1.Read the attached article by Alan Turing.  What is Turing's main point?  In the article, Turing presents several arguments against his thesis.  What are they and how does he respond?  Do you agree with Turing's proposal?  Is the test he suggests adequate to answer the question "can machines think?"

Turing’s main point is “can machines think?” He designed a imitation game to test answer that question. He gave a final version of this question “Let us fix our attention on one particular digital computer C. Is it true that by modifying this computer to have an adequate storage, suitably increasing its speed of action, and providing it with an appropriate programe, C can be made to play satisfactorily the part of A in the imitation game, the part of B being taken by a man?”

There are nine arguments in this article. 1) The Theological Objection. “Thinking is a function of man's immortal soul. God has given an immortal soul to every man and woman, but not to any other animal or to machines. Hence no animal or machine can think”. He respond that “this is mere speculation. I am not very impressed with theological arguments whatever they may be used to support. Such arguments have often been found unsatisfactory in the past.” He gave a example - the Moslem believes that women have no souls. 2) The "Heads in the Sand" Objection. “The consequences of machines thinking would be too dreadful. Let us hope and believe that they cannot do so". He said “this argument is sufficiently substantial to require refutation. Consolation would be more appropriate: perhaps this should be sought in the transmigration of souls”. 3) The Mathematical Objection. “There are a number of results of mathematical logic which can be used to show that there are limitations to the powers of discrete-state machines. The best known of these results is known as Godel's theorem ( 1931 ) and shows that in any sufficiently powerful logical system statements can be formulated which can neither be proved nor disproved within the system, unless possibly the system itself is inconsistent”. Turing claimed “although it is established that there are limitations to the Powers If any particular machine, it has only been stated, without any sort of proof, that no such limitations apply to the human intellect”. 4) The Argument from Consciousness. He respond “It is in fact the solipsist point of view”. If a machine can answer like what he gave to us, there is no one to think that it is “a record of someone reading a sonnet”. 5) Arguments from Various Disabilities. These arguments take the form, "I grant you that you can make machines do all the things you have mentioned but you will never be able to make one to do X". Turing thought the machine can make mistakes and think with some object matters. 6) Lady Lovelace's Objection. He respond “the view that machines cannot give rise to surprises is due, I believe, to a fallacy to which philosophers and mathematicians are particularly subject. This is the assumption that as soon as a fact is presented to a mind all consequences of that fact spring into the mind simultaneously with it. It is a very useful assumption under many circumstances, but one too easily forgets that it is false. A natural consequence of doing so is that one then assumes that there is no virtue in the mere working out of consequences from data and general principles”. 7) Argument from Continuity in the Nervous System. He said “if we adhere to the conditions of the imitation game, the interrogator will not be able to take any advantage of this difference”. 8) The Argument from Informality of Behaviour. He said “We can demonstrate more forcibly that any such statement would be unjustified. For suppose we could be sure of finding such laws if they existed. Then given a discrete-state machine it should certainly be possible to discover by observation sufficient about it to predict its future behaviour, and this within a reasonable time, say a thousand years. But this does not seem to be the case. I have set up on the Manchester computer a small program using only 1,000 units of storage”. 9) The Argument from Extrasensory Perception. He respond “One can say in reply that many scientific theories seem to remain workable in practice, in spite of clashing with ESP; that in fact one can get along very nicely if one forgets about it”.

I agree with Turing’s proposal. The machines do not need to think like a human, it only need to act like a human and it can think things in its own way.

I think the test Turing suggests adequate to answer the question “can machines think?” I believe Turing’s test can find out if a machine can act like a human.

2.a) If there is dirt, suck now and doesn’t impact your chances of getting other dirt in the future, so suck. If There’s no dirt here, to move to the other square.

b) This objective function doesn’t require memory even though the problem is partial order. But what if youhave to pay 1 for each move or such action? Then you have to remember where you are.

3. For each of the following activities, give a PEAS description of the task environment and characterize it in terms of the properties listed in Section 2.3.2.

Playing soccer. P- Win/Lose E- field A- body S- eyes.

partially observable, multiagent, stochastic, sequential, dynamic, continuous, multi-agent

Exploring the subsurface oceans of Titan. P- ocean surface A- probe, S- camera, sonar. partially observable, single agent, stochastic, sequential, dynamic, continuous, single agent

Shopping for used AI books on the Internet. P- Cost, quality, edition E- online book store A- keyboard S- website interfaces, browser. partially observable, multiagent, stochastic, sequential, dynamic, continuous, single agent

Playing a tennis match. P- Win/Lose E-field A- body S- Eyes. partially observable, multiagent, stochastic, sequential, dynamic, continuous, single agent

Practicing tennis against a wall. P- practice E-field A- body S- Eyes. partially observable, multiagent, stochastic, sequential, dynamic, continuous, single agent

Knitting a sweater. P- Quality E- chair(?) A- Hands, Needles S- Eyes. observable, single agent, stochastic, sequential, dynamic, continuous, single agent

Bidding on an item at an auction. P- Item required, cost E- Auction House (or online) A- Bidding S- Eyes. Partially observable, multiagent, stochastic (tie-breaking for two simultaneous bids), episodic, dynamic, continuous, multi-agent