

Indian Institute of Technology, Kharagpur
Department of Humanities & Social Sciences
SYMBOLIC LOGIC (HS30068)

Time: 2 hrs MID-SEM EXAMINATION Autumn 2010- Full marks: 60

****No answer will be evaluated twice. Keep rough work separate in the margin**

1. Diagram the following argument using the number key provided:

[1. The theory of evolution is not acceptable.] [2. It is just a hypothesis that has very little supporting evidence.] [3. It contradicts commonsense, the Bible, and the 2nd Law of thermodynamics.] [4. It is impossible to believe that something so complex as the eye can come about through random processes.] [5. That leaves creationism as the only viable theory of the origin of life.] [6. This of course means that God exists.] [7. It also means that many biologists are just dead wrong.]

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2. True or false? Briefly justify your answer.

2.1. ' $\sim(P \supset \sim E) \bullet (E \equiv S)$ ' is the correct translation of 'Neither it is the case that if a business executive is politically inclined then he is not efficient, nor is it true that he is efficient if and only if he is unscrupulous', where. P: A business executive is politically inclined, E: A business executive is efficient, S: a business executive is scrupulous.

2.2. George Boole did not believe in Aristotelian Laws of Thought.

2.3. In the statement 'many studies may have shown that poverty causes crime, but it could also create true grit', the 'could' is a guarding term.

2.4. Any argument of the following form will be invalid but sound:

All A's are F;

X is F;

Therefore, X is an A.'

2.5. If a material biconditional / ' \equiv ' statement is false, at least one of its component atomic / simple components must be false.

-5x3=15-

3.. Explain with your own example the following: (a) Fallacy of argument from ignorance, (b) Fallacy of affirming a disjunct (c) Fallacy of *post hoc ergo propter hoc*. Must explain in each case where the logical error is.

-3x5=15-

4. Consider the passage below.

What is the point of the proposed law involving hypodermic needles? It makes no sense and should not be enacted. A law is being proposed requiring a doctor's prescription for obtaining hypodermic needles. Its purpose is to lower the incidence of drug-related

deaths, both accidental and intentional, involving hypodermic needles. But even knitting needles can be lethal if they fall into the wrong hands; yet everyone would agree that imposing legal restrictions on obtaining knitting needles would be preposterous.

(b1) Which of the following, if true, would provide *most* support for the argument above? Briefly justify.

b3.1 The benefits of hypodermic needles outweigh those of knitting needles.

b3.2. Knitting needles have been known to cause injury and death.

b3.2.3 The proposed law would not deter the sort of activity known to result in drug-related deaths.

b3.2.4. Knitting needles are not readily available to anybody who wants to obtain them.

b3.2.5. The proposed law could not be effectively enforced.

(b2) Evaluate this argument using the criterion of 'resilience'.

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