

Con. 5708-11.

(REVISED COURSE)

BB-2065

(3 Hours)

[Total Marks : 100

N.B. A. Question No. 1 is **compulsory**.B. Answer any **four** questions out of the remaining six questions.C. Figures to the **right** indicate **full** marks.

1. A. Model the following as a fuzzy set using suitable membership function - "numbers close to 6". 06
- B. Determine all α -level sets and all strong α -level sets for the following fuzzy set.
 $A = \{(1, 0.2), (2, 0.5), (3, 0.8), (4, 1), (5, 0.7), (6, 0.3)\}$ 06
- C. Explain different activation functions. 08
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. Explain 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. Determine the weights after four steps of training for perceptron learning rule of a single neuron network starting with initial weights $w = [0 \ 0]^t$, inputs as $X_1 = [2 \ 2]^t$, $X_2 = [1 \ -2]^t$, $X_3 = [-2 \ 2]^t$, $X_4 = [-1 \ 1]^t$, $d_1 = 0$, $d_2 = 1$, $d_3 = 0$, $d_4 = 1$ and $c = 1$. 12
- B. Explain with an example Mc-Culloch Pitts neuron model. 08
5. A. State the concept of linearly and non-linearly separable pattern classification. 10
- B. Explain any four Defuzzification Methods with examples. 10
6. A. Explain the architecture of Bi-directional 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,

20/12/2011

ME COMPN sem-I (Re) NPN

Con. 6025-11.

(REVISED COURSE)

BB-2074

(3 Hours)

[Total Marks : 100

N.B. : (1) Question No. 1 is compulsory.(2) Answer any **four** out of remaining **six** questions.(3) Assume any **suitable** data wherever required but justify the **same**.

- Q. 1 (a) 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.
- (b) Explain TCP state transition diagram? 10
- Q. 2 (a) Explain Silly windows syndrome? How does Nagle's Algorithm solve this problem? What is Clark's problem? 10
- (b) What is the basis of classification for the four types of links defined by OSPF? Why do OSPF message propagate faster than RIP message? 10
- Q. 3 (a) Compare SNMPv1 network management architecture with the SNMPv2? 10
- (b) Explain ARP components diagrammatically. 10
- Q. 4 (a) An ICMP message has arrived with the header (in hexadecimal) : 05 03 11 12 11 0B 03 02 10
What is the type of message? What is the code? What is the purpose of the message? What is the value of the last 4 bytes? What do the last bytes signify?
- (b) Explain the MIB structure and explain how object can be defined? 10
- Q. 5 (a) What is fragmentation ? Explain with suitable example the concept of fragmentation? Explain what happen if fragment itself is fragmented/ 10
- (b) A DNS client for IP address of "chal.fhda.edu". Show query message and response with value of each field. 10
- Q. 6 (a) Compare POP3 and IMAP in detail? 10
- (b) What are commands and response defined by SMTP? 10
- Q.7 Write a short note on any four of the following : 20
- a) Filter logic in RMON
 - b) Layer 3 switching
 - c) IPv6
 - d) MIME
 - e) TFTP

10/12/11

(3 Hours)

[Total Marks : 100

N.B. : (1) Question No. 1 is compulsory.

(2) Solve any four questions out of the remaining six questions.

1. (a) What are the benefits and risks of object oriented development? (10M)
(b) Distinguish between object and class. (05M)
(c) What are the five attributes of a complex system? (05M)
 2. (a) Explain the various relationships among objects. (10M)
(b) Explain the various relationships among classes. (10M)
 3. (a) Define abstraction. Explain different types of abstraction. (10M)
(b) What do you understand by state, behavior and identity of an object? (10M)
 4. (a) Draw dynamic model for ticket reservation system (10M)
(b) What do you mean by nested state diagram? Explain with example. (10M)
 5. (a) Explain the micro development process. (10M)
(b) What do you understand by use-case analysis and analysis using CRC cards. (10M)
 6. (a) Explain the role of various team members involved in OO project development. (10M)
(b) What do you understand by Management and planning of OO projects. (10M)
 7. Write short notes on the following: (20M)
 - (a) OO Metrics
 - (b) Lightweight and heavyweight process
 - (c) Coupling and cohesion
 - (d) Multiple polymorphism
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- N.B. :** (1) Question No. 1 is **compulsory**.
(2) Attempt any **four** questions from remaining **six** questions.

1. (a) Discuss different parallel Computer Architectures. 10
(b) Explain set associative Cache Organization with example. 10
2. (a) What are the factors affecting performance of pipelined computers ? 10
(b) Explain Task Scheduling in multiprocessor system. 10
3. (a) What are the different 'performance enhancement methods' of SIMD array processor ? 10
(b) Discuss different vector optimization methods. 10
4. (a) Discuss 'Data Flow Graphs' with example. 10
(b) Write a detailed note on 'Interconnection networks' for SIMD array processor. 10
5. (a) What are the different hazards in a pipeline processor ? How are they detected and Resolved ? 10
(b) Explain virtual memory system with paged segments. 10
6. (a) Write a note on 'IO processor and IO channels ? 10
(b) For the Reservation table given below : 10
 - (i) List the set of forbidden latencies and collision vector.
 - (ii) Draw the state transition diagram showing all the cycles. Give all greedy cycles also
 - (iii) What is the minimum average latency of below pipeline ?
 - (iv) What is the maximum through put of the below pipeline ?

	1	2	3	4	5	6	7
S1	X						X
S2		X		X			
S3			X				
S4				X			X
S5		X			X	X	
S6			X			X	
S7	X	X					X

7. Write a note on any **two** of the following :—
- (a) Bus Arbitration Algorithm used in multiprocessor.
 - (b) Cube interconnection network.
 - (c) Parallel language features for vector processing.
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5/12/11

ME CMPN Sem-I

Algorithms & Complexity,
BB-2056

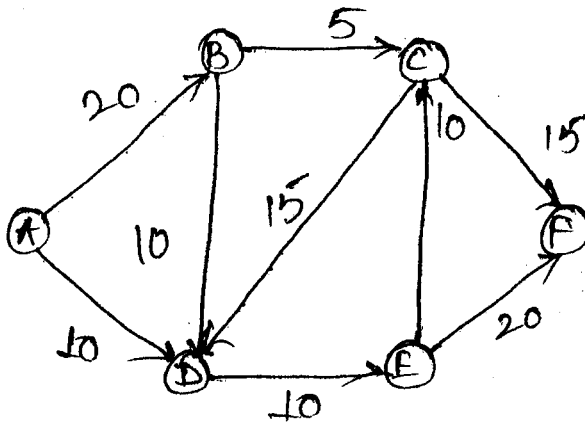
Con. 6400-11.

(3 Hours)

[Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory**. Solve any 4 questions from remaining 6 questions.
 (2) Assume **suitable** data wherever **necessary**.
 (3) **Figures** to the **right** indicate **full** marks.

- 1) a) Define NP Hard algorithms. Prove that travelling salesman problem is NP Hard. (10)
 b) State graph colouring (vertex colouring) problem. Prove that it is NPC. (10)
 2) a) Determine an LCS of (1,0,0,1,0,1,0,1) and (0,1,0,1,1,0,1,1,0) (10)
 b) Evaluate the maximum flow from node A to F for given graph. (10)



- 3) a) Explain Minimum spanning tree algorithms with example. (10)
 b) State an example and define problems of class P, NP, NPH, NPC and CO-NP (10)
 4) a) State the problem of graph 2 coloring. Write an algorithm for the same and evaluate its space and time complexity. (10)
 b) Find an optimal parenthesization for following matrix chain multiplication sequence. (10)
 (5, 10, 3, 12, 5, 50, 6)
 5) a) State vertex cover problem. Prove that it belongs to class NPC. Define NPC class. (10)
 b) Explain the working of Chinese remainder theorem. (10)
 6) a) Explain Assembly line scheduling problem. (10)
 b) State 0-1 knapsack problem. Prove that it is NPC. (10)
 7) Write a detail note on (any four): (20)
 a) RSA public key crypto system
 b) Bitonic Sorting Technique
 c) Dynamic programming
 d) Need of approximate of algorithms
 e) Various models of computation.