Reg. No. : | | | | | | | | | | | | |

Question Paper Code : X20469

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020
Seventh Semester
Electrical and Electronics Engineering
EE 6006 – APPLIED SOFT COMPUTING
(Common to Electronics and Instrumentation Engineering/Instrumentation and Control Engineering)
(Regulations 2013)
(Also Common to : PTEE 6006 – Applied Soft Computing for B.E. (Part-Time) – Sixth Semester – Electrical and Electronics Engineering – Regulations 2014)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. Draw the structure of a biological neuron.
2. Compare supervised and unsupervised learning.
3. List two applications of artificial neural networks.
4. What is the significance of a neuro controller ?
5. Define fuzzy sets.
6. What are fuzzy membership functions ?
7. What are the applications of fuzzy logic in aerospace ?
8. Do there exist a standard for fuzzy washing machines ?
9. How will you cluster fuzzy systems ?
10. What is crossover and mutation ?

PART – B **(5×13=65 Marks)**

11. a) i) Explain artificial neural network architecture. Discuss its applications. **(7)**

ii) Explain in detail multilayer feed forward neural networks. **(6)**

(OR)

b) What is back propagation network ? Why is it important ? Draw its architecture and explain the working of back propagation networks in detail.

12. a) i) What is Hop field networks ? Explain its learning methodology. **(7)**

ii) Explain in detail the common application domains of artificial intelligence. **(6)**

(OR)

b) Explain in detail the neuro controller model for an inverted pendulum.

13. a) i) What is defuzzification ? Explain any four methods. **(7)**

ii) Write short notes on adaptive fuzzy systems. **(6)**

(OR)

b) i) Explain the difference between randomness and fuzziness. What is the significance of fuzzy set theory ? **(7)**

ii) Discuss in brief fuzzy set operators. **(6)**

14. a) Consider a fuzzy logic controller that changes the speed of the heater fan based on the temperature of the room and humidity. Discuss the temperature control system setting and draw the block diagram of the fuzzy logic controller and explain its components in detail.

(OR)

b) i) Write short notes on fuzzy logic motor control system. **(6)**

ii) Draw the fuzzy controller for an aircraft landing system and explain its components. **(7)**

15. a) i) What are the different issues that have to be considered when designing a genetic algorithm for economic dispatch and unit commitment problems ? **(7)**

ii) Differentiate gradient search and non gradient search with an example. **(6)**

(OR)

b) Explain in detail constraint handling methods in incorporating intelligence through genetic algorithms.

PART – C **(1×15=15 Marks)**

16. a) Give a detailed note on the impact of fuzzy systems to health care domain.

(OR)

b) Map the application of using genetic algorithm to the economic dispatch. Highlight with an example.