VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)
CHENNAI

Reg. Number: 22BAI1766

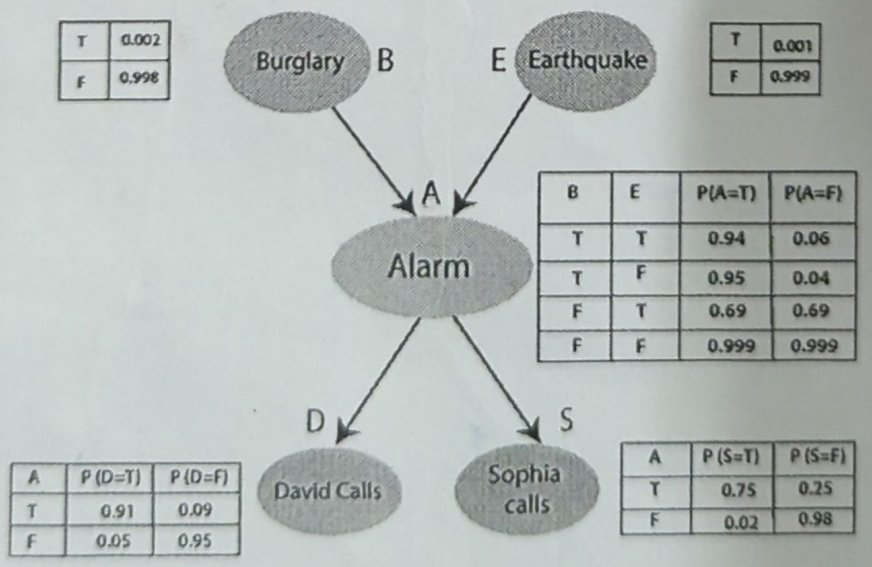
Continuous Assessment Test (CAT) –I - Jan 2025

Programme	:	B.Tech. CSE (AIR)	Semester	:	Win 2024-25
Course Code & Course Title	:	BCSE427L Cognitive Robotics	Class Number	:	CH2024250502615 CH2024250502394
Faculty	:	Dr. S. Harini Dr. Arunkumar V	Slot	:	D1
Duration	:	90 minutes	Max. Mark		50

General Instructions:

- Write only your registration number on the question paper in the box provided and do not write other information.

Answer all questions

Q. No	Sub Sec.	Description	Marks
1.		Elucidate the crucial role of embodiment in the cognitive development process with an example of a warehouse robot that is designed to navigate through the cluttered environment. Give the details of the three types of embodiment hypothesis for the above scenario.	10
2.		In the modern industrial automation system intelligent machine vision systems are used with multidimensional aspects. Design an intelligent system for perception in mechanical manufacturing industry, by identifying the components and methodology used. Elaborate about robotic perception on machine vision using a flow chart for the above example.	10
3.	a.	How can you design sensor model for a mobile robot used for cleaning the office spaces with multiple rooms? Elucidate and highlight the role of Dynamic Bayes Net in the above example.	08
	b.	 T 0.002 / F 0.998 T 0.001 / F 0.999 B E P(A=T) P(A=F): T T 0.94 0.06; T F 0.95 0.04; F T 0.69 0.69; F F 0.999 0.999 A P(D=T) P(D=F): T 0.91 0.09; F 0.05 0.95 A P(S=T) P(S=F): T 0.75 0.25; F 0.02 0.98 Consider the above states and the probability values. Calculate the probability that alarm has sounded, but there is a burglary, but no earthquake occurred, and David and Sophia both called the Harry.	07

	c.	Explain your answer in detail. Compare and contrast perception model and sensor model	05
4.		Identify the PEAS (Performance, Environment, Actuators and Sensors) of an agent of autonomous vehicle between a specific source and destination. Elaborate your answer with a neat sketch.	10
		Total	50

**********All the best **********