



BRAINWARE UNIVERSITY

Term End Examination 2023-2024 Programme – B.Sc.(ANCS)-Hons-2022 Course Name – Introduction to Modern Technologies Course Code - BNCSC403 (Semester IV)

Full Marks: 60 Time: 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

- 1. Choose the correct alternative from the following:
- (i) What is the major component/components for measuring the performance of problem solving?
 - a) Completeness

- b) Optimality
- c) Time and Space complexity

- d) All of these
- (ii) Which is the best way to go for Game playing problem?
 - a) Linear approach

b) Heuristic approach

c) Random approach

- d) An Optimal approach
- (iii) Which of the mentioned properties of heuristic search differentiates it from other searches?
 - a) It provides solution in a reasonable time frame
- b) It provides the reasonably accurate direction to a goal
- c) It considers both actual costs that it took to reach the current state and approximate cost it would take to reach the goal from the current state
- All of these

d)

- (iv) Strong Artificial Intelligence can be identified as,
 - a) The embodiment of human intellectual capabilities within a computer
- b) A set of computer programs that produce output that would be considered to reflect intelligence if it were generated by humans
- c) the study of mental faculties through the use of mental models implemented on a computer
- All of these
- (v) Which of the following definitions correctly defines the State-space in an AI system?
 - a) A state space can be defined as the collection of all the problem states
- b) A state space is a state which exists in environment which is in outer space
- c) A state space is the total space available for the agent in the state
- d) All of these

(vi) Which logical connective is represented by the	symbol ∧?	
a) AND. c) NOT.	b) OR d) IF-THEN.	
(vii) Which connective is represented by the symbol		
a) AND.	b) OR	
c) NOT.	d) IF-THEN.	
(viii) Select the Task Environment of an agent consist	s of,	
a) Sensors	b) Actuators	
c) Performance Measures	d) All of these	
(ix) In text mining, how the words 'lovely' is conver		
a) By stemming	b) By tokenization	
c) By lemmatization(x) The process of identifying syntactic relationship	d) None of these	
a) Top-down parsingc) Dependency parsing	b) Bottom-up parsingd) Transition-based parsing	
(xi) In dependency parsing, what do directed links be	• ***	
a) Semantic similarity	b) Syntactic relationships	
c) Semantic roles	d) Lexical ambiguity	
(xii) Proof of Authority consensus protocol relies on		
a) Computing power	b) Random selection of nodes	
c) Permission from a central authority	d) The number of coins held by a node	2
(xiii) In asymmetric key encryption, the private key is	s utilized for:	
a) Encryption	b) Decryption	
 c) Both encryption and decryption (xiv) Select the appropriate heuristic function for Hil 	d) Generating digital signatures	
shortest path in a maze.	remining search when midnig the	
a) Count the number of steps taken from the	b) Use the Euclidean distance from the	2
start to the goal	current state to the goal	
c) Use a random number generator to select	d) Choose the direction with the higher	est
the next move	number of available moves	
(xv) Apply genetic learning in a scenario where the mathematical function.	goal is to optimize the parameters of a	
 a) Use genetic algorithms to evolve a population of candidate solutions 	 b) Apply gradient descent to fine-tune function 	the
 c) Utilize random search to explore the 	d) Apply hill climbing to optimize the	
solution space	parameters	
Grou	ın-P	
(Short Answer T		3 x 5=15
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2 X 2-13
2. What are goal-based agents in AI?		(3)
3. Explain the concept of state space search in problem-solving.4. How does discourse processing contribute to language comprehension?		(3)
5. Explain the significance of introduction in language processing.		(3)
6. Determine the characteristics and advantages of MANETs (Mobile Ad-hoc Networks).		(3)
OR `		(3)
Justify the need for efficient routing protocols in N	ΛΑΝΕΤs.	(3)
Grov	In C	
Group-C (Long Answer Type Questions) 5 x 6=30		
		5 x 6=30
7. Explain the concept of Blockchain Forks, including soft forks and hard forks.		(5)

8. Provide an overview of the Application Layer in TCP/IP networking, including its functions, (5) protocols, and examples of application-level services. 9. Explain the File Transfer Protocol (FTP) in the Application Layer of TCP/IP networking. (5) 10. Explain how bidirectional search differs from traditional blind search algorithms like (5) breadth-first search and depth-first search and the scenarios where bidirectional search is advantageous. (5) 11. Justify the preference for Supervised Learning over Unsupervised Learning in scenarios where labeled data is available. (5) 12. Explain the concept of adversarial search in artificial intelligence, and its importance in games and decision-making scenarios. OR (5) Explain the significance of State Space Search in problem-solving tasks within artificial intelligence, and its effectiveness.
