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**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIRST SEMESTER M.TECH DEGREE EXAMINATION, DECEMBER 2017**

Branch:

Computer Science and Engineering

Stream(s):

Computer Science and Engineering

Course Code & Name:

01CS6107 Advanced Software Engineering

Answer any two full questions from each part

Limit answers to the required points.

Max. Marks: 60

Duration: 3 hours

PART A

1. a. A well-known word processor consists of a million lines of code. 3
Calculate how many programmers would be needed to write it, assuming that it has to be completed in five years. Assuming that they are each paid 10,00,000 per year, what is the cost of development?
- b. Which stages of software development, if any, can be omitted if the required software is only a small program? 3
- c. Someone enhances the waterfall model by including a user interface design stage immediately after the requirements engineering stage. What are its inputs and outputs? 3
2. a. What roles does the client take in Agile Programming? And Which of the techniques suggest that Agile Programming is an incremental approach? 3
- b. Product quality can be improved when the number of faults in the product is reduced. However, a count of faults can be a misleading measure of product quality. Why? 3
- c. What is the major differences between software engineering and some other engineering discipline, such as bridge design or house building? Would you consider state-of-the-art software engineering as a true engineering discipline? 3
3. a. Some people state that standards help to improve the software quality, and some others do not agree. What do you think? Discuss pros and cons of these viewpoints. 4
- b. For each of the process models we have studied, what are the benefits and drawbacks of using the model? 5

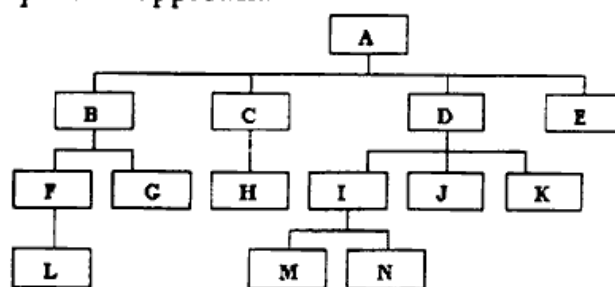
PART B

4. a. Write a use case for checking a balance. 3
- b. A library method draws a line from one set of coordinates to another. What type of cohesion does it exhibit? 3

- c. Most of a system's requirements specify that the system should do what it is intended to do. Is it also appropriate to specify that the system should not do what it is not intended to do? If your answer is no, explain why; if your answer is yes, give an example. 3
5. a. Generate a transition table and diagram to illustrate the requirements of an automatic bank teller machine. 4
- b. A computer manufacturer offers the possibility of purchasing computers via the Internet. The customer can select a computer on the manufacturer's web page. The computers are classified into servers, desktops and portables. The customer can select a standard configuration or can build a desired configuration online. The configurable components (such as memory) are presented as pick-lists of available options. For each new configuration, the system can calculate price. To place an order, the customer must fill out the shipment and payment information. Acceptable payment methods are credit cards and checks. Once the order has been entered, the system sends a confirmation e-mail message to the customer with details of the order. While waiting for the arrival of the computer, the customer can check the order status online at any time. The back end order processing consists of the steps needed to verify the customer's credentials and payment method, to request the ordered configuration from the warehouse, to print an invoice, and to request the warehouse to ship the computer to the customer. Make a use case diagram for the online shopping system described above. The actors for the system should be Customer, Salesperson, and Warehouse. 5
6. a. "Order Configured Computer" is a use case of the use case diagram in 5.b Design an activity diagram for this use case. 3
- b. Design a class diagram for the online shopping system described in 5.b The classes in the system should be Customer, Computer, Order, ConfigurationItem, Payment, Invoice 3
- c. Give an example for the coding conventions followed in a team within itself and among others when developing different components. 3

PART C

7. a. The figure below illustrates the component hierarchy in a software system. Describe the sequence of tests for integrating the components using a bottom-up approach; a top-down approach. 6



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| | b. Describe the CMMI maturity levels and the process areas in each level. | 6 |
| 8. | a. Why are CASE tools used in software engineering | 5 |
| | b. Differentiate between Alpha and Beta Testing | 7 |
| 9. | a. Explain the pros and cons of using a CASE tool ? | 4 |
| | b. Describe the Real-world factors affecting Maintenance Cost | 4 |
| | c. Write test cases for Pen. | 4 |

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