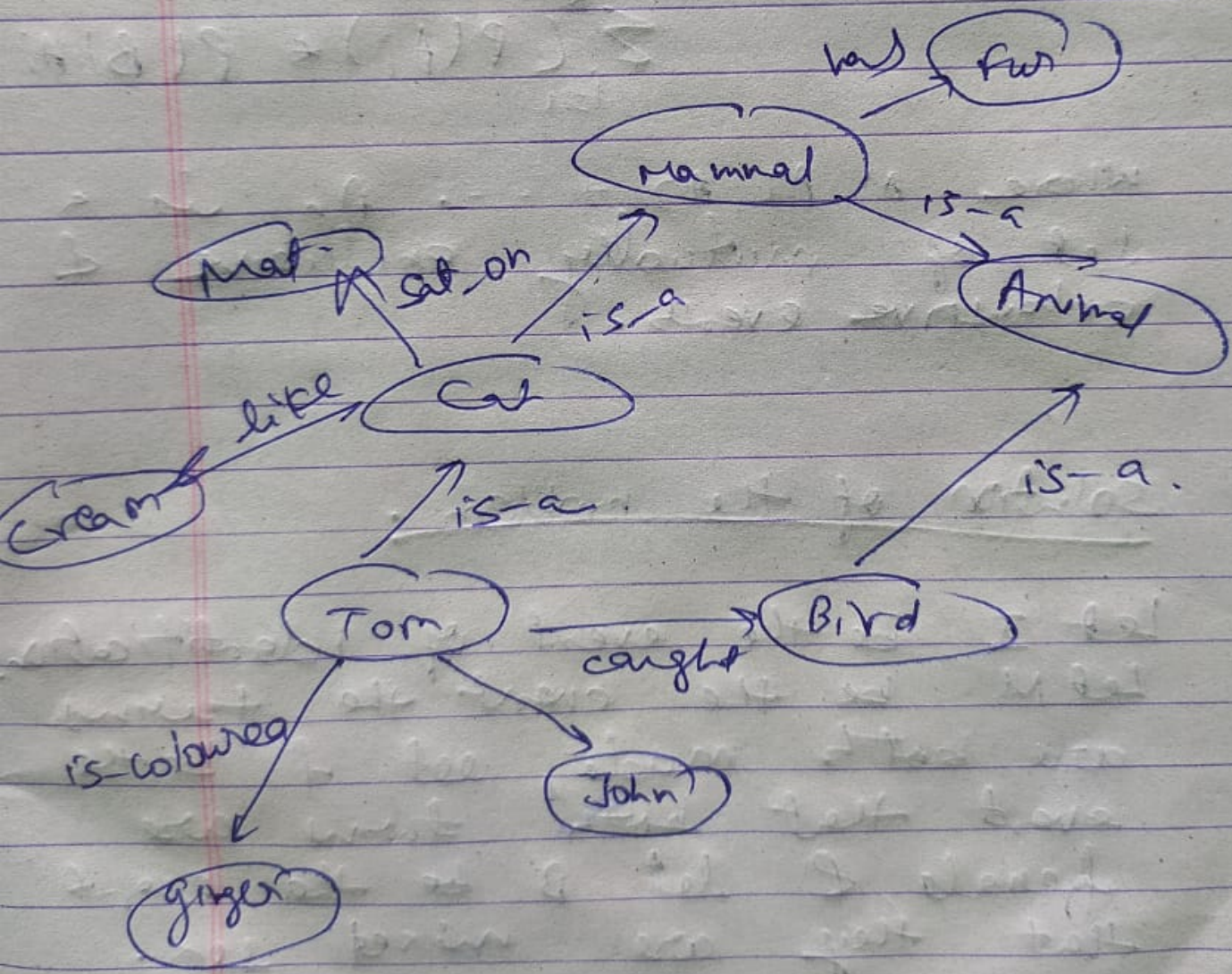Svutika

PA-29

AI problem assignment

Panel f

①   Semantic network :

(2) Baye's therome determeve the probability of an event with uncertain knowledge. It is a way to calculate the $P(B|A)$ w.r.t to $P(A|B)$.

$$P(A_i|B) = \frac{P(A_i) * P(B|A_i)}{\sum_{i=1}^{k} (P(A_i) * P(B|A_i))}$$

where $A_1, A_2, A_3 - - - A_n$ is a set of mutually exclusive & exhaustive events.

Solution of the problem :

Let I be the event of identification. Let M be the event the twins are both made, eet f be the event that both twins are female, & let B be the event that they are mixed sex.

from the information given in the problem.

we know that $P(I) = 0.30$, so

$P(I^c) = 0.70$ (where I^c r s the every the twins are fraternal. We also know that $P(F/I^c) = 0.25$

Using Bayes' theorem.

$$P(I/F) = \frac{P(F/I) \times P(I)}{P(F/I) \times P(I) + P(F/I^c) \times P(I^c)}$$

$$= \frac{0.50 \times 0.30}{0.50 \times 0.30 + 0.25 \times 0.70}$$

$$= 0.4615$$

∴ Probability that they are identical is 0.4615