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VIII SEMESTER

B.E. (COE)

END SEMESTER EXAMINATION, May-2014

COE-411: COMPUTER COMMUNICATION & ELECTRONIC SWITCHING

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

Note: *Attempt ANY FIVE questions.*
All questions carry equal marks.
Assume suitable missing data, if any

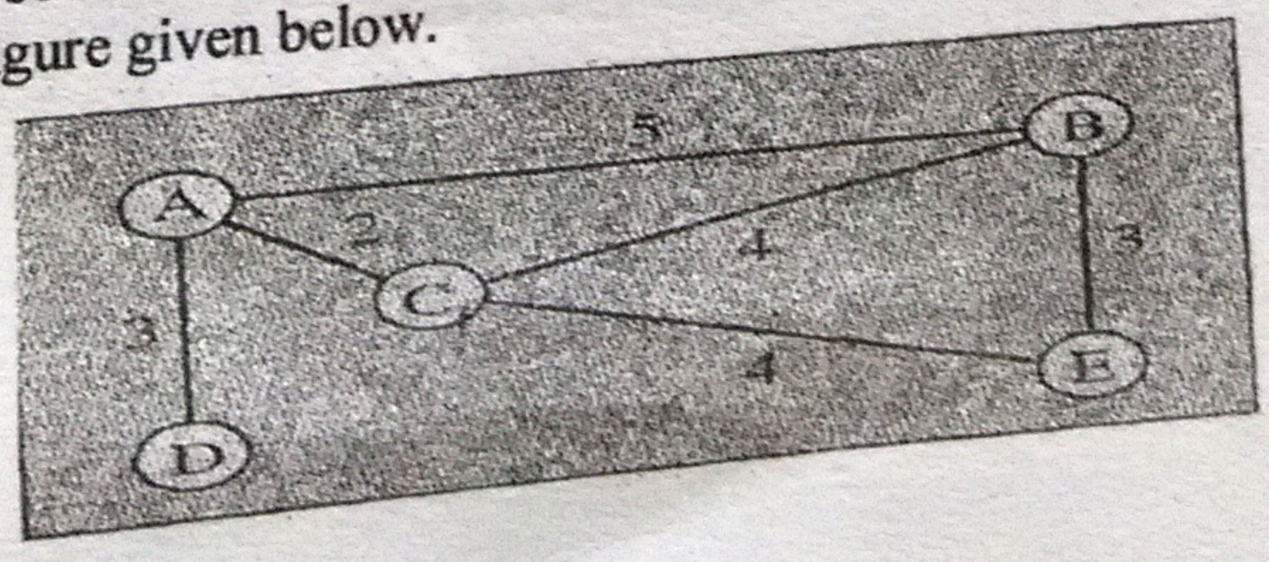
1. **[a]** (i) Compare CSMA with CSMA /CD. Explain with example.
(ii) Explain the working of sliding window protocol.
[b] (i) Compare Pure ALOHA with Slotted ALOHA.
(ii) One hundred stations on a pure ALOHA network share a 1-Mbps channel. If frames are 1000 bits long, find the throughput if each station is sending 10 frames per second.

2. **[a]** Compare IPv4 and IPv6. Compare five classes of IPv4.
[b] An organization is granted the block 130.56.0/16. The administrator wants to create 1024 subnets.
i. Find the subnet mask.
ii. Find the number of addresses in each subnet.
iii. Find the first and last addresses in subnet 1.
iv. Find the first and last addresses in subnet 1024.

OR

An ISP is granted a block of addresses starting with 150.80.0.0/16. The ISP wants to distribute these blocks to 2600 customers as follows.
(i) The first group has 200 medium-size businesses; each needs 16 addresses.
(ii) The second group has 400 small businesses; each needs 8 addresses.
(iii) The third group has 2000 households; each needs 4 addresses.
Design the sub blocks and give the slash notation for each sub block. Find out how many addresses are still available after these allocations.

3. **[a] (i)** Use Dijkstra Algorithm to find the shortest path tree and forwarding tree and forwarding table for node A in the following figure below.
(ii) Use Krushal algorithm to find the minimum spanning tree for figure given below.



Q4(a) what is the difference between White Box and Black Box Testing? Explain in detail different techniques used for White Box testing.

(b) Write a C program to calculate the roots of a quadratic equation. Calculate its Cyclomatic Complexity. (8+4)

Q5(a) Consider the C program given below

```
main()
{
        float  length, breadth, height;
        float  area, volume;
        scanf("%f%f%f", &length, &breadth, &height);
        volume = length*breadth*height;
        area =  3 *(length * breadth + breadth * height + height * length);
        printf("%f %f\n", volume, area);
}
```

Calculate the Halsteads Metrics for this program.

(b) Write a short note on structure chart. Illustrate by taking suitable example the steps to transform Level 1 DFD into structure chart. (5+7)

Q6.(a) A program reads three numbers A, B and C with a range[1,50] and prints the smallest number. Design test cases using Equivalence class partitioning method.

(b) Explain in detail Configuration Management. (6+3)

Q7. Write short notes on any three

(a) Boundary value Analysis

(b) Critical path method

(C) Different types of maintenance

(d) Inspection Process (4+4+4)

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Date: .....

B.E.(Computer Engineering) 8th Semester
End Semester Examination May 2014
COE – 412 Software Engineering

Time – 3 hours *Max. marks – 70*

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

Q1(A) Explain briefly:

(i) What is the difference between Include and Exclude dependency? Explain by giving suitable example.

(ii) Differentiate between Generalization and Aggregation. Explain by giving suitable example.

(iii) Differentiate between Verification testing and Validation Testing. List techniques for verification testing and Validation activities.

(iv) Explain different states of a bug in its life cycle.

(v) Explain Use Case Narrative

(vi) Define critical path, Test case, slack time, Test oracle and Stub (1.5 x 3 + 2.5 x 3)

(B) It is proposed to develop a portal for selling and renting of properties in different parts of country. The properties can be apartments, Floors, lands or private built up properties. Users can create account by registering at the portal. Once they register they are given login and password. Users can be registered users or Guests. Registered users can upload their properties for sale or rent after logging into their account. The portal also sends mails to registered users about prospective sellers/buyers in case the users opts for it. The users can specify the specifications of the property and can also upload their photos. The users registered or Guests can view the properties available for rent or sale. They can also search for upcoming new projects. The owner of the portal contacts different organizations to put advertisement on the portal. The companies can put advertisements for a specific period by paying nominal charges. The owner of the portal also contacts the construction companies for advertising their upcoming projects. The administrator of the owner from time to time generates reports about (i) Registered Users (ii) Revenue generated through advertisements during the specified period. The users can also give their feedback about the portal. The feed back can be viewed by the administrator in order to select good suggestions.

For the requirements specified above Draw

(iv) Context Diagram

(v) Level 1 DFD

(vi) Use case Diagram (3 + 4 +3)

Q2.(a) Explain in detail Quality characteristics of a good quality software.

(b) Explain in detail any method used for developing the functional view.

© How Use Case diagram can be used for elicitation of requirements. (5+5+2)

Q3 (a) Explain in detail Function Point Analysis as discussed in the class.

(b) A system has 12 external inputs, 24 external outputs, fields 30 different external queries, manages 4 internal logical files and interfaces with 6 different legacy systems(6 EIFs). All of theses data are of average complexity and overall system is relatively simple. Compute Function Points for the system.

(c) Define coupling and Cohesion. List different types of Coupling and Cohesion. (6+3+3)

replace it. What must the production quality level be to make a sampling plan economically acceptable (iii) list any two factors on which success of a sampling plan depends. (5)

2 (a) (i) Explain Average Outgoing Quality curve for a sampling plan with specific emphasis on AOQL. (ii) 'There is no relationship between the control limits and the specification limits', (true/false), give reason. (iii) The design specifications for a component are 100±0.5mm. Whereas the process report shows that process average is 99.9mm and standard deviation 0.18. Do these figures call for any action by anyone? **OR** (5)

Assuming that the life in hours of an electric bulb follows a normal distribution with mean of 2000 hours and standard deviation of 400 hours. Find the expected number of bulbs from a random sample of 2000 bulbs having life between 2600 and 2800 hours.

(b) Control chart for $\bar{\bar{X}}$ is to be maintained for a certain dimension of a component. The subgroup size is 4. After 20 subgroups it was found that $\sum\bar{X}$=825.60mm and $\sum R$=5.60mm. Compute the central line and control limits for $\bar{X}$ chart. If the specified dimension is 41.0±0.40mm and the process is in statistical control, can it meet the specification requirements? If not, determine the percentage of rejection. (d_2=2.059) (5)

3. Write short notes on **any five** of the following;
   i. Four principles of Agility
   ii. Double sampling plan
   iii. Run Sum test
   iv. Operating Characteristic curve
   v. Break even between sampling inspection and 100% inspection
   vi. Inspection procedure
   vii. Product inspection Vs process monitoring

(2x5)

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END SEMESTER EXAMINATION, MAY.-2014

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.
a) What are the features which distinguish an Expert System from a conventional computer system and a typical AI system? **[10]**

b) What is a Control Strategy; explain its uses with suitable example. **[4]**

2. What is a Semantic net and why it is used? Draw a Semantic net system for the building in which you are attending classes. Consider offices, classrooms, laboratories, library and other relevant schemes etc. **[14]**

3 Describe all the components of building an expert system with the help of a block diagram. **[14]**

4. **[4]**
a) Transform the following statements into symbolic form.
i. All employees earning Rs 10000 or more per month pay taxes.
ii. Some employees are sick today.
iii. No employee earns more than the president.
iv. All employees of Software Company are programmer.

b) Explain any six syntax of first order Predicate logic (FOPL) **[6]**

c) What are the limitations of Predicate Logic, Justify your answer **[4]**

5. What is Heuristic Technique? How Heuristic Functions are used to write a program? Give suitable example **[14]**

6. Write short notes on any *four* of the following: **[14]**
a) Knowledge Acquisition
b) Production System
c) Data processing Vs Knowledge Engineering
d) Predicate Logic
e) Inference

N