MCQ type Question bank
For Question 1,2(b) and 3(b)

For question 1 (unit-1)

Answers are shown in bold letters

1. Which of the following are comprised within Al?
(a) Machine Learning

(b) Deep Learning

(c) Both (a) and (b)

(d) None of the above

2. State whether the following condition is true or false?

"Artificial Intelligence means to mimic a human. Hence, if a robot can move from one place to like a human, then it comes under Artificial Intelligence."

(a) True

(b) False

3. Which of the mentioned human behaviour does the Al aim to mimic?

(a) Thinking

(b) Eating

(c) Sleeping

(d) None of the above

4. Which of the following is not a goal of Al?

(a) Thinking humanly

(b) Adapting to the environment and situ

(c) To rule over humans

(d) Real Life Problem Solving

5. Artificial Intelligence is about

(a) Playing a game on Computer

(b) Making a machine Intelligent

(c) Programming on Machine with your Own Intelligence

(d) Putting your intelligence in Machine

6. Who is known as the Father of Al"?

(a) Fisher Ada

(b) Alan Turing

(c) John McCarthy

(d) Allen Newell

7. The application/applications of Artificial Intelligence is/are.

(a) Expert Systems

(b) Gaming

(c) Vision Systems

(d) All of the above

8. Which of the given language is not commonly used for AI?

(a) LISP

(b) PROLOG

(c) Python

(d) Perl

9. What role does the "knowledge base" play in an expert system?

(a) It controls the reasoning process and makes decisions.

(b) It stores domain-specific knowledge and rules.

(c) It interacts with the user and provides recommendations.

(d) It performs data analysis tasks.

10. In fuzzy logic, what are linguistic variables?

(a) Variables expressed in natural language terms (e.g., "high," "low").

(b) Binary variables with two possible values.

(c) Variables represented as real numbers.

(d) Variables used in symbolic logic.

For question-2b (unit-2)

1. **Which of the following is NOT a core component of a typical expert system architecture?**
   - a) Knowledge Base
   - b) Inference Engine
   - c) User Interface
   - d) Database (**Answer: d) Database** - While expert systems may interact with databases, it's not a core architectural component. The Knowledge Base stores domain-specific knowledge.
2. **The Knowledge Base in an expert system primarily stores:**
   - a) User preferences.
   - b) Domain-specific facts, rules, and heuristics.
   - c) Intermediate results during problem-solving.
   - d) System performance logs. (**Answer: b) Domain-specific facts, rules, and heuristics** - This knowledge is essential for reasoning and providing solutions.)
3. **The Inference Engine in an expert system is responsible for:**
   - a) Gathering user input.
   - b) Applying knowledge from the Knowledge Base to solve problems.
   - c) Displaying results to the user.
   - d) Managing system security. (**Answer: b) Applying knowledge from the Knowledge Base to solve problems** - The Inference Engine is the reasoning engine that uses strategies like forward or backward chaining.)
4. **Forward chaining is an inference strategy used in expert systems to:**
   - a) Identify the root cause of a problem (better suited for backward chaining).
   - b) Work backward from a desired goal.
   - c) Exhaustively evaluate all possible solutions.
   - d) Reason step-by-step based on available facts and rules. (**Answer: d) Reason step-by-step based on available facts and rules** - Forward chaining starts with known data and applies rules to reach a conclusion.)
5. **Backward chaining is an inference strategy used in expert systems to:**
   - a) Explore all potential solutions (better suited for forward chaining).
   - b) Focus on a specific goal and work backward to identify conditions that lead to it.
   - c) Update the Knowledge Base with new information.
   - d) Handle uncertain or incomplete information (both chaining approaches can handle this to some extent). (**Answer: b) Focus on a specific goal and work backward to identify conditions that lead to it** - Backward chaining is useful for tasks like diagnosis or troubleshooting.)
6. **Which of the following is a benefit of using a knowledge representation language in an expert system?**
   - a) Improves system performance.
   - b) Makes knowledge easier to understand and maintain.
   - c) Both a and b. (**Answer: c) Both a and b** - Knowledge representation languages provide a structured way to store knowledge, improving maintainability and potentially efficiency.)
7. **What is the role of the Explanation Facility in an expert system?**
   - a) Provides justifications for the system's recommendations.
   - b) Manages user authentication and authorization.
   - c) Logs system errors and events.
   - d) Handles communication with external databases. (**Answer: a) Provides justifications for the system's recommendations** - This helps users understand the reasoning behind the system's conclusions.)
8. **User Interface design in an expert system should prioritize:**
   - a) Technical details and advanced features.
   - b) Ease of use and clear communication with the user.
   - c) Integration with complex external systems.
   - d) High level of customization options. (**Answer: b) Ease of use and clear communication with the user** - The interface should be user-friendly and cater to the target user's domain knowledge level.)

9. **Expert systems can be classified based on their function. Which type of system focuses on providing recommendations to users?**
   - a) Diagnostic System
   - b) Configuration System
   - c) Monitoring System
   - d) Advisory System (**Answer: d) Advisory System** - These systems analyze information and suggest courses of action.)
10. **An expert system designed to diagnose faults in a network is an example of a:**
   - a) Retrieval System
   - b) Diagnostic System
   - c) Simulation System
   - d) Optimization System (**Answer: b) Diagnostic System** - These systems use domain knowledge to identify and troubleshoot problems.)

For question-3b (unit-3)

Structure and Function of a Single Neuron

1. **The main part of a neuron responsible for integrating incoming signals and generating electrical impulses is the:**
   - a) Dendrite
   - b) Axon
   - c) Myelin Sheath
   - d) Cell Body (**Answer: d) Cell Body** - The cell body contains the nucleus and organelles for processing information.)
2. **Which of the following structures carries electrical signals away from the cell body towards other neurons?**
   - a) Dendrite
   - b) Axon
   - c) Synapse
   - d) Myelin Sheath (**Answer: b) Axon** - The axon transmits the nerve impulse.)
3. **Dendrites primarily function to:**
   - a) Generate electrical impulses.
   - b) Transmit electrical impulses.
   - c) Receive signals from other neurons.
   - d) Insulate the axon. (**Answer: c) Receive signals from other neurons** - Dendrites receive information from other neurons.)
4. **The gap between two neurons where chemical messengers are released and received is called the:**
   - a) Myelin Sheath
   - b) Node of Ranvier
   - c) Synapse (**Answer: c) Synapse** - The synapse is the communication point between neurons.)
5. **The fatty sheath that insulates some axons and speeds up nerve impulse transmission is called the:**
   - a) Dendrite
   - b) Myelin Sheath (**Answer: b) Myelin Sheath** - The myelin sheath increases the speed of nerve impulses

Structure and Function of Artificial Neuron Model

1. **In an artificial neuron model, what component receives weighted inputs from other neurons?**
   - a) Activation Function
   - b) Bias Unit
   - c) Input Layer
   - d) Summation Node (**Answer: d) Summation Node** - This node sums up the weighted inputs.)
2. **The activation function in an artificial neuron model is responsible for:**
   - a) Assigning weights to incoming signals.
   - b) Introducing non-linearity into the model's output.
   - c) Representing the cell body of a biological neuron.
   - d) Initiating the transmission of a signal down the axon. (**Answer: b) Introducing non-linearity into the model's output** - Activation functions transform the summed input into a final output value.)

-
3. **Which of the following activation functions is commonly used for binary classification problems (output of 0 or 1)?**
   - a) Sigmoid Function
   - b) Linear Function
   - c) ReLU (Rectified Linear Unit)
   - d) Leaky ReLU (**Answer: d) Leaky ReLU** - It allows for a small non-zero gradient even for negative inputs, addressing the "dying ReLU" problem.)
4. **The bias unit in an artificial neuron model serves the purpose of:**
   - a) Simulating the branching structure of dendrites.
   - b) Allowing the model to learn a constant offset to its output.
   - c) Representing the axon of a biological neuron.
   - d) Introducing noise into the model for better generalization. (**Answer: b) Allowing the model to learn a constant offset to its output** - The bias helps shift the activation function's output.)
5. **Artificial neurons are often arranged in layers within a neural network. What is the primary function of these layers?**
   - a) To mimic the structure of the human brain.
   - b) To perform feature extraction at different levels of complexity.
   - c) To increase the computational speed of the network.
   - d) To represent the different types of biological neurons. (**Answer: b) To perform feature extraction at different levels of complexity** - Layered networks allow the model to learn complex relationships between inputs and outputs.)