ARDM; major parts

Theories

Papers

Practical

Limitations

Reinforcement Learning

Explainable AI

Causality

Active Inference

Goal-Directed

Modal Logics

Satisfiability

1. List any five types of reasoning tasks. Explain any two in detail with models, theories and examples.
2. Discuss benchmarking for logical, mathematical, autonomous and multimodal reasoning.
3. List multiple types of lobes and cells in the brain. Define their structure and function.
4. Explain the determinants, features and content of counterfactual thinking. Give two examples each of any property you explain.
5. Define a computational and psychological model which encapsulates reasoning. You can also construct a reasoning experiment to elicit your approach to testing.
6. Define normative and descriptive theories of decision making. Elicit major differences between the two in detail.
7. Define evidential and probabilistic theories of reasoning. Elicit major differences between the two in detail.
8. Define core differences in rationalism, empiricism and idealism. Why are post logical philosophers different from language philosophers? Explain any one theory of a rationalist philosopher and tell us why you like it.
9. What Large Action Model and Large Behavioral Model might look like? Explain major limitations in large models, at least four in detail in reference to ARDM.
10. Craft any one problem in ARDM and show its solution roadmap/approach.
11. What is white noise, two system models and signal to noise ratio?

List of topics:

Mid I: Three introductions (Reasoning, Neuroscience, Philosophy), Model Checking, Counterfactual Thinking, Nudge, Decision Making (Normative/Descriptive Theory, Decision Transformers).

Mid II: Probabilistic and Evidential Reasoning, Algorithms in Model Checking, Modal Logics, Meta-RL.

Final:

Marking Distribution:

10\*2 Mids (Concepts)

20 Essay (Creativity/Craft)

15\*2 Presentation (Learning)

30 Final (Problem Solving)