INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
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COMPUTER SCIENCE AND ENGINEERING

TUTORIAL QUESTION BANK

Course Name	**SOFTWARE ENGINEERING**
Course Code	A50518
Class	III B. Tech I Semester
Branch	Computer Science and Engineering
Year	2017 – 2018
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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 elicitated 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	**Expalain** 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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