27. a.i.	State A^* algorithm and explain it with example.			7	1	2	1
	ii.	State hill climbing algorithm.		3	1	2	1
		(OR)					
	b.	Explain the following		5+5	1	2	1
		(i)	Best first search				
		(ii)	Genetic algorithm				
28. a.	Consider the following sentences				2	3	2
	• John likes all kinds of food						
	• Apples are food						
	• Chick is food						
	• Anything that anyone eats and is not killed by is food						
	• Bill eats peanuts and is still alive						
	• Sue eats everything bill eats						
	(i)	Translate these sentences into formulate in predicate logic		4			
	(ii)	Prove that "John like Peanuts" using forward chaining".		6			
		(OR)					
	b.	Explain with suitable example the Bayesian belief network.		10	1	3	1
29. a.	Solve the following block word problem using goal stack planning method?			10	2	4	2

a	e
e	d
c	c
b	b
d	a
Initial state	Goal state

		(OR)					
	b.	Explain the following learning models		5+5	1	4	1
		(i)	Linear regression				
		(ii)	Support vector machine				
30. a.	What is expert system? Explain all the components by showing the architecture.			10	1	5	1
		(OR)					
	b.	Explain the concept of		5+5	1	5	1
		(i)	Information retrieval				
		(ii)	Syntactic and semantic analysis				

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Reg. No.														

B.Tech. DEGREE EXAMINATION, NOVEMBER 2022
Sixth Semester

18CSC305J – ARTIFICIAL INTELLIGENCE
(For the candidates admitted from the academic year 2018-2019 to 2019-2020)

Note:
(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
(ii) **Part - B** should be answered in answer booklet.

Time: 2½ Hours Max. Marks: 75

PART – A (25 × 1 = 25 Marks)
Answer **ALL** Questions

		Marks	BL	CO	PO
1.	Domain knowledge, ensuring the best solution (for example, A^*, best first) (A) Informed search (B) Semi dynamic (C) Inductive reasoning (D) Trust worthy AI	1	1	1	1
2.	_____ is used to determine the best strategy; the best move maximize the worst case terminal utility (A) Predicate logic (B) Min-Max algorithm (C) Training dataset (D) Validation dataset	1	2	1	2
3.	The process of allowing computers to store what they know or hear is known as (A) Automated reasoning (B) Knowledge representation (C) Natural language processing (D) Computer vision	1	1	1	1
4.	Pick out the wrong statement about solving CSP (A) Need for decomposition of problem (B) Analyze the problem structure (C) Understanding the problem structure (D) Directly implementing the problem	1	1	1	2
5.	Pick the odd one out of demand constraint satisfaction (A) Water jug problem (B) Time table scheduling (C) Employee task management (D) Network configuration	1	2	1	1
6.	The block world problem in artificial intelligence is used to give details about _____. (A) Planning system (B) Search (C) CSP (D) KB system	1	1	4	1
7.	If any search algorithm is able to generate a solution then the search is called (A) Efficient (B) Optimal (C) Complete (D) Informed	1	1	2	1

8. Your friend is in a building which has 9 floors and you want to locate him. Which search technique would you use? 1 2 2 2
   (A) Depth first search (B) Breadth first search
   (C) Depth limited search (D) Iterative depending

9. Which of the following FOL is correct for this English statement "There exist a student" 1 2 2 2
   (A) ∀ student (x) (B) ∃ (x)
   (C) ∃ student (x) (D) □ student (x)

10. Which representation exhibits the property of ISA relationship and instance representation? 1 1 2 1
   (A) Universe of discourse (B) Existential quantifiers
   (C) Inheritance (D) Conjunctive normal form

11. Which informed algorithm does not back track and it depends only on the current and the upcoming states 1 1 2 1
   (A) A^* algorithm (B) AO^* algorithm
   (C) Hill climbing algorithm (D) Steepest ascent hill climbing

12. ARC consistency propagates 1 2 3 1
   (A) Information (B) Unassigned variables
   (C) Constraints (D) Back tracking

13. Production rules system consists of 1 2 3 2
   (A) Predicate logic (B) Condition, action
   (C) Syntax (D) Symbols

14. Which of the following can act as an admissible heuristic for 8 puzzle problem? 1 2 5 2
   (A) Manhattan distance (B) Based on the number of tiles misplacement
   (C) Sum of permutation inversions (D) Euclidean distance

15. Which could be the best way to deal with game playing problem? 1 1 3 1
   (A) Linear approach (B) Heuristic approach
   (C) Random approach (D) An optimal approach

16. _____ is an action language which was a part of the first major planning system with the same 1 1 4 1
   (A) ADL (B) PDDL
   (C) STRIPS (D) VDL

17. Identify antecedent and consequent in the below rule if the light is red then stop 1 2 4 2
   (A) Antecedent : the light is red Consequent : stop (B) Antecedent : stop Consequent : the light is red
   (C) Antecedent : if Consequent : then (D) Antecedent : then Consequent : if

18. Which one of the following is not a type of supervised learning? 1 1 4 1
   (A) Clustering (B) Regression
   (C) Support Vector Machine (D) K Nearest Neighbour

19. The STRIPS representation is 1 1 3 1
   (A) Feature centric representation (B) Action centric representation
   (C) Hierarchical feature centric representation (D) Combination of feature

20. The artificial intelligence techniques imposed in Tesla, Waymo cars are the applications of _____ learning. 1 2 4 1
   (A) Supervise (B) Unsupervised
   (C) Semi-supervised (D) Reinforcement

21. The popular voices assistance, Alexa, SIRI implement the concept of 1 2 5 1
   (A) Machine learning (B) Deep learning
   (C) Data learning (D) Human learning

22. What is the selection rule with the highest priority from agenda 1 1 5 2
   (A) Kenelling (B) Conflict resolution
   (C) Production rule (D) Deep learning

23. The problem space of means-end analysis has not included 1 1 3 1
   (A) An initial state (B) One or more goal state
   (C) A set of operators with set of conditions (D) A^* algorithm

24. List the components of natural language processing 1 1 5 1
   (A) Sentences, clauses, phrases, words (B) Syntax and semantics
   (C) Rules and knowledge (D) Visualization

25. Identify a native language model, not derivatives 1 1 5 1
   (A) CNN (B) RNN
   (C) LSTM (D) Roberta

PART – B (5 × 10 = 50 Marks) Marks BL CO PO
Answer **ALL** Questions

26. a. Explain in detail the characteristics to be analyzed for solving problems in AI. 10 1 1 1

(OR)

   b. We are given two jugs, a 4 gallon jug and 3 gallon jug. Neither has any marking on it. How can we get exactly two gallons of water into 4 gallon jug? Represent the above problem by state space search problem. 10 2 1 2
      (i) Initial state
      (ii) Goal state
      (iii) Operators
      (iv) Action plan
      (v) Find the solution