CBCS SCHEME

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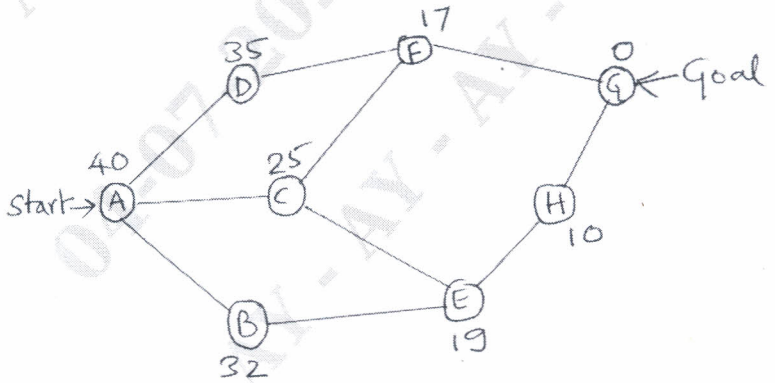
BCS515B

Fifth Semester B.E./B.Tech. Degree Examination, June/July 2025
Artificial Intelligence

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	What is Artificial Intelligence? Explain the four approaches of Artificial Intelligence in detail	10	L2	CO1
	b.	What Artificial Intelligence can do today? Explain various application domains of Artificial Intelligence.	10	L2	CO1
		OR			
Q.2	a.	With the help of a block diagram, explain how agents interact with task environments.	05	L2	CO1
	b.	Briefly explain the properties of task environments.	07	L2	CO1
	c.	With a neat diagram explain the following : i) Utility based agents ii) Learning agents	08	L2	CO1
		Module – 2			
Q.3	a.	List and define the four phases of problem – solving process.	05	L3	CO2
	b.	Explain how a search problem can be formally defined. Illustrate the same for the Vacuum world problem.	10	L2	CO2
	c.	Write the state-space graph for the two-cell vacuum world problem.	05	L3	CO2
		OR			
Q.4	a.	Illustrate Breadth-first search and Depth-first search strategies with suitable example.	10	L3	CO2
	b.	Explain the different metrics used to evaluate an algorithms performance.	06	L2	CO2
	c.	List and explain the three kind of queues used in Best –first search method.	04	L2	CO2
		Module – 3			
Q.5	a.	Apply Greedy best-first search algorithm to the following graph and show the various stages in computing the solution tree.	10	L3	CO3
		 Fig. Q.5 (a)			
	b.	Explain different methods of deriving heuristics.	10	L2	CO3
		OR			
Q.6	a.	Using PEAS description, represent the Wumpus World problem.	06	L3	CO3
	b.	Briefly explain Knowledge Based Agents.	04	L2	CO3
	c.	Explain in detail, syntax and semantics of propositional logic.	10	L3	CO3

		Module – 4			
Q.7	**a.**	Explain in detail, syntax of first order logic.	**10**	**L2**	**CO4**
	b.	Explain various steps in the knowledge engineering process.	**10**	**L2**	**CO4**
		OR			
Q.8	**a.**	Write Unification algorithm. Explain with suitable example.	**10**	**L2**	**CO4**
	b.	Explain simple forward – chaining algorithm with an example.	**10**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	Explain Backward – chaining algorithm with an example.	**10**	**L2**	**CO5**
	b.	Illustrate the procedure to convert a sentence of first order logic to Conjunctive Normal Form (CNF)	**10**	**L2**	**CO5**
		OR			
Q.10	**a.**	Illustrate categories and objects with suitable examples.	**10**	**L2**	**CO5**
	b.	Explain the following with respect to events: i) Time ii) Fluents and objects	**10**	**L2**	**CO5**

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