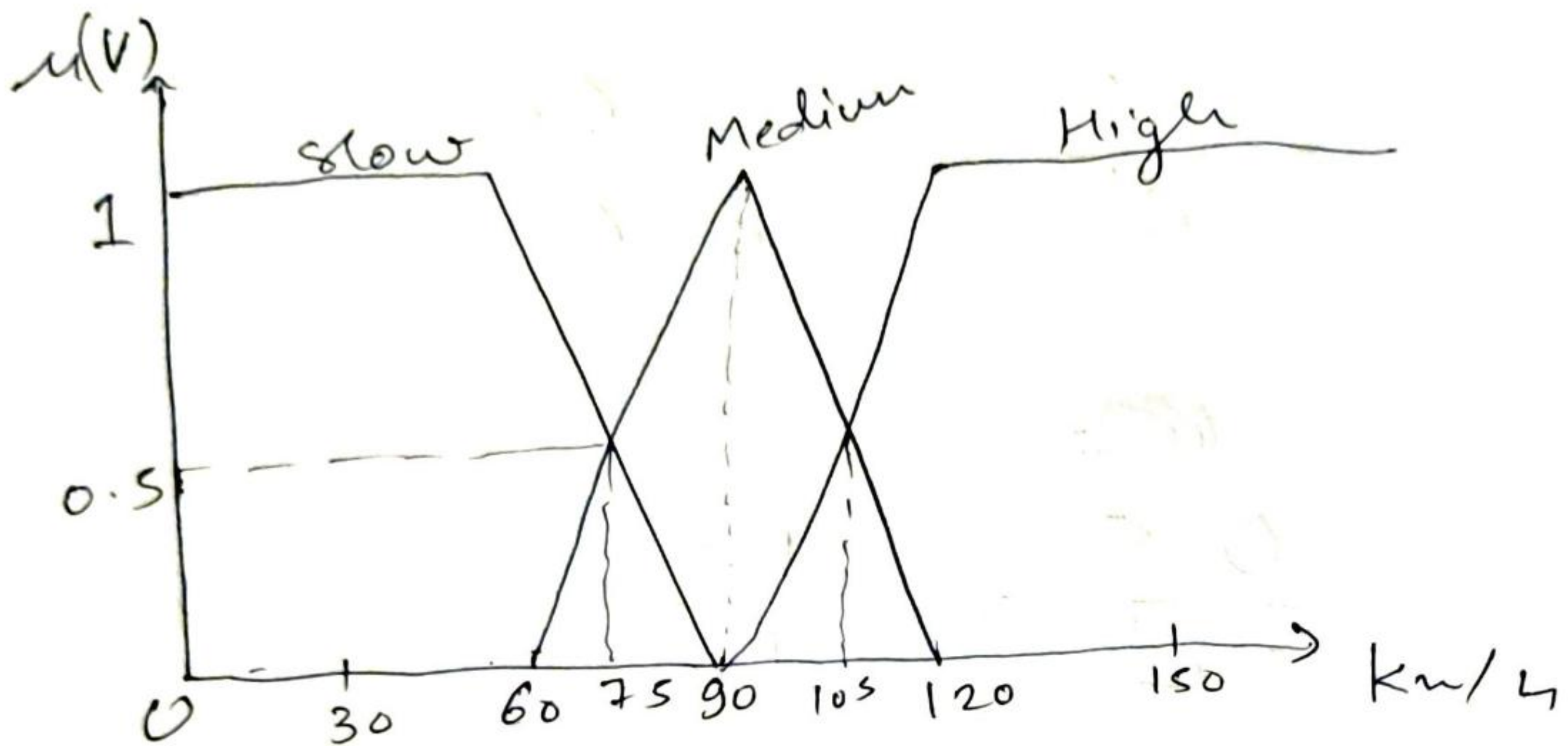


Ans 2)

① (i) $V = 100 \text{ km/h}$, (ii) $V = 70 \text{ km/h}$



① $V = 100 \text{ km/h}$

$$\frac{0.5}{C} = \frac{105 - 90}{100 - 90}$$

$$\frac{0.5}{C} = \frac{15}{10}$$

$$C = \frac{5}{15} = 0.333$$

$$\mu(V) \text{ at } 100 \text{ km/h} = 0.33$$

(ii) $V = 70 \text{ km/h}$

$$\frac{0.5}{C'} = \frac{75 - 60}{70 - 60}$$

~~100~~

$$\frac{0.5}{C'} = \frac{15}{10}$$

$$C' = 5/15 = 0.33$$

$$\mu(V) \text{ at } 70 \text{ km/h} = 0.33 //$$

1(b)(i) Support: The support of a fuzzy set A is the set of all points x in X such that

$$\mu_A(x) > 0$$

$$A = 0.1|-1 + 0.5|2 + 0.4|0 + 0.3|1$$

↳ it is a fuzzy set

$$\text{Sup}(A) = 0.5|2 + 0.3|1$$

(ii) Core: The core of a fuzzy set A is the set of all the points x in X such that $\mu_A(x) = 1$.

$$\text{Core}(A) = \{x | \mu_A(x) = 1\}$$

(iii) Normality: A fuzzy set A is normal if its core is non-empty.

~~Def~~

(iv) Convexity: for any x_1, x_2 belongs to $X \rightarrow \mu_1, \mu_2 \in X$ and any $\lambda \in [0, 1]$, then

$$\mu_A(\lambda x_1 + (1-\lambda)x_2) \geq \min \{ \mu_A(x_1), \mu_A(x_2) \}$$

A is a convex if all its α level sets are convex.

(c) ~~Prove~~ $T_{dp}(a, b) \leq T_{bp}(a, b) \leq T_{ap}(a, b) < T_{min}(a, b)$

Q $T_{dp} \leq T_{min}$

$$a \times b \leq \min(a, b)$$

$$1 \cdot 1 = \min(1, 1), a, b = 1 (P)$$

$$0 \cdot 0 = \min(0, 0), a, b = 0 (P)$$

$$a \times b < a$$

$$, a, b < 1$$

and

$$a \times b < b$$

So,

$$a \times b < \min(a, b) \quad \text{Proved}$$

$$T_{bp} \leq T_{ap}$$

$$0 \vee (a+b-1) \leq ab$$

$$0 \leq ab \Rightarrow 0 = 0 \cdot 0 \quad ab = 0$$

$$1 = 1 \cdot 1 \quad ab = 1$$

$$0 < a \cdot b \quad ab < 1$$

or

$$(a+b-1) \leq ab$$

$$-1 < 0$$

$$1 = 1 \cdot 1$$

$$a, b = 0(p)$$

$$a, b = 1(p)$$

$$a, b < 1$$

again, $a+b > 1$

$$a+b > a \cdot b$$

but,

$$a+b-1 < ab(p)$$

$$\text{and } a+b-1 < ab(p)$$

$$\Rightarrow a, b < 1$$

$$\text{and } a+b < 1$$

$$a+b > a \cdot b \iff (a+b) > a \cdot b \quad (c)$$

$$\text{also } a+b-1 < a \cdot b \quad (p)$$

$$T_{dp} \leq T_{bp}$$

$$Ov(a + 1 - x)$$

$$Ov(a+b-1)$$

$$\text{if } b=1$$

$$= Ov(a) = \textcircled{a}$$

$$(p)$$

$$Ov(1 + b - x)$$

$$\text{if } (a=1)$$

$$= b$$

$$(p)$$

$$\text{if } a, b < 1$$

$$\text{and } a+b > 1.$$

$$\approx$$

$$0$$

$$\max$$

$$\text{or positive value}$$

$$(0, +ive) \approx +ive > 0 \quad (p)$$

$$\text{if } a, b < 1$$

$$\text{and } a+b < 1$$

$$0$$

$$\text{or negative value}$$

$$\approx \max(0, -ive)$$

$$\approx \underline{\underline{0}} \quad (p)$$

GA

$$n \cdot n^2 f(n) \sum f(n)$$

$$\frac{f(n)}{\sum f(n)} \times \text{pop size} \approx \text{next Gen.}$$