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B.E. (Computer Science & Engineering) Eighth Semester (C.B.S.)

# Elective - III : Soft Computing Techniques

P. Pages : 2 **NJR/KS/18/4749**

Time : Three Hours * 0 6 2 2 * Max. Marks : 80

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Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.

**1.** a) What is soft computing? Explain constituents & conventional of AI. **6**

b) Explain in detail the concept of intersection & complement. **7**

**OR**

**2.** a) Explain fuzzy if-then rules with example. **7**

b) Define Neuro-Fuzzy & explain the soft computing characteristic. **6**

**3.** a) Explain in detail Random & Downhill simplex search in detail. **8**

b) Draw & explain Mamdani Fuzzy model in detail. **6**

**OR**

**4.** a) Explain in detail sugeno fuzzy models. **7**

b) Explain in detail Tsukamoto fuzzy model in detail. **7**

**5.** a) Draw & explain the architecture of adaptive networks in detail. **7**

b) Explain Back-Propagation multi-layer perceptron's. **6**

**OR**

**6.** a) What is supervised learning neural network? Explain in detail. **7**

b) Explain Radial Basis function Networks. **6**

**7.** a) Explain the complete process of learning vector optimization. **7**

b) Explain the Hebbian learning in detail. **6**

**OR**

**8.** a) Explain in detail Hopfield networks in detail. **7**

b) What is self organizing network? Explain Kohonen self organizing network in detail. **6**

**9.** a) Draw & explain ANFIS architecture in detail. **7**

b) Define K-means clustering. Explain it with the help of suitable examples. **7**

**OR**

**10.** a) Explain fuzzy C-means clustering with the help of example. **7**

b) Explain in detail subtractive clustering. **7**

**11.** a) Explain Hand-written Numeral Recognition. **7**

b) Write a short note on GA-base fuzzy filter. **6**

**OR**

**12.** Short notes on **any two.** **13**

i) Input space partitioning

ii) Focus set-based rule combination

iii) Rule bace organization.

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**All our dreams can come true if we have the courage to pursue them.**

**~ Walt Disney**