NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA
MID - TERM EXAMINATION, 2018
SESSION: 2017 – 2018 (Spring)

Subject code: CS412 **Subject Name: Software Engineering** **Dept. Code: CS**
No. of pages: 02 Full Marks: **60** Duration: **2 Hrs**

Figures at the right hand margin indicate marks.
All parts of a question should be answered at one place.

PART –A
ANSWER ANY ONE QUESTION FROM PART -A

Q.No.	Particulars	Marks
1.	(a) List two differences between exploratory and modern software development practices. (b) Which types of risks can be better handled in the Spiral Model compared to the Prototyping Model? (c) Explain the important drawbacks of using Evolutionary Model. (d) Why should coupling be low and cohesion be high in software design? (e) What do you mean by logical cohesion? Give an example. (f) What do you mean by traceability of requirements? Why it is so important? (g) Differentiate between transform analysis and transaction analysis. (h) What is a stereotype in UML? Give an example situation, where stereotype can be used. (i) What are important limitations of DFD? (j) What is Module Specification (MSPEC)? At which stage of software development life cycle is it generated?	2×10=20
2.	(a) Is Software Engineering a layered technology? Justify your answer? (b) Discuss about the components of the framework activities? (c) What do you mean by requirements engineering? (d) Mention the elements of analysis model and the corresponding diagrams to represent them? (e) What is understood by the behavioral modeling in SW engineering process? (f) What do you mean by quality guidelines? (g) Why the design of a software should be traceable to the analysis model? (h) What do you mean by SW architecture? Why it is important? (i) How modularity helps in SW management? (j) How cohesiveness is different than coupling among the different modules of a software?	2×10=20

PART –B
ANSWER ALL QUESTIONS

Q.No.	Particulars	Marks
3.	(a) Explain the Spiral Model of software development with a neat diagram. Hence explain why is this model called a "meta-model"? (b) Explain with examples, what are the three major types of problems in a Software Requirements Specification (SRS) document, which are eliminated through requirements analysis? State examples of each. (c) Differentiate between "Decision Tree" and "Decision Table", with examples. (d) What are the factors that determine the goodness of a User Interface? How would you ascertain the compliance with each? OR (e) With neat diagram discuss how the analysis model is mapped to the design model? (f) Mention the principles of communication to be considered to start with the process model? (g) With neat sketch differentiate between the linear model and the evolutionary model of SW engineering process? (h) What are the various architectural styles? Discuss them with neat diagrams?	5×4=20
4.	Being the software designer do the followings for the system described below: (a) Identify and specify 4 major functional requirements with the corresponding mainline and alternate sequences. (b) Draw up to Level 1 Data Flow Diagram (DFD). (c) Draw the Use Case Diagram along with the Sequence Diagram for **any one** use case. (d) Draw the State Chart Diagram for the "Elevator" object.	5×4=20

	"**Building Elevator System**" The elevator includes the basic function of moving up and down, open and close doors, and of course, pick up passengers. The elevator is supposed to be used in a building having floors numbered from 1 to MaxFloor, where the first floor is the lobby. There are car call buttons in the car corresponding to each floor. For every floor except for the top floor and the lobby, there are two hall call buttons for the passengers to call for going up and down. There is only one down hall call button at the top floor and one up hall call button in the lobby. When the car stops at a floor, the doors are opened and the car lantern indicating the current direction the car is going is illuminated so that the passengers can get to know the current moving direction of the car. The car moves fast between floors, but it should be able to slow down early enough to stop at a desired floor. The major features of this system can be summarized as: • The elevator receives car calls from the passengers, turns on or turns off the light of car call buttons, updates the record of car calls stored in system controlling parts. • The elevator receives hall calls from the passengers, turns on or turns off the light of hall call buttons, updates the record of hall calls in system controlling parts • The main function of an elevator will include the changing of driving speed, how to make the decision of stop, and driving directions of the car • The elevator should have a mechanism to let the passengers know the current moving direction of the car such that the passenger might decide whether to enter the car or not. • The elevator should let the passengers know whether his/her destination floor is reached so that the passenger may decide to leave the car.	

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