Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 130017

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2025
Fifth Semester
Information Technology
U23CTV22 – KNOWLEDGE ENGINEERING
(Regulation 2023)

Time: Three Hours Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

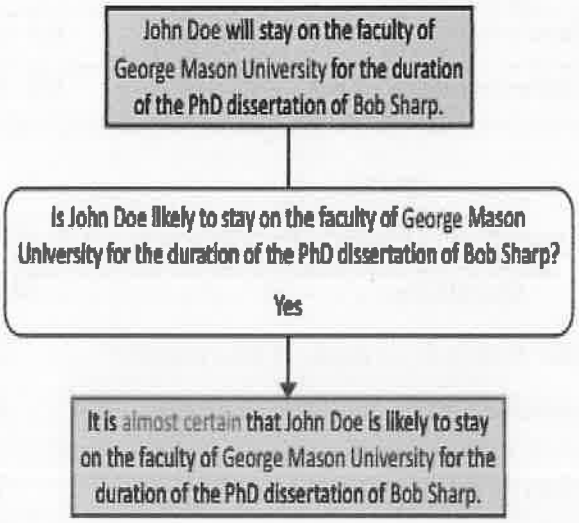
(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Why does evidence differ from data or items of information?	2	K1	CO1
2.	Recall some of the complementary abilities of humans and computer agents?	2	K1	CO1
3.	List out the different types of expert system shells	2	K2	CO2
4.	Differentiate verification and validation.	2	K2	CO2
5.	Identify the Instance of the following concept. ?O1 instance of course has as reading ?O2 ?O2 instance of publication has as author ?O3 ?O3 instance of professor	2	K2	CO3
6.	State the use of ontology in Knowledge base.	2	K2	CO3
7.	List out the basic steps of rule learning.	2	K1	CO4
8.	Define the rule-learning problem.	2	K1	CO4
9.	Define the rule refinement problem.	2	K1	CO5
10.	Critique the importance of Generalization in Knowledge Engineering.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

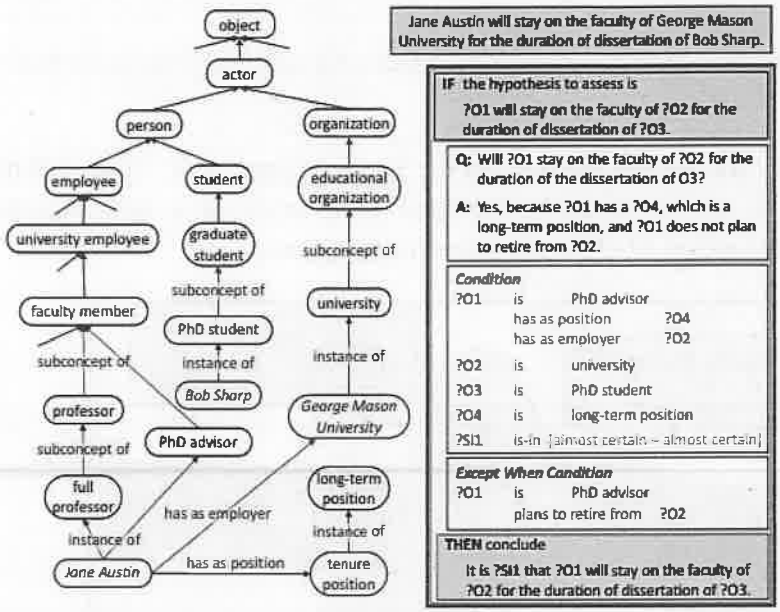
Q.No.		Questions	Marks	KL	CO
11.	a)	Compare and contrast Abductive reasoning and Inductive reasoning with suitable examples.	13	K2	CO1
		(OR)			
	b)	Describe the generic architecture of an intelligent agent and the role of each main component.	13	K2	CO1
12.	a)	Identify the mistakes in the reasoning step given in the following figure with respect to the goal of teaching the agent. Also explain and indicate the corrections	13	K3	CO2



(OR)

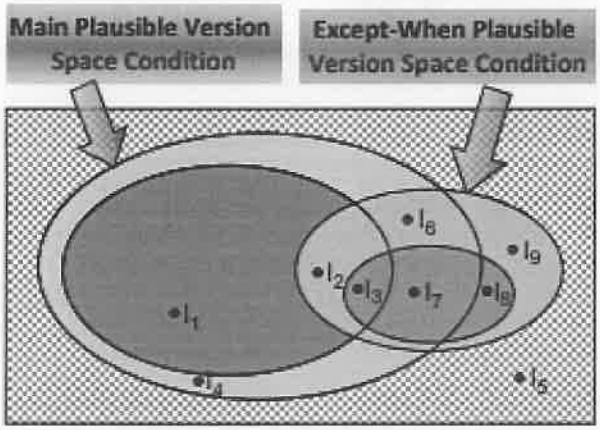
	b)	Use the knowledge engineering guidelines to develop a problem reduction tree for assessing the following hypothesis based on knowledge from the ontology (not evidence): "John Doe would be a good PhD advisor with respect to the employers of graduate's criterion." You do not need to develop the ontology, but the questions and answers from your reasoning tree should make clear what knowledge would need to be represented in the ontology. The logic should be clear, all the statements should be carefully defined, and the question/answer pairs should facilitate learning. Mark all the instances in the reasoning tree.	13	K3	CO2

13. a) Illustrate the problem-solving process with the hypothesis, the rule, and the ontology from the following figure. 13 K2 CO3



(OR)

b) Consider the partially learned concept and the nine instances from the following Figure. Order the instances by the plausibility of being instances of this concept and justify the ordering. 13 K2 CO3

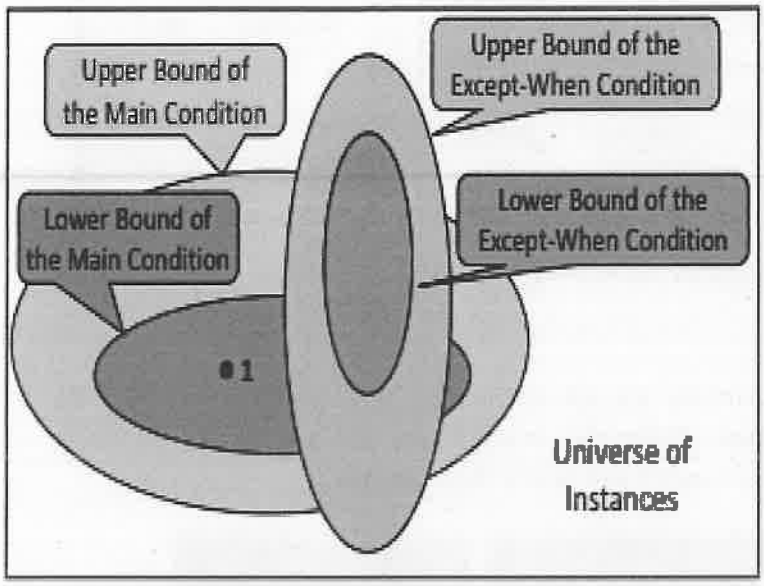


14. a) Elaborate on Reasoning with Partially Learned Knowledge with suitable illustrations. 13 K2 CO4

(OR)

b) Compare the rule-learning process with the traditional knowledge acquisition approach, where a knowledge engineer defines such a rule by interacting with a subject matter expert. Identify as many similarities and differences as possible, and justify the relative strengths and weaknesses of the two approaches, but be as concise as possible. 13 K2 CO4

15.	a)	Describe the Characteristics of Rule Learning and Refinement methods.	13	K2	CO5
		(OR)			
	b)	Consider the version space from the Figure given below. How will the plausible version space be changed as a result of a new negative example labeled 1? Draw the new version space(s).	13	K3	CO5



PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	Prototype an agent that can assess the following hypothesis and others with a similar pattern: "John Doe would be a good PhD advisor with respect to the publications with advisor criterion." Hint: You may consider that a certain number of publications of PhD students with the advisor correspond to a certain probability for the publications with advisor criterion.	15	K3	CO2
		(OR)			

b) Consider the following explanation of a reduction: Dan Smith plans to retire from George Mason University. K3 CO4

i. Reformulate this explanation as a concept with variables. 7

ii. Determine the minimal generalization of the concept, in the context of the ontology from Figure given below, where all the instances are specific instances. 8