Course Code: BITS C461   **IV YEAR**   Date: 07.06.2012 (AN)
Course Title: Software Engineering   Max Marks: 40
Duration: 3 hours   Weightage: 40 %

1. State IEEE definition of Software engineering.   2M

2. Explain waterfall model with diagram.   4M

3. What are the basic guidelines for conducting a collaborative requirements gathering meeting?   3M

4. With diagram explain modularity.   3M

5. Explain data flow architecture with diagram.   3M

6. What do we need to know about the environment as we begin User Interface design?   3M

7. What are the steps for bottom-up integration?   3M

8. Mention the features of SCM.   3M

9. Draw timeline chart to recruit faculty in your university.   3M

10. Draw an activity diagram for Electronic Prescription Service (EPS) scenario given below: 6M

The **Electronic Prescription Service** enables **prescribers** - such as general practitioners (GPs) to send prescriptions electronically to a **dispenser** (such as a pharmacy) of the patient's choice. The access to EPS is controlled through the use of the **Smartcard** having user's name, photograph and unique identity number printed on, and with embedded smart chip. The Smartcard gives individual users different levels of access depending on their role. **Prescriber** logs onto the clinical system using their Smartcard and passcode, chooses medication or medical appliance for the patient, adds prescribing endorsements where required, and applies electronic signature to authorize the electronic prescription. Electronic prescription is transmitted to the EPS. Prescription token is printed where required. Authorized person hands prescription token to patient where necessary. A **dispenser** (or dispensing contractor) is any organization that dispenses primary care prescriptions to patients. Dispenser should record the status of each of the prescription items as one of the 'dispensed', 'not dispensed', 'owing' or 'partial'. In order to complete the dispensing process the whole prescription has to be completed, meaning that all prescribed items must be marked as either 'dispensed' or 'not dispensed'. Some clinical systems will automatically record the status of dispensed items. If dispensing process is complete, dispenser should send **dispense notification** to the Electronic Prescription Service. The message informs the EPS which medication has/has not been supplied to the patient. A schedule will be issued for pharmacists to follow as to when to submit the electronic **reimbursement endorsement** message. The electronic reimbursement endorsement message can only be sent once the dispense notification message has been sent for the electronic prescription. To support the reimbursement claim process, the EPS will allow dispensers to electronically submit **reimbursement endorsement** messages to the **reimbursement agency** for the dispensed electronic prescriptions so that the reimbursement agency can make a payment.

11. Draw the flow graph and find cyclomatic complexity using 3 different methods for the code given below.

3M

```c
#include<stdio.h>
#include<conio.h>
void main()
{
  int a,b,c;
  printf("Enter the value of a:");
  scanf("%d",&a);
  printf("\nEnter the value of b:");
  scanf("%d",&b);
  printf("\nEnter the value of c:");
  scanf("%d",&c);
  if(a>b)
  {if(a>c)
  printf("a is largest");
  else
  printf("c is largest");}
  else
  if(b>c)
  printf("b is largest");
  else
  printf("c is largest");
  getch();
}
```

12. For the decision tree given below should you develop a new product or consolidate?   4M
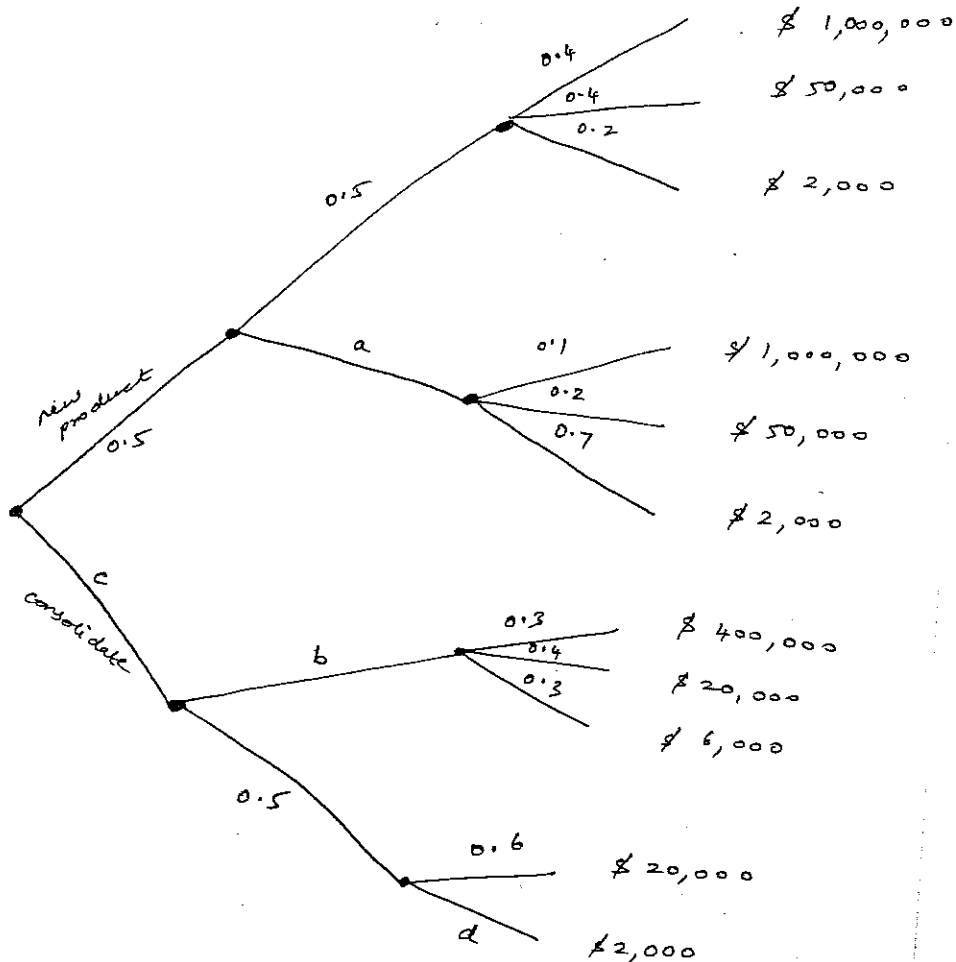
BITS PILANI, DUBAI CAMPUS
SECOND SEMESTER 2011- 2012
Test-II (Open Book)

Course Code: BITS C461   **IV YEAR**   Date: 30.04.2012

Course Title: Software Engineering   Max Marks: 20

Duration: 50 minutes   Weightage: 20 %

1. Define the criteria to assess independence.   2M

2. Draw the decision table for the scenario given below: Company X sells merchandise to wholesale and retail outlets. Wholesale customers receive a two percent discount on all orders. The company also encourages both wholesale and retail customers to pay cash on delivery by offering a two percent discount for this method of payment. Another two percent discount is given on orders of 50 or more units. Each column represents a certain type of order.   4M

3. Draw a swim lane diagram to show student registration.   3M

4. Draw a sequence diagram to show how **Facebook** (FB) user could be authenticated in a web application to allow access to his/her FB resources. Facebook uses **OAuth 2.0** protocol framework which enables web application (called "client"), which is usually not the FB resource owner but is acting on the FB user's behalf, to request access to resources controlled by the FB user and hosted by the FB server. Instead of using the FB user credentials to access protected resources, the web application obtains an access token. Web application should be registered by Facebook to have an application ID (client_id) and secret (client_secret). When request to some protected Facebook resources is received, web browser ("user agent") is redirected to Facebook's authorization server with application ID and the URL the user should be redirected back to after the authorization process. User receives back Request for Permission form. If the user authorizes the application to get his/her data, Facebook authorization server redirects back to the URI that was specified before together with authorization code ("verification string"). The authorization code can be exchanged by web application for an OAuth access token.   5M

5. Draw the flow graph for the code given below, find the cyclomatic complexity and independent program paths.   6M

```
void foo (float y, float a *, int n)
{ float x = sin (y) ;
if (x > 0.01)
z = tan (x) ;
elsez = cos (x) ;
for (int i = 0 ; i < x ; + + i) {
a[i] = a[i] * z ;
Cout < < a [i] ;}
```

BITS PILANI, DUBAI CAMPUS
SECOND SEMESTER 2011- 2012
Test-I (Closed Book)

Course Code: BITS C461   **IV YEAR**   Date: 12.03.2012
Course Title: Software Engineering   Max Marks: 25
Duration: 50 minutes   Weightage: 25 %

1. Explain software failure rate curve with the help of a diagram.   2M

2. With the help of diagram explain Prototyping paradigm.   5M

3. Draw an activity diagram for **online shopping**. Online customer can browse or search items, view specific item, add it to shopping cart, view and update shopping cart, checkout. User can view shopping cart at any time. Checkout is assumed to include user registration and login.   6M

4. Draw a UML Class Diagram for ATM where the bank customer can withdraw cash from an account, transfer funds between accounts, deposit funds to an account or make a balance inquiry of any account linked to the card. Also consider alternate flow of events like invalid PIN, ATM card incompatible, amount exceeds withdrawal limit, insufficient fund.   6M

5. **Hospital Reception** subsystem or module supports some of the many job duties of hospital receptionist. Receptionist schedules patient's appointments and admission to the hospital, collects information from patient upon patient's arrival and/or by phone. For the patient that will stay in the hospital (inpatient) s/he should have a bed allotted in a ward. Receptionists might also receive patient's payments, record them in a database and provide receipts, file insurance claims and medical reports. Draw a UML use case diagram for the above scenario.   6M

BITS PILANI, DUBAI CAMPUS
SECOND SEMESTER 2011- 2012

Course Code: BITS C461   IV.YEAR   Date: 14.05.2012
Course Title: Software Engineering   Quiz - II   Max Marks: 7
Duration: 20 minutes   Weightage: 7%

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

1. List any two ISO 9126 Quality factors.   1M

2. CBSE stands for _____ and it emphasizes _____   2M

3. Draw the layers of the SCM process.   1M

4. Draw the decision tree for the following scenario.   3M

   You are the Project Manager for facilities upgrade project. You need to budget communications services for the new building. You contacted two vendors, but both vendors told you they have major upgrade projects underway. Until they finish installing their new fiber optics they cannot give you the service you need.

   You believe there is a 40% chance that Spirit will have the service capability when you need it and a 60% chance that MCY will. Spirit says there is a 70% chance they can deliver the service for $50,000, otherwise it will cost $100,000 because of extra equipment.

   MCY has three ways they can try to get service to you. There is a 40% chance service will cost $50,000, a 30% chance it will cost $100,000. Otherwise it will cost $70,000.

   What is the expected value you should use in your preliminary budget?

BITS PILANI, DUBAI CAMPUS
SECOND SEMESTER 2011- 2012

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

IV.YEAR

Quiz - 1

Date: 27.02.2012
Max Marks: 8
Weightage: 8%

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

1. List the task sets in software engineering action. 1M

2. Which pattern defines the sequence of framework activities that occurs within the process. Give two examples. 2M

3. CMM stands for _____. 1M

4. Which paradigm will be appropriate for the following
   "Customer has a need, but not able to state his requirements clearly in detail" 1M

5. _____ manages the effects of change throughout the software process. 1M

6. How will you reduce software deterioration? 1M

7. _____ is the variation of Formal methods model. 1M