SRN | | | | | | | | | | | |

PES University, Bangalore

(Established under Karnataka Act 16 of 2013)

UE14CS402

B. Tech 7TH SEMESTER Aug-Dec 2017

END SEMESTER ASSESSMENT (ESA)

UE14CS402 – Software Engineering

Time: 3 Hrs | Answer All Questions | Max Marks: 100

Note: Length of answers should be proportional to the marks allocated

1.	a	Describe the SCRUM approach of Software development using 1. Terminologies (Scrum, Sprint, Backlog, Retrospective) 2. Different Roles (Scrum Master, Scrum members, Product Owner)	3 4*1 3*1
	b	Discuss the Agile Manifesto and establish how Scrum supports that	6
	c	Contrast the Software Development Lifecycle and the Product Development Lifecycle	4

2.	a	A Railway reservation system has the following features. It supports a Web GUI which allows Users to query the system for trains between a starting point to a destination based on i) the time of starting and ending ii) accommodation type iii) type of ticket iv) cost. The system also allows registration of users, and when a registered user queries as above, the system allows the user to select an accommodation on the train based on the criteria specified and pay for the ticket through a payment gateway. The system also creates an itinery for the booking and passes back a booking Id which can be used for changes and cancellation. 1. Making assumptions as necessary, build a high-level block level solution for the system. 2. Identify the Upstream and Downstream modules in the above block diagram	 3 2
	b	What are Risks, Mitigation Plan and Triggers for Risk Mitigation? Identify one risk for the above project, its mitigation plan and the trigger.	3+3
	c	Discuss all the steps necessary for building a Schedule. Use the above as the example for showing the same	3
	d	Choose most appropriate answer 1. A design that can be modified easily to run on a variety of hardware and software environments is highly a) portable b) interoperable c) profitable d) usable P.T.O	6

SRN | | | | | | | | | | | | |

2. The main difference between Verification and Validation can be explained by the following statement(s) in the order given below:
   a) there is no clear difference – they are essentially the same
   b) verification is for looking at are we building the product right while validation is for looking at whether are we building the right product.
   c) verification involves testing while validation involves process related activities
   d) verification takes place during the testing phase; validation takes place during requirements phase

3. Which of the following software engineering activities typically produce the highest volume of configuration items that need to be managed in a software project?
   a) Software requirement analysis
   b) Software design
   c) Software construction
   d) Software engineering management

4. In software construction, "the discipline of removing unwanted code for easier maintenance and deployment" is known as:
   a) Literate programming
   b) Static analysis
   c) Refactoring
   d) Debugging

5. Which of the following design methodologies first specifies the individual base elements of the system in great detail?
   a) Top down design
   b) Bottom up design
   c) Component-based design
   d) Pattern-oriented design

6. Projects are characterized by
   a) Clarity of Requirements
   b) Clarity of certainty of resources
   c) Clarity of the process to be followed
   d) Clarity of the User environment

3.	a	Discuss the Requirements Phase of a Software Development Lifecycle including a brief (2 line) description of the activities involved	4
	b	Define Version, Revision and Release. A product is characterized as 4.6.2 what does this signify	6
	c	What is CBSE? Discuss the different phases of CBSE	6
	d	Name two metrics which you would use in development and two metrics which you would use in the testing phases of the software development lifecycle	4

SRN | | | | | | | | | | | |

4.	a	Consider your company has a software product which has software components deployed across different servers, and when a problem occurs, support engineers need to trouble shoot using the information logged by the software components. Some of the characteristics of the environment are that Log sizes are large, and these logs are generated at small intervals of time, and the interest in the logs are for particular events over specific time period in the logs. You are expected to provide an Architectural solution to support quick and effective trouble shooting. There are potentially different architectural approaches/solutions to solve the above problem, where each of the solutions will have different trade-off's in terms of non-functional requirements. Illustrate this by providing 3 solutions for the above scenario highlighting what non-functionalities and the trade-off's therein.	3*2
	b	What is Coupling and Cohesion in Design? Why are they important? What would be ideal degree to which they need be, for a good design?	4
	c	Discuss with two sentences each, 3 ways through which would write testable code	3
	d	Discuss with 1-2 sentences what does it mean and when would you use the following types of testing 1. Usability testing 2. Boundary testing 3. White Box testing 4. Destructive testing 5. Smoke testing 6. Localization testing 7. Regression testing	7x1

5.	a	Explain in 4-5 sentences 1. Measure and Metrics 2. Hacking 3. SOA	3*2
	b	Contrast the following 1. COCOMO and Delphi Estimation techniques 2. V Model and Waterfall Model 3. Functional and Non-functional requirements 4. Reviews and Inspection	4*2
	c	List out 1. Four (4) reasons why global software development is relevant 2. Five (5) levels of Software Capability Maturity (SEI CMM) 3. Four (4) Ethical characteristics expected of a software Engineer	3*2