

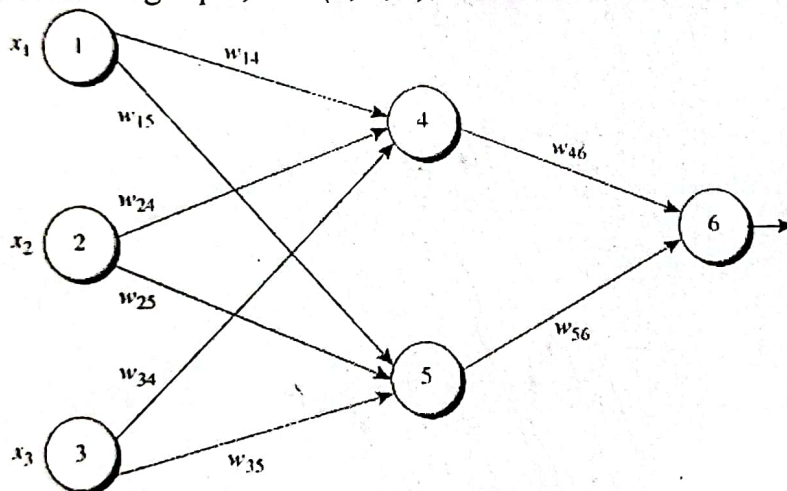
Institute of Information Technology
Jahangirnagar University
4th Year 1st Semester B.Sc. (Hons.) Final Examination 2019
Course Title: Artificial Intelligences & Neural Networks Course Code: IT 4101
Total Marks: 60 Time: 3 hours
Answer any five Questions
(Sequence must be maintained in answering each of the questions)

1.
 - a. Define artificial intelligence. Explain all four approaches. [3]
 - b. What can AI do today? Briefly explain all. [3]
 - c. Define the terms: agent, agent function. [2]
 - d. How agents interact with environments through sensors and actuators? Use a vacuum-cleaner world with just two locations to explain those interactions. [4]
2.
 - a. Write the PEAS description of the task environment for an (any two) [2x2=4]
 - I. Automated taxi,
 - II. Medical diagnosis system,
 - III. Part-picking robot, and
 - IV. Refinery controller
 - b. Briefly explain all the properties of task environments. [3]
 - c. Explain Min-Max algorithm and Alpha –beta pruning. [4]
 - d. What is the difference between agent program and agent function? [1]
3.
 - a. What are the drawbacks of table-driven agent? [1]
 - b. Write short notes on: [2x5=10]
 - I. Table-driven agents
 - II. Simple reflex agents
 - III. Model-based reflex agents
 - IV. Goal-based agents
 - v. Utility-based agents
 - c. Design a well-defined problem. [1]
4.
 - a. What is meant by problem solving agent? Briefly explain goal formulation and problem formulation. [3]
 - b. What an agent-design assumes its environment is, if it does not have any idea of it? [1]
 - c. Explain in short, all the components of a 'problem'. [2]
 - d. Write short notes on: [3x2=6]
 - I. 8-queens problem
 - II. Airline travel problem
 - III. The 8-puzzle
5.
 - a. What will be the final state of vacuum problem if it is sensor less? Explain with appropriate figure. [4]
 - b. What are three distinct problem types lead by partial environment information? [2]
 - c. What is meant by heuristic search strategy? What is the significance of heuristic function? [2]
 - d. Explain greedy best-first search. What are the properties of greedy best-first search? [4]

6. a. Write short notes on cross-validation. [2]
 b. What is Bootstrapping? What is the significance of 0.632 bootstrapping technique and Why it is so called? [4]
 c. The data tuples of table are sorted by decreasing probability value, as returned by a classifier. For each tuple, compute the values for the number of true positives (TP), false positives (FP), true negatives (TN), and false negatives (FN). Compute the true positive rate (TPR) and false positive rate (FPR). Plot the ROC curve for the data. [6]

Tuple #	Class	Probability
1	P	0.95
2	N	0.85
3	P	0.78
4	P	0.66
5	N	0.60
6	P	0.55
7	N	0.53
8	N	0.52
9	N	0.51
10	P	0.40

7. Figure shows a multilayer feed-forward neural network. Let the learning rate be 0.9. [4x3=12]
 The initial weight and bias values of the network are given in Table, along with the first training tuple, $X = (1, 0, 1)$, with a class label of $y=1$.



Initial Input, Weight, and Bias Values

x_1	x_2	x_3	w_{14}	w_{15}	w_{24}	w_{25}	w_{34}	w_{35}	w_{46}	w_{56}	θ_4	θ_5
1	0	1	0.2	-0.3	0.4	0.1	-0.5	0.2	-0.3	-0.2	-0.4	0.2

Find out the following:

- (a) Net Input and Output. (b) Error at Each Node (c) Weight and (d) Bias Updating

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Course Title: Management Information System Course Code: IT 4105

Total Marks: 60 Time: 3 hours

Answer any five Questions

(Sequence must be maintained in answering each of the questions)

1. a) What do you mean by 'information' and 'information system'? Why is an information system so essential for running and managing a business today? 4
b) List some features of a useful system. What are the major challenges to build and use an information system? 4
c) What are the challenges posed by strategic information systems and how should they be addressed? 4
2. a) If an organization determines that it needs an information system, what methods can it use to acquire that information system? Describe at least three and the advantages of each. 5
b) How can the structure of MIS be understood using output from Transaction Processing System (TPS)? 3
c) Give the conceptual Model of a Typical CRM system and give main challenges being faced by CRM. 4
3. a) What is cloud computing and how do you think its developments could impact businesses? 3
b) What additional complexities are faced in global supply chains? How does the Internet help in managing global supply chains? 1+2
c) How does grid computing works? How does a business firm benefited by using grid computing. 1+2
d) What does an ERP system do for an organization? Is using ERP a good method for gaining competitive advantage? 3
4. a) What are the principal tools and technologies for accessing information from database to improve business performance and decision making? 4
b) Describe the organizational structure of a hospital indicating the various operations essential for MIS. 5
c) What does a large distributed database present in terms of security problems? 3
5. a) How are RFID systems used in inventory control and supply chain management? 3
b) Discuss why information systems and networks are vulnerable to security threats. 3
c) Give one Example to show how MIS is applied to Service sector like Airlines, Banking etc. 3
d) What qualities of object-oriented development make this method especially suitable for Internet applications? 3
6. a) What are the points to be considered for successful implementation of knowledge management? 3
b) What are the major types of knowledge work systems and how do they provide value for firms? 4
c) Is a knowledge management system the same as an expert system? Explain. 3
d) What are the ultimate purposes of spoofing and sniffing? 2
7. a) Illustrate three levels of an MIS. How does MIS differ from TPS? 3
b) List the components of MIS. Briefly explain them. 4
c) Differentiate between structured methodologies and object-oriented development for modeling and designing an information system. 3
d) Write down the difference between push-based model and pull-based model of supply chain management system. 2