Unit 3 - Week 1 : Introduction

Assignment 1

The due date for submitting this assignment has passed. **Due on 2019-02-13, 23:59 IST.**

Assignment submitted on 2019-02-11, 20:18 IST

1) Who said the following - "*Thoughts themselves are symbolic representations*"? ***1 point***

- Isaac Newton
- (•) Rene Descartes
- Galileo Galilei
- Gottfried Wilhelm von Leibniz

Yes, the answer is correct.
Score: 1

Accepted Answers:
Rene Descartes

2) What is true about the Physical Symbol System Hypothesis (PSSH)? ***1 point***

- [x] The PSHH says that a physical symbol system has the necessary and sufficient means for general intelligent action.
- [ ] The PSSH refers to a system with a collection of symbols operated upon by well defined rules.
- [ ] The PSSH says that the human brain perceives everything as symbols.
- [ ] The PSSH says that a well defined system of physical signboards is necessary and sufficient to enable intelligent navigation in a city.

Partially Correct.
Score: 0.5

Accepted Answers:
The PSHH says that a physical symbol system has the necessary and sufficient means for general intelligent action.
The PSSH refers to a system with a collection of symbols operated upon by well defined rules.

3) Can(Should) natural language be used for knowledge representation in intelligent agents? Why/why not? ***1 point***

- [x] Yes. The models of world can be easily expressed, understood and explained in natural language.
- [x] No. Natural language is ambiguous and imprecise, and sentences can have more than one meaning.
- [ ] Yes. The richness of natural language can be used to make more expressive models of the world.
- [ ] No. It is too verbose and ambiguous to enable sound reasoning in intelligent agents.

No, the answer is incorrect.
Score: 0

Accepted Answers:
No. Natural language is ambiguous and imprecise, and sentences can have more than one meaning.
No. It is too verbose and ambiguous to enable sound reasoning in intelligent agents.

4) Which of the following is(are) true about knowledge representation using formal logics? ***1 point***

- [x] Formal logics not only allow knowledge representation but also allow reasoning mechanisms using a set of well defined rules for manipulation of representations.
- [ ] All logics are equally expressible and hence any logic can be used to model any domain.
- [x] More expressive logics lead to more computational complexity.
- [ ] Classical logics can be extended to capture the notion of time, and are known as temporal logics.

Partially Correct.
Score: 0.66

Accepted Answers:
Formal logics not only allow knowledge representation but also allow reasoning mechanism using a set of well defined rules for manipulation of representations.
More expressive logics lead to more computational complexity.
Classical logics can be extended to capture the notion of time, and are known as temporal logics.

5) A *sentence* (in formal logic) is a statement that can in principle have a truth value of True or False. Which of the following statements is a *sentence*? ***1 point***

- [ ] Please shut the door.
- [x] Do you know who shut the door?
- [ ] The door is shut.
- [ ] I shut the door on my gown.
- [x] This sentence is false.

No, the answer is incorrect.
Score: 0

Accepted Answers:
The door is shut.
I shut the door on my gown.
This sentence is false.

6) What do we mean when we say that “a knowledge base entails a sentence α"? ***1 point***

- ( ) Given the knowledge base KB, α is possibly true.
- ( ) Given the knowledge base KB, α is conditionally true.
- (•) Given the knowledge base KB, α is necessarily true.
- ( ) All of the above

Yes, the answer is correct.
Score: 1

Accepted Answers:
Given the knowledge base KB, α is necessarily true.

7) Given a system made up of a logic L with a proof system that can produce ONLY true sentences expressible in L, which of the following is (necessarily) true? ***1 point***

- ( ) The system is Sound and Complete.

- (•) The system is Sound but may not be Complete.
- ( ) The system is Complete but may not be Sound.
- ( ) The system is neither Sound nor Complete.

Yes, the answer is correct.
Score: 1

Accepted Answers:
The system is Sound but may not be Complete.

8) Given a system made up of a logic L with a proof system that can produce ALL true sentences expressible in L, which of the following is (necessarily) true? ***1 po***

- ( ) The system is Sound and Complete.
- ( ) The system is Sound but may not be Complete.
- (•) The system is Complete but may not be Sound.
- ( ) The system is neither Sound nor Complete.

Yes, the answer is correct.
Score: 1

Accepted Answers:
The system is Complete but may not be Sound.

9) Which of the following formulas could be a representation of the sentence *'If Sally came for the dance class then she has finished her homework or she has a holiday today'*, where; ***1 point***

P stands for *'Sally comes for the dance class'*
Q stands for *'Sally has finished her homework'*
R stands for *'Sally has a holiday today'*

- [ ] $\neg P \rightarrow Q$
- [ ] $P \rightarrow (Q \vee R)$
- [x] $(P \rightarrow Q) \vee R$
- [ ] $(P \vee Q) \rightarrow \neg R$

Partially Correct.
Score: 0.5

Accepted Answers:
$P \rightarrow (Q \vee R)$

$(P \rightarrow Q) \vee R$

10) Which of the following statement is/are a Contingency in propositional logic? ***1 point***

- [ ] $(\neg P \vee P)$
- [ ] $(\neg P \wedge P)$
- [x] $(\neg P \vee Q)$
- [x] $(P \wedge \neg Q)$
- [ ] $(P \wedge T)$

Partially Correct.
Score: 0.66

Accepted Answers:

$(\neg P \vee Q)$

$(P \wedge \neg Q)$

$(P \wedge T)$

11) Which of the following statement is/are a Tautology in propositional logic? ($\top$ represents Top) *1 po*

- [x] $(\neg P \vee P)$
- [ ] $(\neg P \wedge P)$
- [x] $(P \vee T)$
- [ ] $(\neg P \wedge \neg Q)$

Yes, the answer is correct.
Score: 1

Accepted Answers:

$(\neg P \vee P)$

$(P \vee T)$

12) Which of the following statement is/are a Contradiction in propositional logic? ($\perp$ represents Bottom) *1 point*

- [ ] $(\neg P \vee P)$
- [x] $(\neg P \wedge P)$
- [ ] $(\neg P \vee \neg Q)$
- [x] $(P \wedge \perp)$
- [ ] $(P \vee \perp)$

Yes, the answer is correct.
Score: 1

Accepted Answers:

$(\neg P \wedge P)$

$(P \wedge \perp)$

13 The statement $(P \rightarrow Q) \equiv (Q \rightarrow P)$ is *1 point*

- ( ) Tautology
- (•) Satisfiable
- ( ) Contradiction
- ( ) Cannot say

Yes, the answer is correct.
Score: 1

Accepted Answers:

Satisfiable

14) Which of the following can be mapped to formulas in propositional logic? Consider 'John has *X*' as one atomic sentence, and a compound sentence can be broken into equivalent simple sentences. **1 point**

- [ ] John has a red hat.
- [ ] John has a red hat and a red jacket.
- [x] If John has a red jacket then he has a red hat too.
- [x] John has either a red jacket or a red hat.
- [x] John either has a red hat or a red jacket but not both.

Partially Correct.
Score: 0.6

Accepted Answers:
John has a red hat.
John has a red hat and a red jacket.
If John has a red jacket then he has a red hat too.
John has either a red jacket or a red hat.
John either has a red hat or a red jacket but not both.

15) What can you say about the *truth value* of an *atomic* sentence in propositional logic? **1 point**

- ( ) Truth value of an atomic sentences is derived from the knowledge base.
- (•) Truth value of atomic sentences is assigned externally by some valuation function.
- ( ) Truth value of some sentences can be assigned externally by some valuation function and the truth value of the rest of the atomic sentences can be derived later.
- ( ) None of the above.

Yes, the answer is correct.
Score: 1

Accepted Answers:
Truth value of atomic sentences is assigned externally by some valuation function.

16) Which of the following is not a formula in propositional logic? **1 point**

- [ ] $P \longrightarrow (Q \vee \neg R)$
- [x] $Man(x) \longrightarrow Mortal(x)$
- [ ] $(P \longrightarrow Q) \equiv (\neg P \vee R)$
- [ ] $(P \longrightarrow Q) \equiv (Q \longrightarrow P)$
- [x] $\forall x(Parent(x) \equiv Father(x) \vee Mother(x))$

Yes, the answer is correct.
Score: 1

Accepted Answers:
$Man(x) \longrightarrow Mortal(x)$
$\forall x(Parent(x) \equiv Father(x) \vee Mother(x))$

Previous Page End