BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE EDUCATION

DEPARTMENT OF EDUCATIONAL TECHNOLOGY

BACHELOR OF SCIENCE EDUCATION IN COMPUTER SCIENCE

EDT112: PHILOSOPHY OF COMPUTER SCIENCE

AUG 2023

TIME: 3 HOURS

INSTRUCTIONS

Answer **any four** questions. Each question carries **25** marks. Begin each answer on a **separate** answer sheet.

Question 1

a. Why was the Turing Test first Introduced? **[1]**
b. Give any two examples of a Reverse Turing Test and how it works **[4]**
c. Explain the five generations of computers **[20]**

Question 2

Discuss the ontological differences between computer hardware and software from the positions of philosophers such as Moor (1978), Suber (1988), Colburn (1999), and Turner (2011) **[25]**

Question 3

In your opinion, what is the most fundamental or important question in the Philosophy of computer science?
Pose the question, explain why you think it is important and present your answer to it. **[25]**

Question 4

Is the Brain a Computer?
Evaluate the following "complex" argument.
(It's "complex" because it consists of three "sub" arguments, two of which treat the conclusions of previous ones as premises.)

1. Turing's Thesis: A physical object can compute if and only if it can do what a

(Universal) Turing Machine (TM) can do.
2. A computer is any physical device that can compute. (Consider this as (proposed) definition of 'computer'.)
3. The human brain is a physical object that can do what a (Universal) TM can do.
4. Therefore, the human brain is a computer.
5. Microsoft Word is TM-computable. (That is, a Universal TM can execute Microsoft Word.)
6. Therefore, any computer can execute Microsoft Word.
7. Therefore, the human brain can execute Microsoft Word. **[25]**

As usual, to evaluate this argument, you must determine whether (I) it is valid and whether (II) all the premises are true.
_ If both of those conditions hold, then an argument is said to be sound.
_ You are logically obligated to believe the conclusions of sound arguments!
- So, if you ever come across an argument that you think is sound, but whose conclusion you don't believe (by the way, do you really believe line 7 of this argument?), then either one or more of the premises are false or it is invalid (that is, there is some way for the premises to be true yet for the conclusion to be false).

(I) To determine whether the argument is valid, you must suppose (or make believe) "for the sake of the argument" that all the premises are true, and then consider whether the conclusions logically follow from them. (Or: Can you imagine some way the world might be so that the premises are true but the conclusion is false?)
_ Note that there are three conclusions: lines 4, 6, and 7. So, do you agree that conclusion 4 follows logically from premises 1-3, and/or that conclusion 6 follows logically from premise 5 (maybe with the help of some of the earlier premises), and/or that conclusion 7 follows logically from lines 4 and 6 considered as premises? If not, are there missing premises that are needed to make the argument(s) valid?
If there are, do you agree with them (why/why not)?

(II) It may be too difficult to determine whether each premise is true or false. More realistically, you should decide whether you believe, or agree with, each premise, and you must explain why you do or don't.
Finally, do you agree with the conclusion(s)? If you do, but you think that there's something wrong with the argument, try to present a better one. If you don't agree with the conclusion(s), state why, and try to give an argument for what you do believe.

Question 5

Discuss the epistemological Status of Computer Science **[25]**

THE END