



Saifullah SP21-BSE-104

14.75

COMSATS University, Islamabad.
Department of Computer Sciences
Mid Term Examination Fall-2023

Subject: CSC-462 Artificial Intelligence
Semester: BCS-V (A&B), DS-5 E
Instructor: Syed M Muslim, Waqas Ali, Umar Nauman

Dated: 11-23
Marks: 25
Time (mins): 90

Instructions: Solve all questions on Question Paper only. Use of pencil, cutting, over-writing, use of fluid in Question 01(c), 01(d), and Question 02(a, b, c) will result in zero credit. Nothing will be graded out side the provided space. Be precise and to the point in all questions.

CLO 1:

Articulate how artificial intelligence enables the capabilities of a computer, machine, or system to mimic human Brain

Question 01: (10 marks)

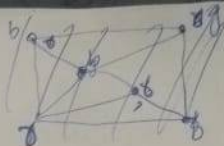
- a) Can Virtual Personal Assistants like Apple's Siri and Google Assistant be considered as examples of strong AI? Please comment with brief explanation (1 + 2 = 03 marks)

Yes, virtual personal assistants like Apple's Siri etc are considered as examples of strong AI because they provide the best possible solution to a problem using best AI algorithms, that are efficient in case of time and space complexity. Also they consider the current knowledge as well as past history to generate an optimal solution to a problem and also learn from past experiences to enhance their result which is a quality of strong AI.

- b) Imagine a city with a mix of autonomous and human-driven vehicles. A pedestrian suddenly jaywalks in front of an autonomous car. How can strong AI address this situation better than weak AI? What are the potential risks associated with each? (01 marks)

In case of strong AI if pedestrian came in front of strong AI autonomous car then car will apply brake because in this case sensor can sense the object with less time taking ability. As this risk will be handled already by strong AI autonomous car, while in weak AI this case (risk) cannot may not be handled by software of car. Risk in strong AI would be back car can hit autonomous car if suddenly apply brake while pedestrian can die if weak AI.

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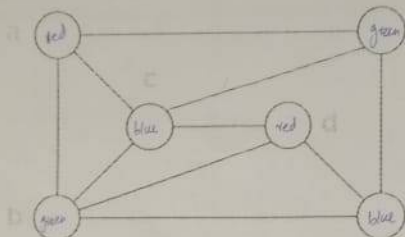


CLO 3:

Formulate a problem specified in natural language as a constraint satisfaction problem.

Question 03: (5 marks)

- a) Solve the following graph coloring problem using CSP listing all the variables, domains, constraints and final values (02 marks)



$V = \{a, b, c, d, e\}$

$D = \{Red, Green, Blue\}$

$C = \{(c, d), (e, f)\}$

1.5

- b) Solve the following cryptarithmic problem, mention all variables, domains, and constraints. (03 marks)

$$AB * CD = DACB$$

Variables $V = \{A, B, C, D\}$

Domain $D = \{*, \times\}$

constraints $C = \{(scope, \times)\}$

$C = \{(AB, AB), (CD, CD), (DACB, DACB), (AB * CD, DACB)\}$

0.75

	A	B	C	D
Initial node	ABCD	ABCD	ABCD	ABCD
C1	AB		CB	DA
C2	ABCD		CB, CD	DA * CD
C3	AB * CD - DACB			