



# MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

II SEM M. Tech (Medical Informatics) DEGREE END SEMESTER EXAMINATIONS, MAY/JUNE-2023

SUBJECT: Artificial Intelligence in Medical Informatics (BME 5272)

(REVISED CREDIT SYSTEM)

Wednesday, 24 May, 2023; Time 9.30am-12.30pm

TIME: 3 HOURS

MAX. MARKS: 50

## Instructions to Candidates:

1. Answer ALL questions
2. Draw diagrams wherever necessary

Q No.	Question	Marks
1 a.	Illustrate typical intelligent agent and its functional units.	4
1 b.	Choose an intelligent agent in a hospital environment and explain, <b>PEAS</b> for the selected agent.	4
1 c.	How do you apply concepts of AI in the automation of EHR (Electronic health record) ?	2
2 a.	How <b>Fully observable</b> environment is different from a <b>Partially observable</b> environment. Illustrate with an example.	3
2 b.	Differentiate <b>uninformed search</b> algorithm informed search algorithm and explain the <b>depth first search</b> algorithm.	3
2 c.	The <b>figure-1</b> has different states such as “a”, “b”.....”z”. The actual cost is given along the edge of the graph. The estimated cost (heuristic value) is given nearby node. Using <b>A* algorithm</b> find the optimal path considering <b>a</b> as start node, <b>z</b> as end node. Conclude how it selects the optimal path.	4

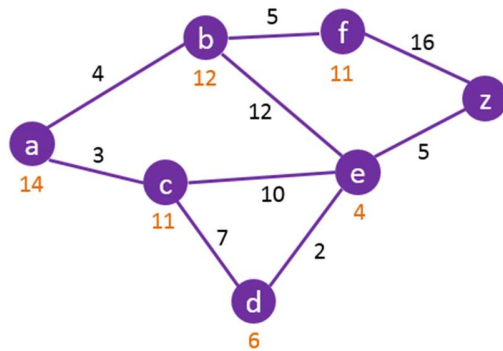


Figure 1

3 a.	Categorize the best practices of Information technology infrastructure library (ITIL). Discuss the any two ITIL best practices for healthcare IT development.	3
3 b.	Analyze the role of Explainable Artificial Intelligence (XAI) in case of a ML or DL. How XAI improves medical information analysis?.	4
3 c.	What are unstructured data and how is AI plays a major role in handling unstructured big data ?	3
4 a.	Explain the two major areas of Artificial Intelligence for IT Operations (AIOps) including AI for clinics and AI for operations.	3
4 b.	Why today AI services with cloud environments are attracting designers? Discuss benefits of cloud-based AI system.	3
4 c.	Discuss Intelligence design security, confidentiality, and privacy aspects of medical software development.	4
5 a.	Illustrate the primary concerns of Artificial intelligence today. Discuss the following with an example: technological singularity and bias.	4
5 b.	Discover the major stages of Machine learning operations (MLOps). Explain MLOps lifecycle. Discuss the benefits of MLOps.	4
5 c.	Illustrate AI application for personnel medicine.	2