

SYMBOLIC LOGIC

IIT KHARAGPUR AUTUMN 2020

Quiz 1

Date: 13.09.2020

Time limit: 20 Minutes

1. In which of these, can we find 'reasoning' is taking place?
- (a) We saw that it was raining, and that the fields at the foothill were all submerged in water, and the electricity in the villages has not been restored.
 - (b) The stern tone in his voice was intimidating.
 - (c) Death penalty has been supported by many with some very good reasons.
 - (d) There has to be an outlet for the water somewhere in this dark tunnel. The sound of water gushing out can be heard, though faintly.

Ans: (d)

Solution: Reasoning is a process of creating knowledge from incomplete information. It is not limited to only what is given to our sensory experience. In the given examples, choice A is merely a description of an observed experience. Choice B and C too are observational statements. In choice D we can find that the activity of reasoning, as we infer from the faint sound of gushing water that there has to be an outlet in the dark tunnel.

2. Which among the following *refutes* the statement: 'Logic is a systematic study of reasoning'?
- (a) Logic has no principles to organize and guide its study of reasoning.
 - (b) Logic does not study anything other than reasoning.
 - (c) Logic uses rules, instead of principles, to rectify our reasoning.
 - (d) Logic uses rules to teach us reasoning skills.

Ans: (a)

Solution: Refutation means to falsify, or to prove a statement wrong. In this question, only option A refutes the given statement. For, a systematic study is the one which is systematized by the presence of rules or principles, and also guided by these principles. (a) clearly claims Logic has no principles. Hence, it basically claims that logic is NOT a systematic study of reasoning. Choice B partly supports the statement. Choice C does not try to refute. Choice D is only partly linked to the statement.

True or false? ¼ off for each incorrect answer.

3. If one believes that ‘Study of Logic has value in itself’, then it follows that one must also believe that Logic must not be applied as a tool.

Ans: False

Solution: The given statement is false. To believe that studying logic has value in itself is not to believe that logic must not be used as a tool. The believers in the intrinsic value of logic regarded Logic as an indispensable tool to improve our way of thinking, by avoiding fallacies and conceptual errors. They accepted its utility to, make us better thinkers.

4. One school of thought in Indian Logic viewed logic as necessary for pursuit of knowledge, and another viewed logic as a training for public speaking and cogent reasoning in public.

Ans: True

Solution: The given statement is true. The two schools of thought in Indian logic were Anvikshiki and Tarka. Anvikshiki viewed logic as necessary for the pursuit of knowledge and Tarka viewed logic as training for public speaking and cogent reasoning in public.

5. ‘Joy saw a light ahead and was hopeful that he was not all alone’ is an example of an act of reasoning.

Ans: True

Solution: There is reasoning involved in the given statement because Joy saw a light and from that, he infers that the light is a sign of someone’s presence.

6. The credit of Indian deductive logic goes to celebrated Indian logician Dharmakirti.

Ans: False

Solution: The credit of Indian Deductive Logic goes to Dignaga. Not to Dharmakirti.

7. Given that there are five flagpoles hoisted in the garden with five flags in five colors — Shocking Pink, Khaki, Magenta, Amber yellow and Radical red. Magenta flag is on the tallest pole. Shocking Pink flag is on a pole which is shorter than the Khaki flagpole, but taller than flagpole on which Radical Red flag is. The pole on which Amber Yellow flag is, is a bit shorter than the pole of Khaki Flag and little taller than pole of Shocking Pink flag. Then the pole with the Shocking Pink flag will be in the middle.

Ans: False

Solution: The given statement is False because the pole with the Amber Yellow flag will be in the middle.

8. The difference between Formal and Informal Logic is that the former heavily relies on abstract forms, and the latter does not.

Ans: True

Solution: The given statement is true because the main aim of formal logic is study abstracts, symbols, and theories. On the other hand, informal logic is based on real-life situations and enhances our critical thinking.

9. Temporal Logic does not belong to the group of non-conventional logic.

Ans: False

Solution: Temporal Logic is used to cover all approaches of reasoning that deals with time and temporal information, as well as their formal representation. This branch of logic belongs to the group of non-conventional logic. Hence, the given statement is false.

10. Fuzzy Logic does not obey the Law of Excluded Middle.

Ans: True

Solution: The Law of Excluded Middle states that for every condition, it has to be either 1 or 0. There is no middle ground, it is binary. On the other hand fuzzy logic is not binary; there can be so many values in between 0-1. Thus fuzzy logic does not obey the Law of Excluded Middle. Hence, the given statement is true.