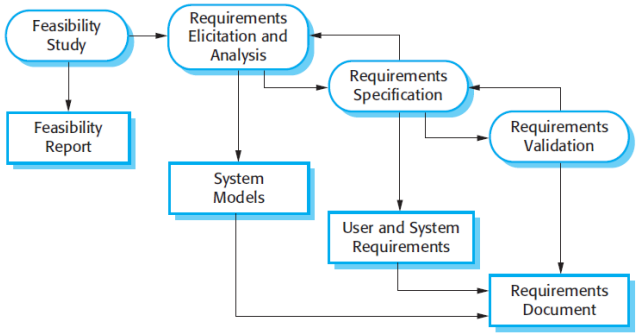
Internal Assessment Test 1 –September 2020

SOLUTIONS

Sub:	SOFTWARE ENGINEERING					Sub Code:	18CS85	Branch:	ISE
Date:	14-09-2020	Duration:	90 min's	Max Marks:	50	Sem / Sec:	III SEM ISE A, B & C		OBE

Section -A Descriptive: Answer any THREE Questions (3 X 10 = 30)

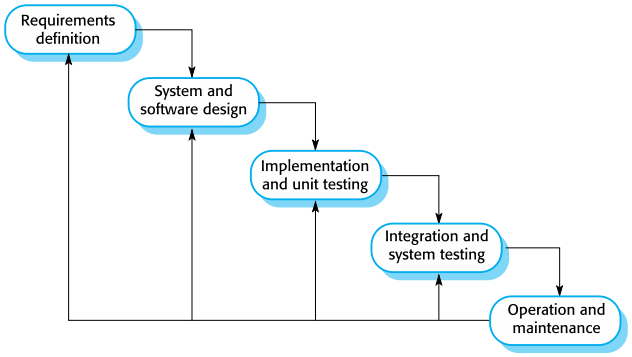
1.	a) Explain the Requirements Engineering Process with a neat diagram.	[05]	CO1	L2



1. Feasibility study: An estimate is made of whether the identified can be achieved using the current software and hardware technologies, under the current budget, etc. The feasibility study should be cheap and quick; it should inform the decision of whether or not to go ahead with the project.

2. Requirements elicitation and analysis: This is the process of deriving the system requirements through observation of existing systems, discussions with stakeholders, etc. This may involve the development of one or more system models and prototypes that can help us understanding the system to be specified.

	3. Requirements specification: It's the activity of writing down the information gathered during the elicitation and analysis activity into a document that defines a set of requirements. Two types of requirements may be included in this document; user and system requirements. 4. Requirements validation: It's the process of checking the requirements for realism, consistency and completeness. During this process, our goal is to discover errors in the requirements document. When errors are found, it must be modified to correct these problems.			
	b) Differentiate Functional and Non Functional Requirements. For a "online movie ticket booking" application, list at least 4 functional and 4 non-functional requirement ✧ Ans: Functional requirements ▪ Statements of services the system should provide, how the system should react to particular inputs and how the system should behave in particular situations. ▪ May state what the system should not do. ▪ Describe functionality or system services. ▪ Depend on the type of software, expected users and the type of system where the software is used. ▪ Functional user requirements may be high-level statements of what the system should do. ▪ Functional system requirements should describe the system services in detail. ✧ Non-functional requirements ▪ Constraints on the services or functions offered by the system such as timing constraints, constraints on the development process, standards, etc. ▪ Often apply to the system as a whole rather than individual features or services. ▪ These define system properties and constraints e.g. reliability, response time and storage requirements. Constraints are I/O device capability, system representations, etc. ▪ Process requirements may also be specified mandating a particular IDE, programming language or development method. ▪ Non-functional requirements may be more critical than functional requirements. If these are not met, the system may be useless.	[05]	CO1	L3

	▪ For a “online movie ticket booking” application, list at least 4 functional and 4 non-functional requirement Ans: Functional requirements: 1. User should be able to view the list of movies which are running near to his location(based on GPS). 2. User should be able to select the seat as per his choice in the hall. 3. User should have different options of payment. 4. User should have option to cancle ticket Non Functional Requirements; 1. The application should be able to handle 1000 ticket booking requests simultaneously. 2. The application’s servers should perform load balancing efficiently. 3. Application should be lightweight and give quick response. 4. The user’s data should be kept safe. 5. The application should be platform independent.			
2.	a) With a suitable block diagram, Explain the Water Fall Model. ✧There are separate identified phases in the waterfall model: ▪ Requirements analysis and definition ▪ System and software design ▪ Implementation and unit testing ▪ Integration and system testing ▪ Operation and maintenance ✧The main drawback of the waterfall model is the difficulty of accommodating change after the process is underway. In principle, a phase has to be complete before moving onto the next phase.  ✧Inflexible partitioning of the project into distinct stages makes it difficult to respond to changing customer requirements. ▪ Therefore, this model is only appropriate when the requirements are well-understood and changes will be fairly limited during the design process. ▪ Few business systems have stable requirements. ✧The waterfall model is mostly used for large systems engineering projects	[06]	CO1	L2

where a system is developed at several sites.

- In those circumstances, the plan-driven nature of the waterfall model helps coordinate the work.

b) Differentiate Water Fall model with Incremental development model. [04] CO1 L3

WATERFALL MODEL	INCREMENTAL MODEL
Need of Detailed Documentation in waterfall model is Necessary.	Need of Detailed Documentation in incremental model is Necessary but not too much.
In waterfall model early stage planning is necessary.	In incremental model early stage planning is also necessary.
There is high amount risk in waterfall model.	There is low amount risk in incremental model.
There is long waiting time for running software in waterfall model.	There is short waiting time for running software in incremental model.
Waterfall model can't handle large project.	Incremental model also can't handle large project.
Flexibility to change in waterfall model is Difficult.	Flexibility to change in incremental model is Easy.
Cost of Waterfall model is Low.	Cost of incremental model is also Low.
Testing is done in waterfall model after completion of all coding phase.	Testing is done in incremental model after every iteration of phase.
Returning to previous stage/phase in waterfall model is not possible.	Returning to previous stage/phase in incremental model is possible.

		In waterfall model large team is required.	In incremental model large team is not required.			
		In waterfall model overlapping of phases is not possible.	In incremental model overlapping of phases is possible.			
		There is only one cycle in waterfall model.	There is multiple development cycles take place in incremental model.			
3.	a) List and explain any five software engineering code of ethics. Eight Principles: 1. PUBLIC – Software engineers shall act consistently with the public interest. 2. CLIENT AND EMPLOYER – Software engineers shall act in a manner that is in the best interests of their client and employer consistent with the public interest. 3. PRODUCT – Software engineers shall ensure that their products and related modifications meet the highest professional standards possible. 4. JUDGMENT – Software engineers shall maintain integrity and independence in their professional judgment. 5. MANAGEMENT – Software engineering managers and leaders shall subscribe to and promote an ethical approach to the management of software development and maintenance. 6. PROFESSION – Software engineers shall advance the integrity and reputation of the profession consistent with the public interest. 7. COLLEAGUES – Software engineers shall be fair to and supportive of their colleagues. 8. SELF – Software engineers shall participate in lifelong learning regarding the practice of their profession and shall promote an ethical approach to the practice of the profession.			[05]	CO1	L2
	b) Discus about the methods involved in interviewing state holders for requirement discovery. List out all the stack holders involved in "Online Examination System". Ans: ✧Formal or informal interviews with stakeholders are part of most RE processes. ✧Types of interview ▪ Closed interviews based on pre-determined list of questions ▪ Open interviews where various issues are explored with stakeholders. ✧Effective interviewing ▪ Be open-minded, avoid pre-conceived ideas about the requirements and are willing to listen to stakeholders.			[05]	CO1	L3

	▪ Prompt the interviewee to get discussions going using a springboard question, a requirements proposal, or by working together on a prototype system. ✧Normally a mix of closed and open-ended interviewing. ✧Interviews are good for getting an overall understanding of what stakeholders do and how they might interact with the system. ✧Interviewers need to be open-minded without pre-conceived ideas of what the system should do You need to prompt the use to talk about the system by suggesting requirements rather than simply asking them what they want ✧ List out all the stack holders involved in "Online Examination System". Ans: Students Teachers Administartion office of School or college			
4.	a) What is the need of Requirement Validation? Explain the different checks to be carried out during requirement validation process. Ans: Requirements validation is the process of checking that requirements defined for development, define the system that the customer really wants. To check issues related to requirements, we perform requirements validation. We usually use requirements validation to check error at the initial phase of development as the error may increase excessive rework when detected later in the development process. Explain the different checks to be carried out during requirement validation process. In the requirements validation process, we perform a different type of test to check the requirements mentioned in the Software Requirements Specification (SRS), these checks include: ✧Validity checks: Does the system provide the functions which best support the customer's needs? ✧Consistency checks: Are there any requirements conflicts? ✧Completeness checks: Are all functions required by the customer included? ✧Realism checks : Can the requirements be implemented given available budget and technology ✧Verifiability.: Can the requirements be checked? Should always be written so that can be varified.	[06]	CO1	L2
	b) Write a note on Requirement Management planning. Ans: During the requirements engineering process, you have to plan:	[04]	CO1	L1

	• Requirements identification: How requirements are uniquely identified so that easy to trace • A change management process: Set of activities which asses the impact and cost of changes. • Traceability policies: Policies define the relationships between requirements and relationship between requirements and the system design. It should be documented. • CASE tool support: The tool support required to help manage requirements change			
Section -B Objective : Answer All the questions (20 X 1 = 20)				
1	…….. is a sub discipline of computer Science that attempts to apply engineering principles to the creation, operation, modification and maintenance of the software a) Computer Engineering b) Hardware Engineering **c) Software Engineering** d) Component Engineering	[1]	CO1	L1
2	The cost of software engineering includes approximately …… of development costs and ……. of testing costs. a) 50%, 50% b) 40%, 60% c) 80%, 20% **d) 60%, 40%**	[1]	CO1	L2
3	Software maintenance refers to the support phase of software development which includes. a) Correction b) Adaption c) Enhancement **d) All the above**	[1]	CO1	L1
4	.....is an engineering discipline that is concerned with all aspects of software production a) Programming	[1]	CO1	L1

	b) Program Development **c) Software Engineering** d) None of the Above			
5	Software that is commissioned by a specific customer to meet their own needs **a) Customized Products** b) Software Products c) Generic Products d) None of the Above	[1]	CO1	L2
6	_____shall perform reliably and deliver the correct amount of insulin to counteract the current level of blood sugar **a) Smart Insulin pump control system** b) MentCare c) Wilderness weather station d) iLearn	[1]	CO1	L1
7	A system used to maintain records of people receiving care for mental health problems a) Smart Insulin pump control system **b) MentCare** c) Wilderness weather station d) iLearn	[1]	CO1	L1
8	A framework in which a set of general-purpose and specially designed tools for teaching and learning a) Smart Insulin pump control system b) MentCare c) Wilderness weather station **d) iLearn**	[1]	CO1	L1
9	Software engineering managers and leaders shall subscribe to and promote an_____ to the management of software development and maintenance. a) Approach b) Methodology **c) Ethical Approach** d) None of the above	[1]	CO1	L1

10	Software engineers shall participate in _____regarding the practice of their profession a) Technical Events b) Seminars and Symposiums c) Conferences and Workshops **d) Life Long Learning**	[1]	CO1	L2
11	_____defines what the software system should do? **a) Software Specification** b) Software Design c) Software Implementation d) Software Validation	[1]	CO1	L1
12	_____defines the organization of the system and implementation of software system; a) Software Specification **b) Software Design and Implementation** c) Software Validation d) Software Evolution	[1]	CO1	L1
13	_____checks completely the software system does what the customer wants. a) Software Specification b) Software Design and Implementation **c) Software Validation** d) Software Evolution	[1]	CO1	L1
14	_____changes the software system in response to changing customer needs. a) Software Specification b) Software Design and Implementation c) Software Validation **d) Software Evolution**	[1]	CO1	L1
15	_____are processes where all of the process activities are planned in advance and progress is measured against this plan. **a) Plan-driven Process** b) Agile Process c) Plan-Driven Process and Agile Process d) None of the above	[1]	CO1	L1

16	In _____ planning is incremental and it is easier to change the process to reflect changing customer requirements. a) Plan -Driven Process b) Agile Process **c) Plan Driven Process and Agile Process** d) None of the above	[1]	CO1	L2
17	The main drawback of the waterfall model is _____ a) Easy in accommodating change after the process is underway **b) Difficulty in accommodating change after the process is underway** c) Based on the type of Applications d) None of the above	[1]	CO1	L1
18	Waterfall Model is otherwise Called a) Linear Sequential Model b) Software Development Life Cycle c) SDLC **d) All the above**	[1]	CO1	L1
19	Incremental Development helps in _____ a) Rapid delivery of useful software to the customer is possible. b) Deployment of useful software to the customer is possible. c) **Rapid delivery and deployment of useful software to the customer is possible**. d) None of the above	[1]	CO1	L2
20	Software Design Activities are _____ a) Data b) Architectural c) Procedural and Interface **d) All the above**	[1]	CO1	L2