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VIII SEMESTER **B.E. (COE)**

B.E. END SEM. EXAMINATION, MAY-2015

COE-411 : Computer Communication and Electronics Switching

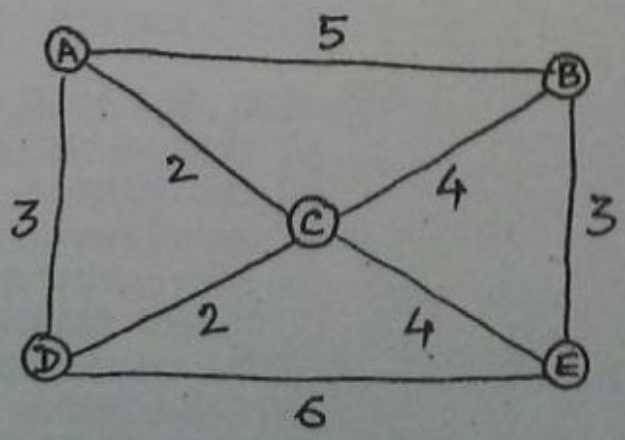
Time: 3.00 Hrs. **Max. Marks: 70**

Note: Answer any FIVE questions.

1. **[a]** (i) Explain the function of each layer of ISO-OSI Reference Model.
   (ii) Compare TCP/IP Model with ISO-OSI Reference Model.
   [b] (i) Compare in detail Guided Media with Unguided Media by taking examples of both media.
   (ii) Draw a Networking Layout of academic institute having 1 GBPS link from ISP, 7 Departments, 20 labs in each department, 200 Faculty Room, Library Block, Administration Block, 100 Class Room, 4 Boys Hostel, 2 Girls Hostel, 1 PG Hostel. What type of the media is used as the backbone in this academic institute? Show various IP Addressing, Media (Guided/Unguided), Server etc. used in this academic institute.

2. **[a]** (i) Compare Pure ALOHA with slotted ALOHA. Indicate the throughput of both.
   (ii) A pure ALOHA network transmits 200 bits frame on a shared channel of 200 kbps. What is the throughput if the system (all stations together) produces 500 frames per second?
   [b] (i) Explain Stop and Wait, Go-Back-N and Selective protocol.
   (ii) Compare Fast Ethernet with Gigabit Ethernet.

3. **[a]** (i) Explain in brief Distance Vector Routing and Link State Routing.
   (ii) Use Dijkstra's algorithm to find the shortest path, forwarding tree and forwarding table for node A in the following figure. Also use krushal algorithm to find minimum spanning tree for the following figure.



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[b] (i) Explain the concept of redundancy in error detection and correction. What are Cyclic Codes? What are the advantages of cyclic code

(iii)What is Cyclic Redundancy Check (CRC)? If data word is $x^2 + 1$ and the divisor is $x^3 + x^1 + 1$, what will be codeword (i.e Dataword + Remainder) in CRC encoder.

4. [a] (i)Compare IPv4 Class A, Class B, Class C, Class D. Find the class of following address :

(a) 118.35.2.12 (b) 241.8.10.32 (c) 212.52.1.1

(d) 129.12.6.8 (e) 225.5.21.5

(ii)What is classless Addressing with respect to IPv4? What are the advantages?

[b] (i) Compare IPv4 and IPv6.

(ii) An organization is granted the block 16.0.0.0/8. The administrator wants to create 500 fixed-length subnet

(a) Find the subnet mask

(b) Find the number of address in each subnet

(c) Find the first and last address in subnet 1

(d) Find the first and last address in subnet 500.

5. [a] (i) Describe architecture of a ATM network

(ii) With reference to ATM explain Virtual Circuit, Virtual Path, VCI, VPI, NNI and UNI with example.

[b] List various layers of ATM and explain function of each layer in brief.

6. [a] (i) Define following with respect to network security

Message Integrity, Authentication and Non repudiation

(ii) Explain the function of Firewall, Digital Signature and Certification Authority

[b] Compare **any two** of the following:

(I) Symmetric- key Cryptography with Asymmetric-key Cryptography

(II) http with https

(III) SSL with PGP

7. Write short notes on **any four** of the following:

(I) Compare TCP with UDP

(II) DES or RSA

(III) Cyber Law

(IV) ICMP or IGMP or BOOTP

(V) Network Simulator (NS2 or Glomosim)

(VI) Network topologies

(VII) Sliding Window Protocol

(VIII) IEEE 802 Standard.

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VIII SEMESTER BE (COE)

END SEMESTER EXAMINATION, May 2015

COE-412 Elective III Software Engineering

Time: 3 Hrs. Max. Marks: 70

Note: *First Question is Compulsory. Attempt ANY FOUR questions from the rest. Assume suitable missing data, if any.*

1. a. State any four software effort estimation techniques.
   b. Differentiate between functional and non- functional requirements.
   c. What is cohesion and name different types of cohesion.
   d. Differentiate between Delphi technique and Brainstorming.
   e. What are process specifications.
   f. What is risk exposure.
   g. What activities are part of project management process.
   h. Differentiate between Incremental Model and Prototype Model.
   i. What is Effort Adjustment Factor in FPA.
   j. Explain generalization with an example.
   k. Differentiate between alpha and beta testing (2x11)

2. a. Draw Context Diagram and write Event List for the following problem description. (6)
   A hotel has several rooms. Each room has unique room number, category and rate. A set of rooms is under hospitality manager who manages through a set of service employees. The hospitality manager is responsible for room service tasks. The charge of room services is added to final bill of the room. For each customer a unique id is assigned along with room number, customer's check–in and check-out date and time. Every room has status as empty, occupied or advance booking. When a customer is allocated a room, check-in date and time is recorded for that room. Customer name, address, telephone number are also recorded.
   b. Explain Capability Maturity Model. State how it is different from ISO. (6)

3. a. Explain COCOMO.
   The value of size of program in KLOC and different cost drivers are given and calculate the effort for three types of projects i.e. organic, semidetached, embedded using COCOMO.
   Size-350 KLOC, Complexity-0.95, Software Reliability-1.10, Use of Software Tools-0.81, Performance Requirement-0.75. (6)
   b. What are the different techniques used for scheduling a software project. Explain any two. (6)

4. a. Explain State Transition Diagram with an example. (6)
   b. Explain Data Dictionary and the importance of data dictionary. (6)

5. a. Consider a software module that accepts information about employees of an organization as per the following details – name, title, age, list of qualification, number of publications. The name must be 5 to 30 characters long and first character must be an alphabet. Title can be director, professor or registrar. Age must be between 22 years and 58 year. List of qualification can be B.Tech, M.Tech, Ph.D. Minimum one and maximum three qualifications can be included in the list. All fields except number of publication must be non-null. The module prints the report of employees in ascending order based on i) Title and ii) Number of publications.
   1) Derive the valid, invalid equivalence classes for the above module
   2) Identify the list of boundary values to be tested. Consider input as well as output conditions. (6)
   b. Explain different levels of testing. (6)

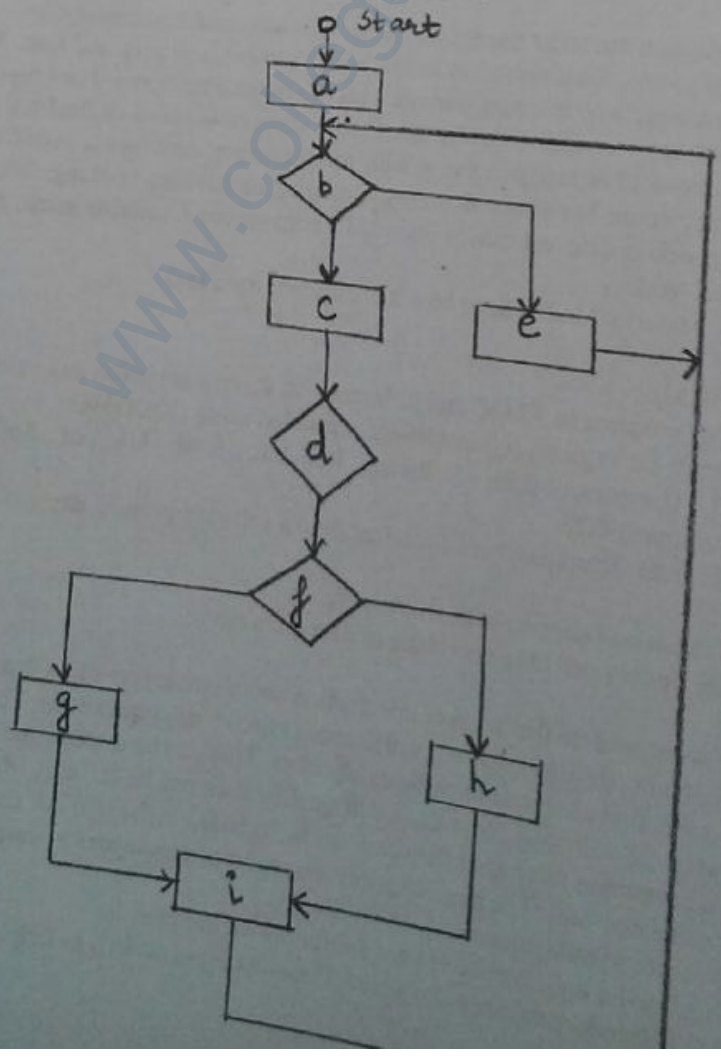
6. Write Short note on any two (2 X 6)

a) Use Case Diagram
b) Coupling and its types
c) Black Box Testing
d) Decision table and decision tree.

7. a. Draw activity graph and find critical path using Critical Path Method for the following activities (6)

Activity Number	Duration in weeks	Immediate predecessor
A	10	--
B	4	A
C	7	B
D	10	C
E	10	C,D
F	5	A
G	9	F
H	12	E,G

b. Convert the following flow chart to flow graph. Compute cyclomatic complexity and identify independent paths using Basis Path Testing method (6)



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END SEMESTER EXAMINATION, MAY.-2015

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 Semantic Net and why it is used? Draw a Semantic Net 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 control strategy 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 Rules
   b) Production System
   c) Frame
   d) Predicate Logic
   e) Knowledge