M. E. Comp. Sem I 13 Dec - 2012

Sub - NNFS. old

ws-Sept. 2012 (a) 142

Con. 7483–12.

BB–4307

(3 Hours) **[Total Marks : 100**

N. B. : (1) Question No. **1** is **compulsory**.
(2) Answer any **four** questions out of the remaining **six** questions.
(3) **Figures** to the **right** indicates **full** marks.

1. (a) Model the following as a fuzzy set using suitable membership function – "numbers close to 6". **6**
   (b) Determine all α-level sets and all strong α-level sets for the following fuzzy set. **6**
   $A = \{(1, 0{\cdot}2), (2, 0{\cdot}5), (3, 0{\cdot}8), (4, 1), (5, 0{\cdot}7), (6, 0{\cdot}3)\}$
   (c) Discuss different activation functions. **8**

2. Design a fuzzy controller to determine the wash time of a domestic washing machine. Assume that the inputs are dirt and grease on clothes. Use three descriptors for each input variable and five descriptors for output variable. Derive a set of rules for control action and defuzzification. The design should be supported by figures wherever possible. Clearly indicate that if the clothes are soiled to a large degree the wash time required will be more. **20**

3. (a) Draw and explain the flowchart of error back propagation training algorithm. **10**
   (b) List the concept of learning rules and state their properties such as single weight adjustment, type of learning, neuron characteristics, etc. **10**

4. (a) Implement the perceptron rule training using f(net) = sgn(net), c = 1, and the following data specifying initial weights w_1 and the two training pairs. **12**
   $w_1 = [0{\cdot}1\ 0]^t$, $x_1 = [2\ 1\ -1]^t$, $x_2 = [0\ -1\ -1]^t$ $d_1 = -1$; $d_2 = 1$.
   Repeat the training sequence until two correct responses in a row are achieved.
   (b) Explain with an example Mc Culloch Pitts neuron model. **8**

5. (a) State the concept of linearly and non-linearly separable pattern classification. **10**
   (b) What is competitive learning ? Explain winner take all learning rule and self organizing map with the help of an example. **10**

6. (a) Explain the architecture of Bidirectional Associative memory. How is storage and retrieval performed in BAM ? **10**
   (b) Describe the basic Hopfield model and give the theory of energy minimization. **10**

7. Write short notes on any **two** of the following :– **20**
   (a) Fuzzy knowledge based controller
   (b) Medical Diagnosis using neural networks
   (c) Character Recognition using EBPTA
   (d) Properties of Fuzzy Relations.

M.E. Comp. Sem I ~~(Rev)~~ ~~Nov.~~ 2012

EL-I. Sub- CNS. 13 Dec 12

4 : 2nd half.12-AM(g)

Con. 7466-12. **BB-4262**

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** from remaining **six** questions.
(3) Assume suitable **data** whenever **necessary**.

1. (a) Discuss in detail RSA algorithm, highlighting its computational aspects and security. 10
   (b) Compare and contrast attacks on digital signatures with attacks on crypto system. 10

2. (a) What is Kerberos ? Explain how it provides authenticated service ? 10
   (b) Briefly explain Deffie Hellman key exchange with an example. 10

3. (a) What is the role of Ticket Granting server in inter realm operations of Kerberos ? 10
   (b) Define S-box and mention the necessary condition for an S-box to be invertible. 10

4. (a) Describe the MD5 message digest algorithm with necessary block diagrams. 10
   (b) Explain Mental Poker protocol in detail. 10

5. (a) Briefly explain design principles of block cipher. 10
   (b) Explain Random ORACLE MODEL in detail. 10

6. (a) Describe Euler's and Chinese Remainder theorem. 10
   (b) Explain about the single round of DES algorithm. 10

7. Solve any **four** of the following :— 20
   (a) What is cryptanalysis and cryptography ?
   (b) What are the key principles of security ?
   (c) Compare stream cipher and block cipher with example.
   (d) Explain X·509 certificate format.
   (e) Explain different kinds of cryptanalysis attacks.

ME / CMPN / I (Old) 8/12/12
Network Protocols & Networking

ws-Con-2012

Con. 10555–12.

BB–3773

(3 Hours) **[Total Marks : 100**

N.B.: [1] Question No.1 is compulsory.
[2] Attempt any four out of the remaining six.

Q. 1 [A] Explain silly window syndrome. Explain Nagle's algorithm and Clark's solution? [10]

[B] An ISP is granted a block of addresses starting with 190.100.0.0/16. The ISP needs to distribute these addresses to three groups of customers as follows: [10]
1. The first group has 64 customers; each needs 256 addresses.
2. The second group has 128 customers; each needs 128 addresses.
3. The third group has 128 customers; each needs 64 addresses.
Design the subblocks and give the slash notation for each subblock. Find out how many addresses are still available after these allocations.

Q. 2 [A] Explain in detail how DNS offers a hierarchical naming scheme. [10]

[B] An ICMP message has arrived with the header as shown below: [10]
05 00 11 12 11 0B 03 02 (Hex) . Analyse the header.

Q. 3 [A] How does RIP work? Explain request and response messages, using RIP Version 2 format? [10]

[B] Compare the following : [10]
(i) ARP and RARP
(ii) IPv4 and IPv6.

Q. 4 [A] Compare SNMPv1 network management architecture with the SNMPv2? [10]

[B] A DNS client for IP address of *"chal.fhda. edu"*. Show query message and response with value of each field. [10]

Q. 5 [A] What is the basis of classification for the four types of links defined by OSPF? Why do OSPF message propagate faster than RIP massage? [10]

[B] What are commands and response defined by SMTP? [10]

Q/6 [A] Explain the TCP State Transition Diagram? [10]

[B] A host with IP address 130.23.43.20 and physical address 0xB23455102210 has a packet to send to another host with IP address 130.23.43.25 and physical address 0xA46EF45983AB. The two hosts are on the same Ethernet network. Show the ARP request and reply packets encapsulated in Ethernet frames. [10]

Q.7 Write short notes on [any four] [20]

[A] Layer 3 switching
[B] Filter logic in RMON
[C] MIME
[D] MPLS
[E] Socket programming (port no and application).

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3/12/12

M.E. Comp sem I old NID - 2012

Sub. - OOAD

157-p3-d-upq-SH KL12 A

Con. 7494–12.

BB–3770

(3 Hours) [Total Marks : 100

N.B. : (1) Question No. 1 is **compulsory**.
(2) Attempt any **four** questions out of remaining.
(3) Any **object oriented notations** may be used to **model** the system in your answers.

1. Read the following case study and answer the questions given below the case study. **20**

"A system is to be developed for maintaining attendance, the process of taking attendance currently is as follows : At the start of the academic session, the eligibility list for every class is taken out. For every subject the respective faculty takes the attendance in the attendance register. Defaulties list is prepared for every subject at the end of the semester. Theory and practical attendance are maintained separately. Theory is taken by a single faculty and practicals are conducted by more than one faculty."

(a) Draw use case diagram **4**
(b) Draw Activity diagram **4**
(c) Draw State Transition diagram **4**
(d) Draw Interaction diagram **4**
(e) Draw Class diagram **4**

2. (a) Explain the **major** elements of object model. **10**
(b) Explain the **minor** elements of object model. **10**

3. (a) Explain with example various relationships among objects. **10**
(b) Explain with example various relationships among classes. **10**

4. (a) Discuss all the five metrices for measuring quality of an abstraction. **10**
(b) Discuss with example multiple polymorphism and multiple inheritance. **10**

5. (a) Compare Rambaugh, Jocobson and Boock object oriented methodologies. **10**
(b) Explain with example abstract class, mete class and parameterized class. **10**

6. (a) Compare and constrast between macro and micro development processes. **10**
(b) Explain concurrancy ? How do you distinguish between heavy weight and light weight processes. **10**

7. (a) Compare and constrast between object oriented and non-object oriented methodologies. **10**
(b) How unit testing is conducted in object oriented development ? **10**

ME (CMPN - I (Old)
AC

Con. 9490–12. **BB–7926**

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question No. **1** is **compulsory.**
(2) Solve any **four** from remaining **six** questions.

Q1.	a. Explain the Asymptotic notation and its properties?	10
	b .What is recursion ? Explain the substitution and master method	10
Q2.	a .Explain the linear probing, Quadratic probing & double hashing with example.	10
	b. Explain Matrix-Chain multiplication problem of dynamic programming.	10
Q3.	a. What is an optimal Huffman code for the following set of frequencies, based on the first 8 Fibonacci numbers ? a:1 b:1 c:2 d:3 e:5 f:8 g:13 h:21	10
	b. Explain the Minimum Spanning Trees using Kruskal's algorithms.	10
Q4.	a. Explain the Single – Source Shortest Paths using the Bellman-Ford algorithm.	10
	b. Explain the Dijkstra's algorithm for Single –Source Shortest paths.	10
Q5.	a. Explain the All-Pairs Shortest Paths using Johnson's algorithm.	10
	b. Explain Maximum Flow network using the Ford-Fulkerson method.	10
Q6.	a. What is the sorting network and Explain the bitonic sorting and merging network.	10
	b. Explain the Chinese remainder theorem.	10
Q7.	a .Explain the RSA public-key cryptosystem.	10
	b. Explain the NP-completeness and the classes P and NP	10