



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad -500 043

INFORMATION TECHNOLOGY

TUTORIAL QUESTION BANK

Course Name	SOFTWARE ENGINEERING
Course Code	A50518
Class	III B. Tech I Semester
Branch	INFORMATION TECHNOLOGY
Year	2017 – 2018
Course Faculty	Dr. I Surya Prabha ,Professor

OBJECTIVES

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited.

In line with this, Faculty of Institute of Aeronautical Engineering, Hyderabad has taken a lead in incorporating philosophy of outcome based education in the process of problem solving and career development. So, all students of the institute should understand the depth and approach of course to be taught through this question bank, which will enhance learner's learning process.

S No	QUESTION	Blooms taxonomy level	Course Outcomes
UNIT - I			
INTRODUCTION TO SOFTWARE ENGINEERING			
Part - A (Short Answer Questions)			
1	Explain is legacy software?	Knowledge	1
2	Demonstrate all the applications of software	Knowledge	2
3	List the types of software myths?	Knowledge	2
4	Discuss the architecture of layered technology	Understand	2
5	List all the umbrella activities in process framework	Understand	2
6	Explain process pattern?	Knowledge	2
7	List the types of software models	Understand	2
8	Explain the types other software process models	Understand	2
9	Explain software component? explain its uses	Understand	2
10	Explain process assessment?	Knowledge	2
11	Explain the models in CMMI	Knowledge	2
12	Explain the levels in continuous model in CMMI	Understand	2

13	Explain the differences between perspective and iterative process models	Understand	2
14	Explain staged model in CMMI	Knowledge	2
15	Explain waterfall model and who invented waterfall model	Understand	2
16	Explain boehm model?	Understand	2
17	List the phases in unified process model	Understand	2
18	List the types of patterns	Knowledge	3
19	Explain PSP and TSP	Knowledge	3
20	Explain high speed adaptation model	Understand	3
Part - B (Long Answer Questions)			
1	Explain the evolving role of software	Knowledge	1
2	Define software and explain the various characteristics of software	Knowledge	2
3	Explain “Software myth”? Discuss on various types of software myths and the true aspects of these myths	Knowledge	2
4	Discuss about software Engineering? Explain the software engineering layers?	Understand	2
5	Explain in detail the capability Maturity Model Integration (CMMI)	Understand	2
6	Describe with the help of the diagram discuss in detail waterfall model. Give certain reasons for its failure	Knowledge	2
7	Explain briefly on (a) the incremental model (b) The RAD Model	Understand	2
8	Explain the Spiral model in detail?	Understand	2
9	Describe With the help of the diagram explain the concurrent development model	Understand	2
10	Explain unified process? Elaborate on the unified process work products	Knowledge	3
11	Explain specialized process models	Knowledge	3
12	Explain different software applications?	Knowledge	3
13	Explain the paradigms do you think would be most effective? Why?	Understand	3
14	Explain product and process are related?	Understand	3
15	Explain personal and team process models	Understand	3
16	Explain process frame work activities	Knowledge	3
17	Explain the purpose of process assessment	Knowledge	3
18	Explain changing nature of software in detail	Knowledge	3
19	Explain and contrast perspective process models and iterative process models	Understand	3
20	Explain about the evolutionary process models	Understand	3
Part - C (Problem Solving and Critical Thinking Questions)			
1	Describe the law of conservation of familiarity in your own words	Knowledge	1
2	Suggest a few ways to build software to stop deterioration due to change	Knowledge	1
3	Try to develop a task set for the communication activity	Apply	2
4	Explain the purpose of process assessment? Why has SPICE been developed as a standard for process assessment?	Knowledge	2
5	Discuss the meaning of “cross-cutting concerns” in your words	Knowledge	2

UNIT - II
SOFTWARE REQUIREMENTS

Part – A (Short Answer Questions)

1	Explain the kinds of system requirements	Knowledge	3
2	Explain functional requirement	Knowledge	3
3	Explain non-functional requirement	Understand	3
4	Explain domain requirements	Understand	3
5	What are kinds of non-functional requirements	Knowledge	3
6	Explain example of functional requirement	Understand	3
7	Explain user requirements in detail.	Understand	3
8	Explain system requirement in detail	Understand	4
9	Explain interface and list out how many types of there and what are they	Knowledge	4
10	Explain the term stake holder	Knowledge	4
11	Explain use case	Knowledge	4
12	Explain requirement validation	Understand	5
13	Explain requirement review	Understand	5
14	Explain data dictionary?	Understand	5
15	Discuss data flow model	Knowledge	5
16	Explain state machine model of a microwave oven	Knowledge	5
17	List kinds of behavioural and object models	Knowledge	5
18	Design class hierarchy for library by using in inheritance model	Knowledge	5
19	Describe ethnography	Understand	5
20	Explain viewpoints and types of view points	Understand	5

Part - B (Long Answer Questions)

1	Write short notes on user requirements. What is requirements	Knowledge	3
2	Compare functional requirements with non-functional requirements	Knowledge	3
3	Discuss system requirements in a detail manner	Understand	3
4	Explain requirement engineering process.	Understand	3
5	Discuss briefly how requirement validation is done?	Knowledge	3
6	Discuss your knowledge of how an ATM is used , develop a set of use-cases that could serve as a basis for understanding the requirements for an ATM system.	Understand	3
7	Describe four types of non-functional requirements that may be placed on a system. Give examples of each of these types of requirement.	Understand	3
8	Explain how requirements are managed in software project management	Understand	4
9	Explain context models	Knowledge	4
10	Explain Behavioural models.	Knowledge	4
11	Explain Data models.	Knowledge	4
12	Explain Object models	Understand	4
13	Explain in which circumstances would you recommend using structured methods for system development?	Understand	4

14	Explain SRS document and explain along with its contents	Understand	4
15	Explain interface specification in detail	Knowledge	4
16	Discuss how requirements are elicited and validated in software project	Knowledge	4
17	Discuss how feasibility studies are important in requirement engineering process.	Knowledge	4
18	Demonstrate class hierarchy for library by using interface specification	Understand	4
19	Explain inheritance model	Understand	4
20	Explain state machine model with a suitable example	Understand	4
Part – C (Problem Solving and Critical Thinking)			
1	Identify and briefly describe four types of requirements that may be defined for computer based system	Knowledge	3
2	List out plausible user requirements for the following functions a) cash dispensing function in a bank ATM b) spelling check and correcting function in a word processor	Knowledge	3
3	Suggest how an engineer responsible for drawing up a system requirements specification might keep track of the relationship between functional and non- functional requirements.	Knowledge	4
4	Suggest who might be stakeholders in a university student record system. Explain why it is almost inevitable that the requirements of different stakeholders will conflict in some way.	Knowledge	4
5	Explain who should be involved in requirements review? draw a process model showing how a requirements review might be organized.	Apply	4
UNIT-III DESIGN ENGEERING			
Part - A (Short Answer Questions)			
1	Explain why design is important in design engineering	Knowledge	4
2	Discuss analysis and design model	Understand	4
3	Describe quality attributes and its guidelines	Understand	5
4	List the design concepts	Knowledge	5
5	Justify the importance of refactoring	Understand	5
6	Give a short notes on low coupling	Understand	5
7	Define software architecture with its importance	Understand	5
8	Explain taxonomy of architectural styles	Knowledge	5
9	Write a short notes on architecture patterns	Knowledge	6
10	Define archetypes	Understand	6
11	Define component	Knowledge	6
12	Write a short notes on coupling	Knowledge	6
13	List out the steps for conducting component level design	Knowledge	6
14	Write a short notes on cohesion	Knowledge	6
15	Design the class based components	Understand	6
16	List out the golden rules for interface design	Understand	7
17	Write a short notes on interface design steps	Knowledge	7
18	Describe design evaluation	Knowledge	7
19	List out all the design issues	Understand	7
20	Explain process in user interface design	Understand	7

Part – B (Long Answer Questions)			
1	Explain a two level process? Why should system design be finished before the detailed design, rather starting the detailed design after the requirements specification? Explain with the help of a suitable example.	Knowledge	4
2	Discuss briefly the following fundamental concepts of software design: i) Abstraction ii) Modularity iii) Information hiding.	Understand	4
3	Explain briefly the following: i) Coupling between the modules ii) The internal Cohesion of a module.	Understand	5
4	Discuss the fundamental principles of structured design. Write notes on transform analysis.	Knowledge	5
5	Explain software architecture in a detail manner	Understand	5
6	Explain software design? Explain data flow oriented design	Understand	5
7	What are the goals of the user interface design	Understand	5
8	Discuss briefly about the golden rules for the user interface design	Knowledge	5
9	Discuss interface design steps in a brief manner	Knowledge	6
10	Explain how the design is evaluated	Understand	6
11	Explain design processing along with its quality	Knowledge	6
12	What are the design concepts in software engineering	Understand	6
13	Explain pattern based software design in a detail manner	Understand	6
14	Elaborate model for the design	Understand	6
15	Discuss architectural styles and patterns	Knowledge	6
16	Explain with a neat diagram of architectural design	Knowledge	6
17	Elaborate modeling component level design	Knowledge	6
18	Describe mapping data flow into a software architecture	Understand	6
19	Explain the guide lines of component level design	Understand	6
20	Describe the way of conducting a component level design	Understand	6
Part – C (Problem Solving and Critical Thinking)			
1	State how do we assess quality of a software design?	Knowledge	5
2	Suggest a design pattern that you encounter in a category of everyday things.	Apply	5
3	Provide examples of three data abstractions and the procedural abstractions that can be used to manipulate them	Apply	5
4	Explain the difference between a data base that services one or more conventional business applications and data warehouse	Knowledge	5
5	Demonstrate the architecture of a house or building as a metaphor, draw comparison with software architecture. How are the disciplines of classical architecture and software architecture similar? How do they differ?	Apply	5
UNIT-IV TESTING STRATEGIES			
Part – A (Short Answer Questions)			
1	Compare verification and validation	Knowledge	6
2	Write a short notes on unit testing	Knowledge	6
3	Describe smoke testing	Knowledge	6
4	List out the steps for bottom-up integration	Knowledge	6

5	List out the steps for top-down integration	Understand	7
6	Write short note on integration testing	Understand	7
7	Define alpha testing	Knowledge	7
8	Define beta testing	Knowledge	7
9	Write a short notes on validation testing	Knowledge	7
10	Explain art of debugging	Understand	7
11	Describe regression testing	Knowledge	9
12	List out the steps for integration step documentation	Knowledge	9
13	Describe performance testing	Knowledge	9
14	Write a short notes on glass box testing	Knowledge	9
15	Explain behavioral testing	Understand	9
16	List the quality factors of McCall's	Understand	9
17	List the quality factors of ISO 9126	Knowledge	9
18	Define the following terms measures, metrics, indicators	Understand	9
19	Give a short notes on product metric land scape	Understand	9
20	List out the metrics for analysis model	Understand	9
Part – B (Long Answer Questions)			
1	Explain about the importance of test strategies for conventional software	Knowledge	6
2	Discuss black box testing in a detailed view	Apply	6
3	Compare black box testing with white box testing	Apply	6
4	Compare validation testing and system testing	Knowledge	6
5	Discuss software quality factors? Discuss their relative importance	Understand	7
6	Discuss an overview of quality metrics	Understand	7
7	Explain should we perform the Validation test – the software developer or the software user? Justify your answer	Apply	7
8	Explain about Product metrics	Knowledge	7
9	Explain about Metrics for maintenance	Knowledge	7
10	Explain in detail about Software Measurement?	Understand	7
11	Explain about Metrics for software quality?	Knowledge	7
12	Explain strategic approach to software testing	Understand	7
13	Describe test strategies for conventional software	Understand	7
14	Describe validation testing	Understand	7
15	Write a long notes on system testing	Knowledge	7
16	Demonstrate art of debugging	Knowledge	7
17	Discuss a framework for product metrics	Knowledge	7
18	Demonstrate metrics for analysis model	Understand	7
19	Briefly list the metrics for the design model	Understand	7
20	Describe metrics for source code and for testing	Understand	7
Part – C (Problem Solving and Critical Thinking)			
1	Provide a few examples that illustrate why response time variability can be an issue.	Knowledge	6

2	Develop two additional design principles “place the user in control”	Apply	6
3	Develop two additional design principles “make the interface consistent”	Apply	7
4	Develop a complete test strategy for the safe home system. Document it in a test specification.	Apply	7
5	Provide examples for unit testing.	Apply	7
UNIT-V			
RISK MANAGEMENT			
Part - A (Short Answer Questions)			
1	Define reactive and proactive risk strategies	Knowledge	8
2	List out the generic subcategories of predictable risks	Understand	8
3	Define risk components	Understand	8
4	List out the conditions for risk refinement	Knowledge	9
5	Demonstrate quality concepts	Understand	9
6	Give a short notes on formal technical reviews	Understand	9
7	List out review guidelines	Understand	9
8	Describe six sigma for software	Knowledge	9
9	Define SQA plan	Knowledge	9
10	Write a short notes on ISO 9000 quality standards	Understand	9
11	Give the formulae for measures of reliability and availability	Knowledge	9
12	Define software safety	Knowledge	10
13	Define risk projection	Knowledge	10
14	Define software risks and what are the types of software risks	Knowledge	10
15	Describe risk components and drivers	Understand	10
16	Define risk refinement	Understand	10
17	What does RMMM stands in RMMM plan	Knowledge	10
18	Define software reliability	Understand	10
19	Define quality and quality control in quality management	Understand	11
20	Give a short notes on risk identification	Understand	11
Part - B (Long Answer Questions)			
1	Explain about software risks?	Knowledge	8
2	Elaborate the concepts of Risk management Reactive vs Proactive Risk strategies	Understand	8
3	Explain about RMMM Plan?	Understand	8
4	Explain about Quality concepts?	Knowledge	9
5	Explain software quality assurance	Understand	9
6	Explain about formal technical reviews	Understand	9
7	Explain in detail ISO 9000 quality standards	Understand	9
8	Discuss risk refinement?	Knowledge	9
9	Compare reactive with proactive risk strategies	Knowledge	9
10	Discuss software reliability?	Understand	9
11	Briefly explain about formal approaches to SQA	Knowledge	9
12	Demonstrate statistical SQA	Understand	9

13	Define software reliability along with its terms	Understand	9
14	Explain risk projection in detail	Understand	9
15	Explain seven principals of risk management	Knowledge	9
16	Explain software reviews in brief	Knowledge	9
17	Explain six sigma for software engineering	Knowledge	9
18	Explain quality management with their terms	Understand	9
19	Demonstrate risk identification	Understand	9
20	Describe developing a risk table	Understand	9
Part – C (Problem Solving and Critical Thinking)			
1	Quality and reliability are related concepts but are fundamentally different in number of ways. Discuss them	Apply	8
2	Explain you have been given the responsibility for improving quality of software across your organization. What is the first thing that you should do? what's next	Apply	8
3	Some people argue that an FTR should assess programming style as well as correctness is this a good idea? Discuss why?	Apply	8
4	Demonstrate is it possible to assess the quality of software if the customer keeps changing what it is supposed to do?	Apply	9
5	Create a risk table for the project that if you are the project manager for a major software company. you have been asked to lead a team that's developing "next generation "word- processing software.	Apply	9

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