



MACHAKOS UNIVERSITY

University Examination for 2019/2020

SCHOOL OF ENGINEERING AND INFORMATION TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FOURTH YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO411: NEURAL NETWORKS

DATE: 21/1/2021

TIME: 2:00 – 4:00 PM

INSTRUCTIONS:

Answer question **ONE** and **Any** other **Two** among the four selective questions

QUESTION ONE (COMPULSORY)

- a) Compare and contrast neural networks and human brain (8 marks)
- b) Explain any three functions used in neural networks (6 marks)
- c) Explain any three learning rules in neural networks (6 marks)
- d) Explain any three tools for modelling a neural network problem (6 marks)
- e) Model a rain prediction using neural network (6 marks)

QUESTION TWO (20 MARKS)

- a) Compare and contrast supervised and unsupervised learning method (8 marks)
- b) State any five importance of studying ANN (5 marks)
- c) Describe the neural network task of classification using a typical example

QUESTION THREE (20 MARKS)

- a) Using a typical example, explain the application of ANN in weather prediction (7 marks)
- b) Discuss the functions of the following neural model (9 marks)
 - i. receptors
 - ii. effectors
 - iii. neural net (brain)
- c) State any four properties and capabilities of Neural Networks (4 marks)

QUESTION FOUR (20 MARKS)

- a) List any four ANN topologies (4 marks)
- b) Draw a neural network model according to *McCulloch-Pitts Neuron* (6 marks)
- c) Describe the applications of Neural Networks in robotics (10 marks)

QUESTION FIVE (20 MARKS)

- a) Describe any three neural network learning algorithms (9 marks)
- b) Using typical examples, demonstrate how any three logic gates can be used in modelling neural network (9 marks)
- c) Define neural networks (2 marks)