BITS PILANI, DUBAI CAMPUS

FIRST SEMESTER 2012- 2013

Comprehensive Examination (Closed Book)

Course Code: BITS C461 **IV YEAR** **Date: 08.01.2013**
Course Title: Software Engineering **Max Marks: 40**
Duration: 3 hours **Weightage: 40%**

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1. Explain legacy software. **1M**
2. Define task set. Identify the task set for requirements gathering of a small and simple project. **2M**
3. With the help of diagram, explain prototyping paradigm. **2M**
4. What is an agile process? **2M**
5. What happens when software developer and customer cannot come to an agreement with the customer on some project related issue? (Answer in a single statement) **1M**
6. What is separation of concerns? **1M**
7. Illustrate with diagram main program / subprogram architecture. **2M**
8. Mention the design principles to make the interface consistent. **1M**
9. Give two examples of software quality factors that can be measured indirectly. **1M**
10. Give two examples for work product size. **1M**
11. Mention the core steps of six sigma methodology. **1M**
12. Draw the baselined SCI's and the project database. **2M**
13. What is a graph matrix and how to extend it for use in testing? **2M**
14. Draw and explain cleanroom process model. **2M**

15. Draw the flow graph for the code given below and find cyclomatic complexity and also the independent paths. **3M**

```
WHILE NOT EOF LOOP
 Read Record;
 IF field1 equals 0 THEN
        Add field1 to Total
       Increment Counter
  ELSE
  IF field2 equals 0 THEN
        Print Total, Counter
        Reset Counter
 ELSE
 Subtract field2 from Total
    END IF
 END IF
        Print "End Record"
END LOOP
  Print Counter
```

16. Create a decision table for the following scenario, to give discount to post graduate students in paying tuition fees in an university. **2M**

- Married and good students get 60% discount.
- For Married students without good marks, they get 25% discount.
- For good students without Married, they get 50% discount.

17. Draw the decision tree for the given scenario and suggest your investment policy. **3M**

There is a 0.65 probability of no growth in the investment climate and 0.35 probability of rapid growth. The payoffs are $500 for a bond investment in a no-growth state, $100 for a bond investment in a rapid-growth state, -$200 for a stock investment in a no-growth state, and a $1100 payoff for a stock investment in a rapid-growth state.

18. Draw the state diagram for the states that a door goes through during its lifetime. **3M**

The door can be in one of three states: "Opened", "Closed" or "Locked". It can respond to the events Open, Close, Lock and Unlock. Notice that not all events are valid in all states; for example, if a door is opened, you cannot lock it until you close it.

19. Draw the timeline chart for organizing an international conference in your university. (Assume time limit is one academic year) **4M**

20. Draw an activity diagram to create a document in Microsoft word. **4M**

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FIRST SEMESTER 2012- 2013

Test-II (Open Book)

Course Code: BITS C461 **IV YEAR** **Date: 12.12.2012**
Course Title: Software Engineering **Max Marks: 20**
Duration: 50 minutes **Weightage: 20%**

Note: Only prescribed text book and handwritten class notes are allowed.

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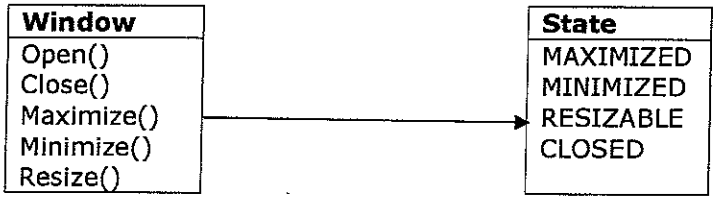
1. Draw the flow graph for the pseudo code given below and find the cyclomatic complexity. **4M**

```
i := 2
while (i is less than or equal to n) do
        j := i - 1
    while ((j is greater than or equal to 1) and (A[j] is greater than A[j+1])) do
          temp := A[j]
          A[j] := A[j+1]
           A[j+1] := temp
         j := j-1
   end while
    i := i + 1
end while
```

2. Draw the state diagram for the lifecycle of a Window. **3M**



Using the buttons in the upper right corner, users can change the size and location of the window.

3. A whole seller has three commodities to sell and has three types of customers. The discount is given as per the following rules:

(i) For Govt. orders, 15% discount is given irrespective of the value of the order.

(ii) For orders of more than Rs. 20,000 an agent gets a discount of 20% and the retailer 15% respectively.

(iii) For orders of value between Rs. 10,000 and Rs, 20,000 agent gets discount of 15% and the retailer gets 10%.

(iv) For order of value less than Rs. 10,000 the agent and retailer get discount of 10% and 5% respectively.

The above rules do not apply to furniture items. However, in case of furniture items, flat rate of 10% discount is admissible to all type of customers. Draw a decision table. **5M**

4. The owner of the Snow Fun Ski Resort wants to decide how the resort should be run in the coming winter season. The resort's profits for this year's skiing season will depend on the amount of snowfall during the winter. On the basis of prior experience, the probability distribution of snowfall and the resulting profit is summarized below:

Amount of snow	Probability	Profit
More than 40 inches	0.4	$120,000
20-40 inches	0.2	$40,000
~~More~~ than ~~40~~ inches	0.4	$40,000

less 20

The owner has recently received an offer from a larger hotel chain to operate the resort for the winter, guaranteeing a $45,000 profit for the season. The owner is also considering leasing snowmaking equipment for the season. If the equipment is leased, the resort will be able to operate full time, regardless of the amount of natural snowfall. If the owner decides to use snowmakers to supplement the natural snowfall, the profit for the season will be $120,000 minus the cost of leasing and operating the snowmaking equipment. The leasing cost will be about $12,000 per season, regardless of how much it is used. The operating cost will be $10,000 if the natural snowfall is more than 40 inches, $50,000 if it is between 20 and 40 inches, and $90,000 if it is less than 20 inches.

Draw the decision tree and suggest the best option to the owner. **6M**

5. Draw the time line chart for the data given below in manufacturing a car. **2M**

	A	B	C
1	**Model**	**Start**	**End**
2	A	1901	1921
3	B	1916	1936
4	C	1931	1951
5	D	1946	1966
6	E	1961	1981
7	F	1976	1996
8	G	1991	2011

BITS PILANI, DUBAI CAMPUS Test-1

FIRST SEMESTER 2012- 2013

Course Code: BITS C461 **IV YEAR** **Date: 24.10.2012**
Course Title: Software Engineering **Max Marks: 25**
Duration: 50 minutes **Weightage: 25%**

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1. What characteristics differentiates Web apps from other software. (Any 4) **2M**
2. Explain incremental process model with diagram. **5M**
3. Mention any two agile process models. **1M**
4. State any two core principles of Software engineering for process and practice. **1M**
5. Draw use case diagram for Payroll processing system. The employee details and department details are stored in a database. The basic pay for each employee is obtained from the department and processed by controllers. The attributes such as HRA, DA, TA, loan arrears for each employee is used for calculating the net pay for each employee. The controller process all the details and then provides a salary report to employees. **5M**
6. Draw activity diagram for the given scenario: **6M**

    a. A salesperson calls the client and sets up an appointment.
    b. If the appointment is onsite (in the consulting firm's office), corporate technicians prepare conference room for a presentation.
    c. If the appointment is offsite (at the client's office), a consultant prepares a presentation on a laptop.
    d. The consultant and the salesperson meet with the client at the agreed-upon location and time.
    e. The salesperson follows up with a letter.
    f. If the meeting has resulted in a statement of a problem, the consultant create a proposal and sends it to the client.

7. Explain modularity with diagram. **2M**
8. Illustrate with diagram, layered architecture. **3M**

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FIRST SEMESTER 2012- 2013

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FIRST SEMESTER 2012- 2013

IV. YEAR

Course Code: BITS C461
Course Title: Software Engineering
Duration: 20 minutes

Quiz - 2

Date: 25.11.2012
Max Marks: 7
Weightage: 7%

Name: ..... **ID No:** .....

1. Mention any two important aspects of a software product. 1M

2. Draw the user interface design process. 1M

3. Draw the flow graph for the code given below and find cyclomatic complexity. 1.5M

```
public static Boolean isPrime(int n) {
    boolean prime = true;
    int i =2;
    while (i<n)     {
        if (n % i == 0) {
            prime = false; }
        i++; }
    return prime; }
```

4. _____address problems associated with the assignment of responsibility between objects and the manner in which communication is effected between objects. 1M

5. The requirements model contains 800 lines of code. The review uncovers 16 minor errors and 4 major errors. Find error density. 1M

6. Draw a decision table for the following example to calculate admission prices for a museum. In the example, children under 5 years of age are to be admitted free of charge, children 5 years and over but under 18 years are charged $8.00, adults 18 years and over but under 55 years of age are charged $12.00, unless they have a concession card, in which case they are charged the child price. Senior citizens, 55 years and over are charged only $6.00. 1.5M

BITS PILANI, DUBAI CAMPUS

FIRST SEMESTER 2012- 2013

Course Code: BITS C461 IV.YEAR Date: 03.10.2012
Course Title: Software Engineering Max Marks: 8
Duration: 20 minutes Weightage: 8%

Name: ..... **ID No:** .....

1. Design is a _____ software engineering activity 1M

2. State IEEE definition of software engineering. 1M

3. Mention any two key XP activities. 1M

4. Define pareto principle. 1M

5. CMMI stands for _____ 1M

6. Which paradigm assist the developer and other stake holders to better understand what is to be built when requirements are fuzzy. 1M

7. _____ model maintains the systematic stepwise approach suggested by the classic life cycle but incorporates it into an iterative framework that more realistically reflects the real world. 1M

8. What is cleanroom software engineering? 1M