END SEM. EXAMINATION MAY, 2013

COE-411: COMPUTER COMMUNICATION & ELECTRONIC SWITCHING

Time: 3:00 hrs. Max. Marks: 70

Note: Attempt any five questions. All questions carry equal marks. Assume any missing data.

1. [a] Compare ISO-OSI Reference Model with TCP/IP Model. Explain function of each layer of both model with example.

   [b] (i) Compare Guided Media with Unguided Media.
   (ii) State advantage of optical fiber cable over co-axial and twisted pair cable.

2. [a] Compare pure Aloha and slotted Aloha protocol. Also show how throughput of slotted Aloha is better than pure Aloha.

   [b] Measurement of slotted ALOHA channel with an infinite number of user, show that 10% of the slots are idle;
   (a) What is the channel load, G?
   (b) What is the throughput?
   (c) Is the channel underloaded or overloaded?

   Or

   [b] A slotted ALOHA network transmits 200 – bit frames using a shared channel with a 200 kbps bandwidth, find the throughput if the system (all stations together)produces
   (i) 1000 frames per second
   (ii) 500 frames per second

3. [a] (i) Compare and contrast Stop-and-Wait ARQ Protocol with Selective-Repeat and Go-Back-N ARQ Protocol.
   (ii) A system uses the stop-and waits ARQ Protocol. If each pack carries 100 bits of data, how long does it take to send 1 million bits of data if tree distance between the sender and receiver is 5000 km and the prorogation speed is $2x10^8$ m?

   [b] Compare in details with example TCP with UDP?

4. [a] (i) Explain in details architecture of an ATM network.
   (ii) Explain Virtual circuit, virtual Path, UNI, NNI, VCI, VPI with reference to ATM.

   [b] (i) Describe in brief the function of various layers of ATM.
   (ii) Describe in brief the function of ATM cell.

5. [a] Write the steps to compute the checksum in CRC code. Calculate CRC for the frame 110101011 and the generator polynomial $=x^4+x+1$. And also write the transmitted frame.

[b] (i) Explain MAC sub layer of standard Ethernet. Compare standard Ethernet, Fast Ethernet and Gigabit Ethernet.

(ii) Explain why collision is an issue in a random access protocol but not in controlled access or channelizing protocols. Compare and contrast CSMA/CD with CSMA/CA.

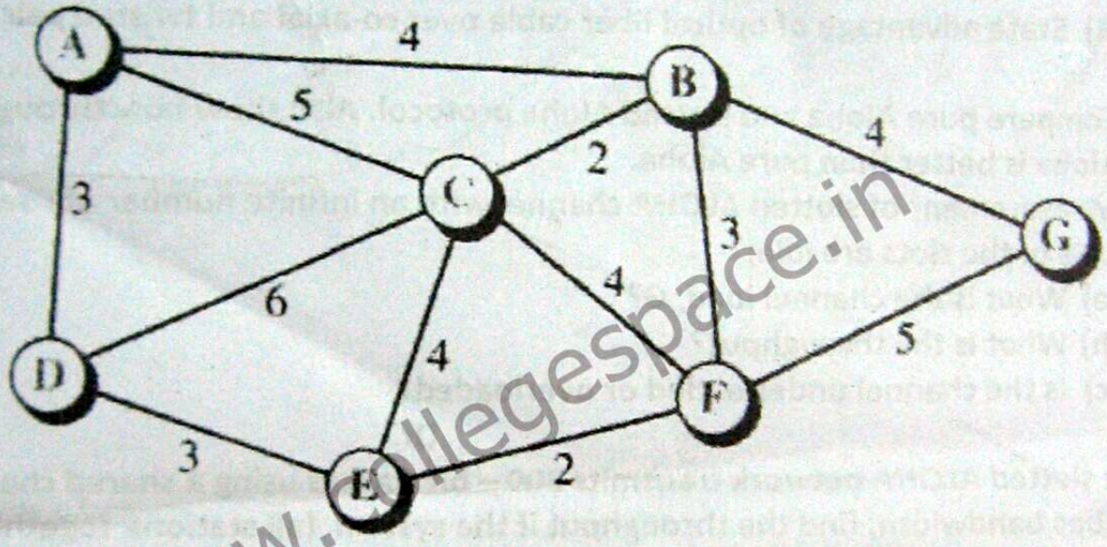
6. [a] (i)Compare different classes of IPv4 in terms of netid and hostid.

(ii) Find the netid and hosted of the following IP addresses. Indicate the class of IP addresses.

192.168.43.19, 237.34.14.1, 208.35.54.12 and 129.14.6.8

[b] (i) Use Dijkstra's algorithm to find the shortest path tree and forwarding table for node A in the figure below.

(ii) Use Krushal algorithm to find minimum spanning tree for figure given below.



7. With reference to Network Security explain the following terms.

[a] Digital Signature

[b] PGP

[c] Firewalls

[d] SSL

[e] Certification Authority (CA)

[f] Hash Algorithm

[g] Cyber Law

8. Write short notes on any four:

(a) Symmetric Key Cryptography vs Asymmetric Key Cryptography

(b) IPv4 vs IPv6

(c) Compare different Network Topologies

(d) Leaky Bucket algorithm

(e) Belman-Ford Routing Algorithm

(f) Switching Technique

Roll No. 295/CO/09 Date: .....

B.Tech(Computer Engineering) 8th Semester
End Semester Examination May 2013
COE – 412 Software Engineering

Time – 3 hours Max. marks – 70

Note : Attempt total five questions. Question No. 1 is compulsory.

Q1.(a) For the requirements given below draw context diagram and ER diagram.

It is proposed to automate the working of a shop dealing in computer software and hardware. The shop deals in the products of several companies and its spare parts. The company does not stock the items, instead it procures the item if some requirement comes from the customer. On getting the requirement the company delivers the product with necessary invoice. The customer can make the payment by cash or credit card. The shop normally gets a credit of one month from different companies. The shop clears the invoices of different companies on daily basis and makes the payment by cash or cheque. The shop also applies for AMC of hardware in various organization. In case it gets the contract, it submits the bills of AMC on quarterly basis for payment. It also maintains records of all the complaints attended by its staff which it gets from different organizations. This is to ensure that all complaints are attended properly by the staff. In case the shop gets AMC from the organization 2nd time onwards, it offers a discount of 20% to the organization. Repeat customers who make a purchase of more than 1 Lac rupees in a year are also offered some incentive. (10)

(b)Answer briefly following question

i) What is Cyclomatic Complexity? What are the different ways to calculate it?

ii) Which process model you will use for implementing a software for ATM Machine? Justify your answer.

iii) What are the three views of modeling? Which models are used to support these views?

iv) What is the significance of CMM? List all its levels.

v) List different types of coupling and Cohesion.

vi) List the Sections for writing SRS as per IEEE Standard 830

vii) Why Spiral model is not suitable for small size projects?

viii) Define an event. What are the different types of events that can occur in a system? Explain by giving suitable example. (1.5x8)

Q2. (a) What are the different stages of Requirement Engineering? Explain in detail different requirement elicitation techniques. (9+3)

(b) Write a note on Non Functional requirements.

Q3.(a) What is the difference between verification and validation testing? Explain different types of verification testing techniques in detail.

(b) For the Control Flow graph shown in Fig.1 Calculate the Cyclomatic Complexity using different methods (7+5)

Q4. (a) By taking suitable example illustrate how you will calculate the critical path and the slack time for different activities.

OR

What are the different activities of Design? Explain.

(b)Write a note on State Transition Diagram.

P.T.O.

(c) Draw the decision table for the specifications given below:

NDPL computes the monthly bill of its customers as per following details: If monthly consumption is less than equal to 300 units and load type is residential, calculations are done at the rate of Rs.2.00/unit. In case of commercial type of load, rate of Rs. 3.50/unit is used. If monthly consumptions is greater than 300 units and less than equal to 400 units, rate of Rs. 2.50/unit is used for units above 300 units for residential load. In case of commercial load, for consumption greater than 300 units, rate of Rs. 5/unit is charged for consumption above 300 units and less than equal to 400 units. For monthly consumption greater than 400 units for residential load, rate of Rs. 3.00/unit is charged for consumption above 400 units. Additionally a fixed charge of Rs 200 is also charged on total value. In case of commercial load a surcharge of 3% is charged on total value for consumption greater than 500 units per month.

For the above specification draw the decision table. (4+4+4)

Q5. (a) What are the different types of relationships supported by Use Case Diagram? Explain.

(b) Explain in detail any one cost estimation model discussed in the class.

(c)Consider a project with following data:

Number of External inputs with low complexity = 15
Number of External inputs with high complexity = 10
Number of External outputs with average complexity = 11
Number of External inquiries with high complexity = 13
Number of internal logical files with high complexity = 3
Number of internal logical files with low complexity = 3
Number of External Interface files with average complexity = 7

The system has a very high transaction rate, medium end user efficiency and supports several multiple communication protocols. Calculate the unadjusted as well as adjusted function points. (4+4+4)

Q6 (a)Explain in detail Boundary Value analysis testing technique.

(b) Consider a program to multiply and divide two numbers. The inputs may be two valid integers (say a and b) in the range [0,100]. Generate Boundary Value analysis test cases. (6 +6)

Q7. Write short notes on any two: (a) Configuration Management (b) Software Metrics (c) Deriving Structure Chart from SRS (d) CMM

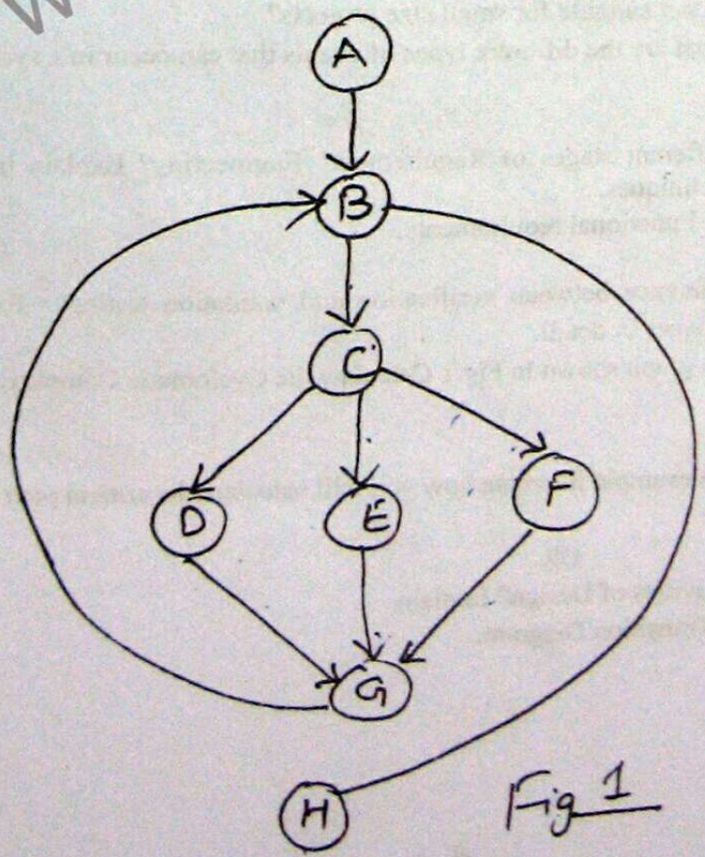


Fig 1

Roll No. 295/10/09 No. of Pages: 1 Date: -05-2013

END SEMESTER EXAMINATION, MAY.-2013

VIII Sem. BE (COE)

COE-413: Expert System

Time: 3:00 Hrs. **Max. Marks: 70**

*Note: Attempt any **FIVE** questions. All questions carry **EQUAL** marks*
*Question no. **six** is compulsory*

1. What is a Frame and why it is used? Draw a frame system for the institute in which you are studying. Consider divisions, sections, offices, classrooms laboratories, facilities and other schemes etc. **[14]**

2. a) Explain the structure of an Expert System with the help of a block diagram. **[8]**

   b) Describe the properties of Expert Systems. **[6]**

3. a) Explain the concept of Knowledge Representation in expert systems. **[10]**

   b) Describe real life applications where expert systems have been used. **[4]**

4. Explain the process of Knowledge Acquisition in Expert Systems. **[14]**

5. a) What is Heuristic technique? How heuristic functions are used to write a program? Give example. **[8]**

   b) Explain the difference between Data Processing and Knowledge Engineering. **[6]**

6. Write short notes on any ***four*** of the following: **[14]**
   a) Inference
   b) Production System
   c) Control Strategy
   d) Predicate Calculus
   e) Knowledge