Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIFTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018

Course Code: IT301

Course Name: SOFTWARE ARCHITECTURE AND DESIGN PATTERNS (IT)

Max. Marks: 100   Duration: 3 Hours

PART A
Answer any two full questions, each carries 15 marks   Marks

1	a)	In waterfall life cycle model, a working version of the system is not seen until late in the project's life cycle. Suggest another life cycle model to solve the problem and give its working.	(5)
	b)	Identify the model used for realistic approach to the development of large-scale systems software. Justify & explain the model.	(5)
	c)	What is software architecture? Why is it important?	(5)
2	a)	Explain refactoring with example.	(5)
	b)	Mention various approach to improve robustness.	(5)
	c)	Explain how efficiency in speed can be improved.	(5)
3	a)	Explain different software application domain.	(4)
	b)	List out the agility principles.	(4)
	c)	Replace the following code with more robust statements. int computeArea(intaLength, int aBreadth) {..}	(2)
	d)	Mention various approach to improve correctness.	(5)

PART B
Answer any two full questions, each carries 15 marks

4	a)	Write short note on sequence diagram.	(5)
	b)	Draw a use case diagram for the following: There is a vending machine which delivers beverage after a customer selects and pay for it. Technicians perform periodic service on the vending machine to keep it in good condition. He also performs unexpected service on vending machine to repair a problem. Clerical staff add items into the vending machine to replenish stock.	(5)
	c)	Explain aggregation and composition with example.	(5)
5	a)	Explain pipe and filter style architecture in detail.	(8)
	b)	Explain MVC in detail.	(7)
6	a)	As a start of a call, the telephone line is idle. When the phone receiver is picked from hook, it gives a dial tone and can accept the dialling of digits.If after getting dial tone, if the user doesn't dial number within time interval then time out occurs, and phone line gets idle. After dialling a number, if the number is invalid then some recorded message is played. Upon entry of a valid number, the phone system tries to connect a call & routes it to proper destination. If the called person answers the phone, the conversation can occur. When called person hangs up, the phone disconnects and goes to idle state.Draw the state transition diagram for above description of telephone line.	(8)
	b)	Explain repository architecture style in detail.	(7)

PART C
Answer any two full questions, each carries 20 marks

7	a)	What are the elements of a design pattern?	(5)
	b)	Write short notes on the following: i) Factory ii) Decorator	(7)
	c)	Explain the structural design patterns of the following: i) Façade ii) Prototype	(8)
8	a)	Discuss applicability, structure, participants, consequences and implementation of observer pattern.	(10)
	b)	Explain the structure and participants of chain of responsibility with one example.	(5)
	c)	Write note on ATAM.	(5)
9	a)	Discuss applicability, structure, participants, consequences and implementation of singleton design pattern.	(10)
	b)	Explain with example about the behavioural design patterns interpreter and template.	(10)

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