

V11 SEMESTER BTECH. (E & C) DEGREE END SEMESTER EXAMINATION MARCH 2022

SUBJECT: Computational Intelligence and Environmental Sustainability (ECE -4308)

TIME: 75 minutes

MAX. MARKS: 20M

Instructions to candidates

- Answer **ALL** questions.
- Missing data may be suitably assumed.

Q. No.	Questions	Μ
1A.	Discuss the limitation of standard Particle Swarm Optimization algorithm? Examine ScPSO hybrid approach by hybridizing Scout bee phase into standard PSO to upgrade its performance	5M
1B.	Investigate the traditional technique for municipal solid waste disposal and limitations of traditional waste characterization techniques in most developing countries? Suggest ANN modelling approach to address the issue with classical models to the intelligent models.	3М
1C.	Formulate Computational Intelligence based in time series prediction model with an example using feed forward neural network model architecture. Also discuss details regarding number of inputs, hidden and output neurons, activation function in each layer and select hybrid ANN-PSO training algorithm.	2M
2A.	Using back propagation network, find new weight W11 from X1 to Z1 for the network shown in Figure Q2A. It is presented with the input pattern [-0,1] and the target output is 1. Use learning rate α = 0.25 and binary sigmoidal activation function.	5M

	Develop the rainfall forecasting model using artificial neural network approach	
2B.	by considering historical hydrometeorological data and elaborate on need of	3M
	hybrid approach.	
	Suppose a single perceptron with sign activation function is represented by	
2C.	weight vector $[0.4, -0.3, 0.1]$ and a bias $\Theta = 0$. If the input vector to the perceptron	2M
	is $x = [0.2 \ 0.6 \ 0.5]$, then find the output of the perceptron.	