



**FINAL EXAMINATION**

**BACHELOR OF INFORMATION TECHNOLOGY (HONOURS) IN CYBER  
SECURITY**

**BACHELOR OF INFORMATION TECHNOLOGY (HONOURS) IN COMPUTER  
APPLICATION DEVELOPMENT**

**COURSE : ARTIFICIAL INTELLIGENCE**

**COURSE CODE : SWC3553**

**DURATION : 3 HOURS**

**INSTRUCTIONS TO CANDIDATES:**

1. This question paper consists of **THREE (3)** questions.
2. Answer **ALL** questions in the Answer Booklet provided.
3. Please check to make sure that this examination pack consists of :
  - i. The Question Paper
  - ii. An Answer Booklet
4. Do not bring any material into the examination hall.
5. Please write your answer using permanent ink.

**MYKAD/  
PASSPORT NO** : \_\_\_\_\_

**ID. NO.** : \_\_\_\_\_

**LECTURER** : \_\_\_\_\_

**SECTION** : \_\_\_\_\_

---

**DO NOT OPEN THIS QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO**

---

*This question paper consists of 4 printed pages including the front page*

**QUESTION 1**

Artificial Intelligence (AI) is increasingly embedded in everyday life and is used to solve real-world problems.

- a. Explain **TWO (2)** real-world applications of AI used in daily life. Show clearly how AI concepts are applied in these examples.  
(8 marks)
- b. Apply **FOUR (4)** foundations of AI in term of their contributions to intelligent systems development.  
(12 marks)
- c. Discuss **TWO (2)** major milestones in AI history and their impact on modern AI technologies today.  
(10 marks)

(Total: 30 Marks)

**QUESTION 2**

A smart taxi dispatch system is used by taxi drivers in a city. The system collects data from GPS, traffic sensors, and passenger requests through a mobile application. Based on real-time road conditions, passenger demand, and driver availability, the system provides route recommendations and job assignments to taxi drivers. The system operates under predictable conditions such as fixed road networks and unpredictable conditions such as traffic accidents and sudden passenger demand.

Answer the following question:

- a. Illustrate how Artificial Intelligence in the smart taxi dispatch system differs from a standard computer program.  
(5 Marks)
- b. Employ **FOUR (4)** the PEAS model in the smart taxi dispatch system.  
(10 Marks)
- c. Demonstrate the roles of rationality and autonomy in the decision-making process of the smart taxi dispatch system operating in deterministic and stochastic environments.  
(15 Marks)

(Total: 30 Marks)

## QUESTION 3

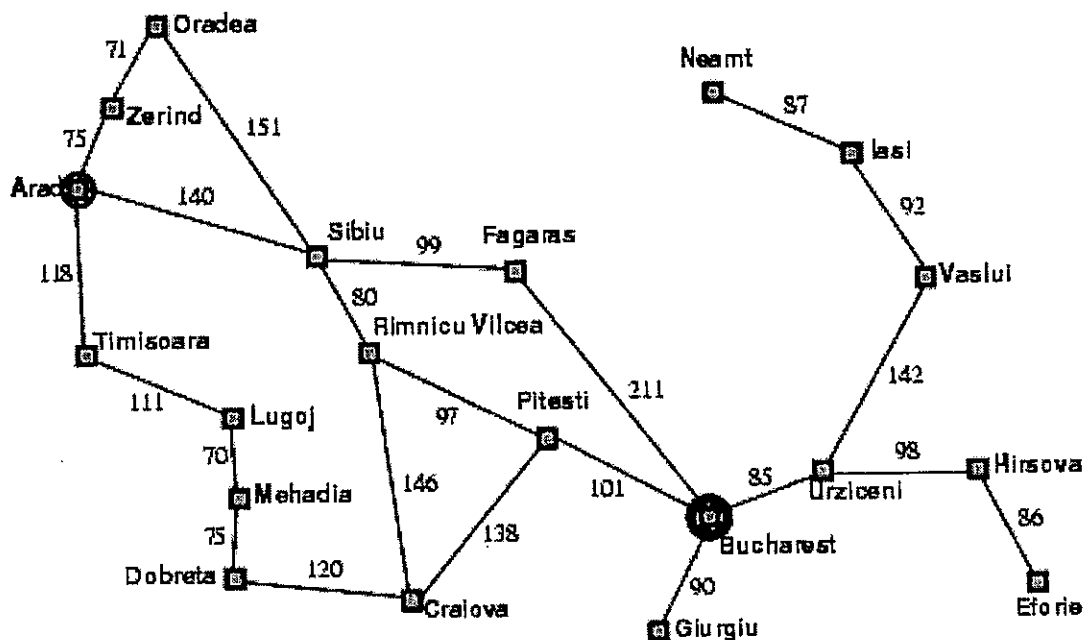


Figure 1. A Romania road map

A navigation system is developed to assist travellers in finding routes between cities connected by roads, similar to the Romania road map such as in Figure 1. Each city is represented as a node, roads are represented as links with known distances, and the environment is static, fully observable, discrete, and deterministic.

The system starts from Arad and aims to reach Bucharest with the minimum total travel cost. Before starting the journey, the system plans the entire route and then follows the plan without responding to new percepts during execution. Based on Figure 1:

- Interpret how the navigation system applies the concept of a simple problem-solving agent through the stages of goal formulation, problem formulation, search, and execution in this scenario. (8 Marks)
- Employ the five components of problem formulation in a well-defined problem for this route-finding task by clearly stating:
  - Initial state
  - Actions
  - Transition model
  - Goal test
  - Path cost
 (10 Marks)
- Select **ONE (1)** irrelevant real-world detail from the scenario and explain why it should be removed during problem abstraction to simplify the search process. (2 Marks)

- d. Employ future Artificial Intelligence technologies in the route-planning navigation system to improve traffic management and route decision-making based on the given scenario.

(20 Marks)

(Total: 40 marks)

**(TOTAL: 100 MARKS)**

**END OF QUESTION PAPER**