## Systems Thinking Skills Assessment (STSA) Draft for Experts’ Opinion

Name: ____________________________       Institute:________________________________
Address / Ph. No. / e-mail: ______________________________________________________

Given below are statements for assessing various skills related to system thinking (A. Understanding concept of system, subsystem and supra-system, B. Understanding interconnectedness, C. Understanding dynamic behaviour, D. Application of system thinking in life) of secondary school science stream students. You are requested to go through these statements and put a tick mark (or simply delete the specific alphabet, if filling soft copy) on A or R in column no. 2 (options explained in the table below) on the basis of your opinion keeping in mind the appropriateness of the statements under that particular category

<table>
<thead>
<tr>
<th>Accept</th>
<th>Reject</th>
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In case if you feel for any statement that it should be accepted with modification or needs to be put in some different category, kindly mention so in the last column. Please note that some statements which have to be reversely scored have been marked as RS.

Your precious opinions and valuable advice will enable us in developing the final draft of the questionnaire.

Thank you.

### (Column 1)

**Statements**

### A. Questions related to the concept of system, sub-system & supra-system

1. Which all in the given list are examples of a system: school, computer, a cup of hot coffee, human body, pen, rose, balloon, black board.
   - a. none
   - b. all
   - c. computer & school
   - d. only computer
   | A | R |

2. Can we consider computer as a subsystem? (Yes / No)
   | A | R |

3. Can we consider computer as a supra system? (Yes / No)
   | A | R |

4. A fruit tree can be considered as a system. Write down any four of its sub-systems.
   | A | R |

5. Considering solar system as a system, draw a diagram using the symbols etc. to show and enumerate its subsystem and supra system
   | A | R |

6. An atom can be considered as a system. (Yes / No)
   | A | R |

7. Considering human body as a system, write down any four of its sub-systems.
   | A | R |

### B. Questions related to the concept of Interconnectedness

1. In a family there are grand parents, uncle - aunts, parents and their kids. Using arrows & circles (or other symbols) show how they are interconnected.
   | A | R |

2. Human beings breathe in oxygen and give out carbon dioxide, which is used by plants to give out oxygen in sunlight. Show this diagrammatically.
   | A | R |

3. Based on your imagination and understanding depict any system diagrammatically, showing various interconnections in it using arrows, lines, circles etc.
   | A | R |
4. All the subjects which we study are interconnected.  
5. Considering solar system as a system, draw a diagram using symbols such as circle, boxes, arrows, etc. to show and enumerate its subsystem and supra-system.

C. Questions related to the Dynamic Behaviour of Systems.

1. All phenomena can be explained as resulting from the flow, the production & the storage of certain quantities.  
2. Every phenomenon is only linear in nature.  
3. Every phenomenon is cyclic in nature.  
4. Describe the working of a school diagrammatically using lines, arrows, circles, boxes etc.

D. Questions related to the Application of Systems Thinking Skills in life.

/Instruction for students: Rate the following based on the frequency of your behaviour. (0 for never, 1 - rarely, 2 - sometimes, 3 - often & 4 - always).

1. In a conflicting situation, I do the following:  
   i. Straight away follow others' advice. (RS)  
   ii. Try to reflect on the origin, causes factors of problem.  
   iii. Choose the alternative easy to opt for.

2. When buying a book for myself, I will do the following:  
   i. Buy the most popular one used by the majority (RS)  
   ii. Buy the interesting one although very expensive.  
   iii. Explore for the one suiting my needs and budget.

3. While studying Physics, I need to have  
   i. only my Physics text book and notes. (RS)  
   ii. Physics text book and other subject books etc.

4. While interacting with my friends, I  
   i. simply listen and believe to what they are saying (RS)  
   ii. remain critical, suspicious and try to find out hidden meanings. (RS)  
   iii. openly listen and believe what he / she is saying keeping in mind his / her mental set up, feelings, etc.

Remarks

Thank-you for your co-operation