steer products are involved.	(ii) Here also customer
(v) Communication, Co-operation and corporation is the key to emergence	(iv) Here communication, co-operation and corporation here key for working towards results.
(v) Human utilize technology at their will.	(v) Here human control technology its within pre-defined framework
(vi) Purpose of development is to survival and thriving of organization	(vi) Purpose of development is to product delivery while doing satisfying work.

5 (b)

5) b) Answer feasibility:

feasibility is the measure of how beneficial or practical an information system will be to an organization.

Type of feasibility:

1. Technical feasibility
2. Operational feasibility
3. Economical feasibility
4. Legal feasibility
5. Sate date feasibility

1. Technical feasibility:

In technical feasibility

Current resources both hardware, software along with required technology are analyzed to develop project.

2. Operational feasibility:

In operational feasibility degree of providing service to requirements is analyzed along with ~~as~~ how much easy product will be ~~at~~ to operate and maintenance after development.

3. Economic feasibility:

In economic feasibility study cost and benefit of the project is analyzed. That means under this feasibility study a detail analysis

is carried out what will be cost of the project for development.

4. Legal feasibility:

In legal feasibility study project is analyzed in legality point of view. This includes analyzing barriers of legal information of project.

5. Schedule flexibility:

In schedule flexibility study mainly timeline is analyzed for proposed project which includes how much time team will take to complete final project.

Ans to the Question no - 0.6

Q) Ans: The difference between prototyping and spiral models are given below:-

Prototyping Model	Spiral Model
(i) In prototyping model, a prototype is build, tested, and then refined as per customer needs.	(i) Spiral model is a risk driven software development model and is made with features of incremental, waterfall or evolutionary prototyping models.
(ii) It does not give emphasis on risk analysis	(ii) It takes special care about risk analysis and alternative solution is under taken.
(iii) Referred to as rapid or close ended prototype	(iii) Referred to as meta model.
(iv) Customer interaction is continuous until the final prototype is approved.	(iv) In spiral model, there is no continuous customer interaction.
(v) This model is best when the requirement of the client is not clear and supposed to be changed.	(v) This model is best when the requirement of the client is complete and clear.

(v) In prototyping model cost effective quality improvement is very much possible	(vi) In Spiral model, cost effective quality improvement is not possible
(vii) Improvement of quality does not increases the cost of production.	(viii) Improvement of quality can increases the cost of production.

Formal method model:

The formal method model is concerned with the application of a mathematical technique to design and implement the software. This model is the foundation for developing a complex system and supporting the program development. Ambiguity, incompleteness, inconsistency can be discovered and corrected more easily through mathematical analysis.

Example: B-Method

B method is a method of software development based on B, a tool supported formal method based on ~~an~~ an abstract machine notation, used in

The development of Computer software.

It divides the software into a separated components that further represent as abstract machines. B-method is widely cited technique in scientific publication concerning formal method implementation.

B-method represent the system models in the form of mathematical expression as an abstract notation machine.

6(b)

6(b) Answer: Scrum

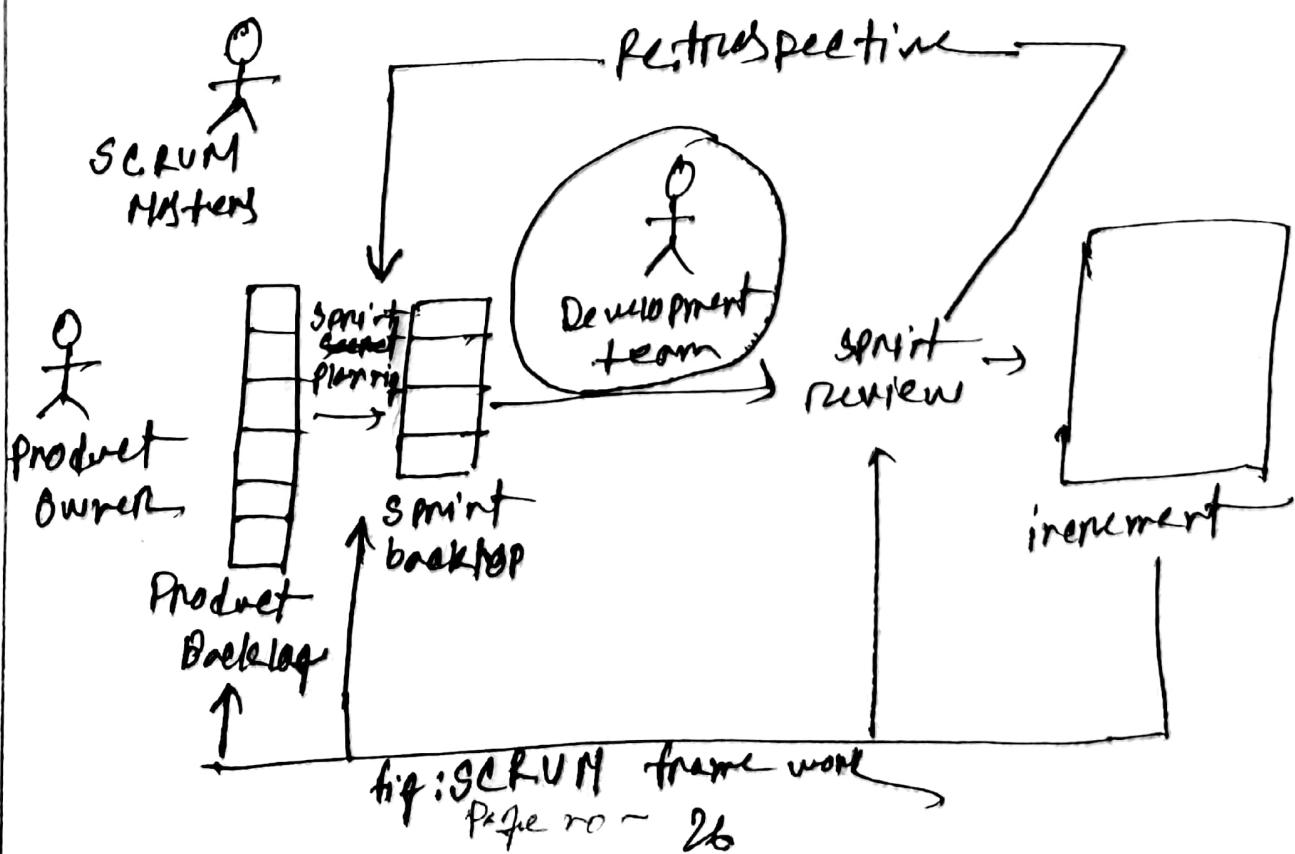
SCRUM framework:

A software development method originally proposed by

Schauder and Beeble.

features are —

- Development work is partitioned into packets
- Testing and documentation are going of the product is constructed.
- meeting are very short
- demos are delivered to the customers with the time box allocated.



6(c)

6(c) Answer:

Verification:

Verification refers to the set of tasks that ensure that software correctly implements a specific function.

Validation:

Validation refers to a different set of tasks that ensure that the software that has been built is traceable to customer requirements.