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NPTEL (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » Fuzzy Sets, Logic and Systems & Applications (course)



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Course
outline

About NPTEL
()

How does an
NPTEL online
course work?
()

Week-0 ()

Week 1:
Introduction
of Fuzzy Sets,
Logic and
Systems &
Applications
()

Week 2:
Nomenclature
Terms and Set
Theoretic
Operations
used in Fuzzy
Sets ()

Week 5 : Assignment 5

Your last recorded submission was on 2025-02-19, 19:39 IST Due date: 2025-02-26, 23:59 IST.

- 1) When multiplying two triangular fuzzy numbers, what is a possible outcome? **1 point**
- ☐ (a) Always a triangular fuzzy number
- ☐ (b) A trapezoidal fuzzy number
- ☐ (c) A crisp number
- ☒ (d) Not guaranteed to maintain triangular shape
- 2) Which property ensures that a fuzzy set's α -cuts are intervals? **1 point**
- ☐ (a) Normality
- ☒ (b) Convexity
- ☐ (c) Symmetry
- ☐ (d) Completeness
- 3) For continuous fuzzy numbers, division involves: **1 point**
- ☐ (a) Summing membership values
- ☐ (b) Integrating over the domain
- ☐ (c) Subtracting supports
- ☐ (d) Multiplying α -cuts
- ☒ (e) None of the above
- 4) Dividing two fuzzy numbers might result in: **1 point**
- ☐ (a) A non-convex set
- ☐ (b) A non-normal set
- ☒ (c) Both (a) and (b)
- ☐ (d) Always a valid fuzzy number
- 5) Why is the universe of discourse critical in fuzzy arithmetic? **1 point**
- ☐ (a) To enforce binary logic compatibility
- ☒ (b) To limit operations to meaningful ranges

Week 3: Set Theoretic Operations and Fuzzy Set Properties ()

Week 4: Fuzzy Set Properties and Distance between Fuzzy Sets ()

Week 5: Arithmetic Operations on Fuzzy Numbers, Complement, T-norm and S-norm for Fuzzy Sets ()

☐ Lecture 21: Arithmetic Operations on Fuzzy Numbers (Part II) (unit? unit=49&lesson=50)

☐ Lecture 22: Arithmetic Operations on Fuzzy Numbers (Part III) (unit? unit=49&lesson=51)

☐ Lecture 23: Complement of Fuzzy Sets (unit? unit=49&lesson=52)

☐ Lecture 24: T-norm Operators (unit? unit=49&lesson=53)

☐ Lecture 25: S-norm Operators (unit? unit=49&lesson=54)

☐ Lecture Notes (unit? unit=49&lesson=234)

☒ **Quiz: Week 5 : Assignment 5**

- ☐ (c) To speed up computations
☐ (d) To ensure symmetry

6) The complement of a fuzzy set A with membership $\mu_A(x) = 0.7$ is:

1 point

- ☐ (a) 0
☐ (b) 1/0.7
☒ (c) 1 - 0.7
☐ (d) 0.7²

7) If Sugeno's complement parameter λ approaches infinity, what happens?

1 point

- ☒ (a) Complement approaches 0
☐ (b) Complement approaches 1
☐ (c) Complement equals 1 - μ
☐ (d) Complement becomes undefined

8) In Yager's complement, if $w=2$, the complement of $\mu=0.5$ is:

1 point

- ☒ (a) $\sqrt{1 - 0.5^2}$
☐ (b) $(1 - 0.5)^{\frac{1}{2}}$
☐ (c) $1 - 0.5$
☐ (d) $\sqrt{0.5}$

9) Which T-norm produces the highest membership value for intersection between $\mu_A(x) = 0.6$ and $\mu_B(x) = 0.8$? **1 point**

- ☐ (a) Minimum
☐ (b) Algebraic product
☐ (c) Bounded product
☒ (d) Drastic product

10) Which axiom is unique to T-norms but not S-norms?

1 point

- ☒ (a) $T(1, a) = a$
☐ (b) $S(0, a) = a$
☐ (c) Associativity
☐ (d) Non-decreasing

You may submit any number of times before the due date. The final submission will be considered for grading.

Submit Answers

(assessment?
name=227)

☐ Feedback for
Week 5 (unit?
unit=49&lesson
=228)

**Week 6:
Parmeterized
T-Norms,
Parameterized
S-Norms,
Fuzzy
Relation and
its Operations
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