BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BTECH/BARCH **SEMESTER : V**
BRANCH: ECE/EEE/MECH/PIE/ARCH **SESSION : MO/2023**

SUBJECT: IT361 BASICS OF INTELLIGENT COMPUTING

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	Define Artificial Intelligence. Suggest one application of artificial intelligence (AI) in each of the following indicating the preceptor, environment, actuator, and performance measure- i) housekeeping ii)public transport	[5]	1	3
Q.1(b)	Illustrate depth first search using a suitable example. Compare the performance of DFS and BFS search	[5]	1	2
Q.2(a)	Write about the steps of genetic algorithm. Perform the intersection, union, and negation fuzzy operation for given fuzzy set A = {(0.95, 1) (0.8, 2) (0.6, 3) (0.55, 4) (0.3, 5)} and B = {(0.25, 2) (0.5, 3) (0.75, 4) (0.9, 5) (1, 6)}.	[5]	2	3
Q.2(b)	Let p be a linguistic variable that measures an Employee's performance, which takes values from the universe of discourse U = {1, 2, 3, 4, 5, 6, 7, 8}. Suppose the term set of p includes Excellent, Good, Fair, and Bad. The membership functions of these linguistic labels are listed as follows: $\mu_{\text{Excellent}} = \{(6,0.3), (7,0.5), (8,1)\}$ $\mu_{\text{Good}} = \{(4,0.2), (5,0.6), (6,0.8), (7,1), (8,1)\}$ $\mu_{\text{Fair}} = \{(3,0.4), (4,0.6), (5,0.9), (6,0.9), (7,0.5), (8,0.1)\}$ $\mu_{\text{Bad}} = \{(1,1), (2,0.8), (3,0.7), (4,0.4)\}$ Construct the membership functions of the following compound set (1) good but not Excellent (2) not very bad but not good	[5]	2	3
Q.3(a)	Demonstrate the operation of AND and OR logics using McCulloch-Pitts neuron.	[5]	3	3
Q.3(b)	A 3-input 2-output NN has the weight values w11 = 0.4, w21 = 0.8, w31 = 0.7, w12 = 0.6, w22 = 0.3, and w32 = 0.2. It is given an input of [0.2 0.6 1.5] ^{T}. Find the following a) What is the output of the NN if the binary step function is used? Assume a threshold of 1.1. b) Find the output if bipolar sigmoid function is used as the activation function. Assume slope s =1 where bipolar sigmoid function is $f(sum_k) = (1-\exp(-s \times sum_k)) / (1-\exp(-s \times sum_k))$ You have given the following exponential values	[5]	3	3

Exp(0.6)	Exp(0.8)	Exp(1.0)	Exp(1.51)	Exp(1.61)	Exp(1.71)	Exp(1.81)	Exp(2)
1.8221	2.2255	2.7183	4.5267	5.0028	5.5290	6.1104	7.3891

Q.4(a)	Distinguish between private and hybrid cloud. Explain briefly about Amazon web services.	[5]	4	2
Q.4(b)	Explain briefly about SaaS, IaaS, PaaS related to cloud implementation.	[5]	4	2
Q.5(a)	How do "Things" of IoT differ from raw sensors? Describe functional blocks of IOT Architecture.	[5]	5	2
Q.5(b)	Explain briefly about IoT levels 3 and 5.	[5]	5	2

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