

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MCA DEGREE EXAMINATION DECEMBER 2024

(Third Semester)

Branch – **COMPUTER APPLICATIONS**

ARTIFICIAL INTELLIGENCE

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry **EQUAL** marks

$$(10 \times 1 = 10)$$

Module No.	Question No.	Question	K Level	CO
1	1	Which of the following is an example of an uninformed search strategy? a) A* Search b) Greedy Best-First Search c) Depth-First Search d) Hill Climbing	K1	CO1
	2	What distinguishes an informed search strategy from an uninformed one? a) Use of a queue to store nodes b) Use of a heuristic function to estimate the cost c) Exploration of all possible nodes d) Utilization of random moves	K2	CO1
2	3	In the context of adversarial search, what is the primary purpose of alpha-beta pruning? a) To find the optimal move by exploring all possible nodes b) To reduce the number of nodes evaluated in the search tree c) To enhance the heuristic function d) To implement randomness in decision-making	K1	CO2
	4	Which of the following best describes backward chaining in inference for first-order logic? a) Starting from known facts and applying inference rules to derive new facts b) Starting from a goal and working backwards to determine the necessary conditions c) Enumerating all possible inferences from the knowledge base d) Using unification to match predicates	K2	CO2
3	5	Which of the following is a supervised learning algorithm? a) K-Means Clustering b) Decision Trees c) Apriori Algorithm d) Principal Component Analysis	K1	CO3
	6	In the context of artificial neural networks, what is the role of the activation function? a) To initialize the network weights b) To propagate input data through the network c) To introduce non-linearity into the network d) To perform backpropagation	K2	CO3
4	7	Which of the following is a primary task of natural language processing (NLP)? a) Image Recognition b) Text Classification c) Path Planning d) Robot Navigation	K1	CO4
	8	In speech recognition, what is the primary challenge that systems must overcome? a) Understanding grammar rules b) Converting text to speech c) Handling variations in pronunciation and accents d) Translating languages	K2	CO4

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5	9	Which component of robot hardware is primarily responsible for processing information and making decisions? a) Actuators b) Sensors c) Central Processing Unit (CPU) d) Power Supply	K1	CO5
	10	In robotics, what is the primary purpose of perception systems? a) To execute movement commands b) To interpret sensory data and understand the environment c) To provide power to the robot d) To store data	K2	CO5

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks

$$(5 \times 7 = 35)$$

Module No.	Question No.	Question	K Level	CO
1	11.a.	Develop the difference between an agent and its environment in the context of intelligent agents.	K3	CO1
	(OR)			
	11.b.	Build two uninformed search strategies and discuss their advantages and disadvantages.		
2	12.a.	Dissect the concept of stochastic games in adversarial search. How do they differ from deterministic games?	K4	CO2
	(OR)			
	12.b.	Divide the difference between forward chaining and backward chaining in knowledge-based agents.		
3	13.a.	Evaluate the process of learning decision trees in supervised learning. Include the steps involved in building the tree.	K5	CO3
	(OR)			
	13.b.	Opinion the difference between supervised and unsupervised learning. Provide examples of each.		
4	14.a.	Determine the process of syntactic analysis in natural language processing.	K5	CO4
	(OR)			
	14.b.	Deduct the basic steps involved in image formation and early image processing operations in computer vision.		
5	15.a.	Elucidate the key components of robot perception.	K6	CO5
	(OR)			
	15.b.	Propose the challenges involved in planning uncertain movements for robots.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks

$$(3 \times 10 = 30)$$

Module No.	Question No.	Question	K Level	CO
1	16	Elaborate the role of heuristic functions in informed search strategies.	K3	CO1
2	17	Compare and contrast propositional logic and first-order logic in the context of knowledge representation.	K4	CO2
3	18	Prioritize the architecture of artificial neural networks and explain how they learn from examples?	K5	CO3
4	19	Justify the challenges and techniques involved in machine translation.	K5	CO4
5	20	Originate the importance of robotic software architectures in the development of intelligent robots.	K6	CO5

Z-Z-Z

END