APPENDICES
APPENDIX - I

DRAFT FORM OF

CONTEXTUAL VARIABLE SCALE
Dear student,

Given below are some statements relating to you as a student of science. Please read each statement carefully. Circle the letter at the right of the statement that best describes what you think about these statements. This is not a test and there are no 'right' or 'wrong' answers. Your opinion is what is wanted and it will be kept confidential.

For each statement, draw a circle around

a- if you Strongly Agree with the statement
b- if you Agree with the statement
c- if you are Not Sure about the statement
d- if you Disagree with the statement
e- if you Strongly Disagree with the statement.

Be sure to give your opinion to all the given statements. If you change your mind about an opinion, just cross it out and circle another.
In the science class.............................,

1. I find it interesting to listen to the explanations of my science teacher than reading textbook.
   a  b  c  d  e

2. My teacher uses a variety of teaching-learning materials (like charts, models, experiments, etc.) to explain new science topics.
   a  b  c  d  e

3. I find it hard to do science experiments without instructions from my teacher.
   a  b  c  d  e

4. What I learn have practical applications in my daily life.
   a  b  c  d  e

5. I am afraid to raise questions to my teacher.
   a  b  c  d  e

6. I understand science topics better when my teacher correlates them with my daily life.
   a  b  c  d  e

7. I always get a chance to follow up on the questions I have.
   a  b  c  d  e

8. I enjoy science lessons as my teacher shows good interpersonal relations with us.
   a  b  c  d  e

9. I am praised by my teacher for my efforts in science.
   a  b  c  d  e

10. It is hard for me to listen to my teacher for a long period of time.
    a  b  c  d  e

11. My teacher demonstrates an excellent knowledge of the science topics.
    a  b  c  d  e

12. I felt it easy to learn science as my teacher always presents new topics based on our previous knowledge or life experiences.
    a  b  c  d  e

    a  b  c  d  e

14. My teacher poses questions that elicit our thinking.
    a  b  c  d  e

15. I learn science better by reading the textbook than by listening to the explanations of my teacher.
    a  b  c  d  e

16. I feel excited to watch the ICT presentations in the class than doing experiments.
    a  b  c  d  e
17. Many of my misconceptions on science were clarified and resolved during class discussions.  
a b c d e
18. I master science skills (like classifying, measuring, etc.,) that are useful to me outside of school.  
a b c d e
19. We discuss and appreciate the contributions of science and technology to our society.  
a b c d e
20. My teacher uses the usual written tests to test my understanding of the concept.  
a b c d e
21. We are encouraged to maintain a science corner in our classroom.  
a b c d e
22. Assignments which require a variety of resources are given.  
a b c d e
23. My teacher uses a variety of teaching methods (like discussion, demonstration, brain storming, experimenting, etc.) to facilitate our understanding of the topic.  
a b c d e
24. My teacher correlates science topics with other school subjects.  
a b c d e
25. My teacher depends only on the school textbook to present the topics.  
a b c d e
26. We engage in creative discussions on the activities of/for the school science club.  
a b c d e
27. My teacher always leaves a spark in me to read/explore more on the topics taught.  
a b c d e
28. Learning science is a joyful experience which I always look for.  
a b c d e
29. My teacher encourages us to take decisions on our health and lifestyle based on our learning.  
a b c d e
30. What I learn about science is of no use to me in my daily life.  
a b c d e

As I learn Science..............

31. I wish to investigate my own science questions.  
a b c d e
32. I am interested in reading about the research work that scientists do.  
a b c d e
33. I like to solve puzzles and quizzes in science.  
a b c d e

a- Strongly Agree  b- Agree  c- Not Sure  d- Disagree  e- Strongly Disagree
<p>| | | | | | |</p>
<table>
<thead>
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<tbody>
<tr>
<td>34.</td>
<td>I make careful observations while doing experiments and activities in science.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>35.</td>
<td>I am scared of doing science experiments.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>36.</td>
<td>I am interested in many scientific ideas that are not taught at school.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>37.</td>
<td>I get worried if I cannot solve a problem in science.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>38.</td>
<td>I try myself to design activities and experiments in science based on the concept taught.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>39.</td>
<td>I maintain a science dairy to record something relevant/curious about science.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>40.</td>
<td>If I do not understand a concept in my science class, I never look it up.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>41.</td>
<td>I am interested in watching science educational programmes in the television.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>42.</td>
<td>I know that science is useful to me in many ways in my daily life.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>43.</td>
<td>I would like to browse the internet to seek scientific information at my fingertips.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>44.</td>
<td>I feel interested to contribute to the science club activities/projects at school.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>45.</td>
<td>If activities or experiments do not appear to work as predicted, I lose interest in them.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>46.</td>
<td>I try to keep myself abreast with the latest information in science.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>47.</td>
<td>I prefer to find out something without my teacher telling me how to do it.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>48.</td>
<td>I try experiments more than once to check my results.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>49.</td>
<td>I feel that science and technology have made the life of the people comfortable on earth.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>50.</td>
<td>I get confused when I read several books about the same scientific concept.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>51.</td>
<td>I prefer to lead scientific discussions in the class.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>52.</td>
<td>I help my friends to solve problems in science.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>53.</td>
<td>I like to do my best when doing my science homework.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>54.</td>
<td>I learn how science can be a part of my out-of-school life.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
</tbody>
</table>
55. What I learn never encourages me to think.  
a  b  c  d  e
56. I like to do assignments that require a variety of resources.  
a  b  c  d  e
57. I feel excited to watch science exhibitions and wonder on the magic of science.  
a  b  c  d  e
58. I enjoy reading article and books about science.  
a  b  c  d  e
59. I try to correlate my science learning with other school subjects  
a  b  c  d  e
60. I hate homework in science because it is time consuming.  
a  b  c  d  e

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**In my home/family.................................,**

61. I am encouraged to do activities relevant to my science lessons.  
a  b  c  d  e
62. I do activities which help me to understand the science I have learnt.  
a  b  c  d  e
63. My parents share their knowledge of science with me in relevant situations.  
a  b  c  d  e
64. I feel free to raise science questions to facilitates understanding.  
a  b  c  d  e
65. My parents cannot help me with the activities I perform in science.  
a  b  c  d  e
66. I can read/explore further about a scientific idea on which I am interested.  
a  b  c  d  e
67. I apply the learnt science skills at the proper situation/context.  
a  b  c  d  e
68. My parents provide me with extra reading materials relating to science.  
a  b  c  d  e
69. I get support to participate in science club activities/projects/science exhibitions.  
a  b  c  d  e
70. I am scared of trying out experiments done at school.  
a  b  c  d  e
71. My parents are very much concerned about my achievement in science.  
a  b  c  d  e
72. My parents help me to use the internet to seek scientific information.  
a  b  c  d  e
73. I get enough opportunities to apply the science I have learnt and master my science skills.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

74. I work hard with a goal to pursue a career in the field of science.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

75. No one listens to my explanation of the scientific reason behind incidents.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

76. Everyone watch science educational programmes in the television.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

77. I have an encyclopedia/science library to refer science topics.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

78. I try to do science projects as per the instructions in science magazines.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

79. My parents take me to science museums and exhibitions.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

80. My family members believe in superstitions very much.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

81. I get help from my family to complete my science assignments on time.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

82. I have a good collection of the contributions of famous scientists to mankind.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

83. I try to make still and working models having scientific applications.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

84. We regularly subscribe science magazines.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

85. My parents are against trying out activities at home, anticipating accidents.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

86. My family is aware of the importance of science and technology in our society.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

87. My parents meet my science teacher to evaluate my progress in science.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

88. I get enough appreciation for my efforts/achievements in science.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

89. We discuss about the scientific achievements of our nation as it appear on headlines.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree

90. My parents say that reading the science textbook matters more than doing experiments.  
a- Strongly Agree  
b-Agree  
c-Not Sure  
d-Disagree  
e-Strongly Disagree
APPENDIX - II

FINAL FORM OF

CONTEXTUAL VARIABLE SCALE

(ENGLISH & MALAYALAM VERSIONS)
Dear student,

The Contextual Variable Scale has statements relating to you as a student of science. Please read each statement carefully. Circle the letter at the right of the statement that best describes what you think about these statements. This is not a test and there are no ‘right’ or ‘wrong’ answers. Your opinion is what is wanted and it will be kept confidential.

Circle the letter on the right which best describes you.

1. Gender : a-Female b-Male a b
2. Class : a-8 b-9 c-10 a b c Div: .......
3. Location of your school : a-Urban b-Rural a b
4. School management : a-Government b-Private a b
5. Science is one of my favourite school subjects: a-Yes b-No a b
6. Marks scored in science out of 100 in the second terminal examination:
   a- 80 to 100 b- 60 to 79 c- 40 to 59 d- below 40 a b c d

For each of the following statements, draw a circle around
a- if you Strongly Agree with the statement
b- if you Agree with the statement
c- if you are Not Sure about the statement
d- if you Disagree with the statement
e- if you Strongly Disagree with the statement.

Be sure to give your opinion to all the given statements. If you change your mind about an opinion, just cross it out and circle another.
In the science class............................

1. I find it interesting to listen to the explanations of my science teacher than reading text book. a b c d e
2. My teacher uses a variety of teaching-learning materials (like charts, models, experiments, etc.) to explain new science topics. a b c d e
3. I find it hard to do science experiments without instructions from my teacher. a b c d e
4. What I learn have practical applications in my daily life. a b c d e
5. I am afraid to raise questions to my teacher. a b c d e
6. I understand science topics better when my teacher correlates them with my daily life. a b c d e
7. I always get a chance to follow up on the questions I have. a b c d e
8. I enjoy science lessons as my teacher shows good interpersonal relations with us. a b c d e
9. I am praised by my teacher for my efforts in science. a b c d e
10. My teacher demonstrates an excellent knowledge of the science topics. a b c d e
11. I felt it easy to learn science as my teacher always presents new topics based on our previous knowledge or life experiences. a b c d e
12. My teacher emphasizes on the 'why' and 'how' of science rather than 'what' of science. a b c d e
13. My teacher poses questions that elicit our thinking. a b c d e
14. I feel excited to watch the ICT presentations in the class than doing experiments. a b c d e
15. Many of my misconceptions on science were clarified and resolved during class discussions. a b c d e
16. I master science skills (like classifying, measuring, etc.,) that are useful to me outside of school. a b c d e

a- Strongly Agree   b- Agree      c- Not Sure      d- Disagree      e- Strongly Disagree
17. We discuss and appreciate the contributions of science and technology to our society.  
a b c d e
18. We are encouraged to maintain a science corner in our classroom.  
a b c d e
19. Assignments which require a variety of resources are given.  
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20. My teacher uses a variety of teaching methods (like discussion, demonstration, brain storming, experimenting, etc.) to facilitate our understanding of the topic.  
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21. My teacher correlates science topics with other school subjects.  
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22. We engage in creative discussions on the activities of/for the school science club.  
a b c d e
23. My teacher always leaves a spark in me to read/explore more on the topics taught.  
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24. Learning science is a joyful experience which I always look for.  
a b c d e
25. My teacher encourages us to take decisions on our health and lifestyle based on our learning.  
a b c d e
26. What I learn about science is of no use to me in my daily life.  
a b c d e

As I learn Science...................

27. I wish to investigate my own science questions.  
a b c d e
28. I am interested in reading about the research work that scientists do.  
a b c d e
29. I like to solve puzzles and quizzes in science.  
a b c d e
30. I make careful observations while doing experiments and activities in science.  
a b c d e
31. I am scared of doing science experiments.  
a b c d e
32. I am interested in many scientific ideas that are not taught at school.  
a b c d e
33. I get worried if I cannot solve a problem in science.  
a b c d e
34. I try myself to design activities and experiments in science based on the concept taught.  
a b c d e
35. I maintain a science dairy to record something relevant/curious about science.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

36. If I do not understand a concept in my science class, I never look it up.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

37. I am interested in watching science educational programmes in the television.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

38. I know that science is useful to me in many ways in my daily life.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

39. I would like to browse the internet to seek scientific information at my fingertips.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

40. I feel interested to contribute to the science club activities/projects at school.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

41. I try to keep myself abreast with the latest information in science.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

42. I try experiments more than once to check my results.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

43. I feel that science and technology have made the life of the people comfortable on earth.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

44. I prefer to lead scientific discussions in the class.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

45. I help my friends to solve problems in science.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

46. I like to do my best when doing my science homework.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
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47. I learn how science can be a part of my out-of-school life.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

48. What I learn never encourages me to think.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

49. I like to do assignments that require a variety of resources.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

50. I feel excited to watch science exhibitions and wonder on the magic of science.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

51. I enjoy reading article and books about science.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

52. I try to correlate my science learning with other school subjects  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree

53. I hate homework in science because it is time consuming.  
   a. Strongly Agree  
   b. Agree  
   c. Not Sure  
   d. Disagree  
   e. Strongly Disagree
<table>
<thead>
<tr>
<th></th>
<th>Statement</th>
<th>a</th>
<th>b</th>
<th>c</th>
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</thead>
<tbody>
<tr>
<td>54.</td>
<td>I am encouraged to do activities relevant to my science lessons.</td>
<td>a</td>
<td>b</td>
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</tr>
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<td>55.</td>
<td>I do activities which help me to understand the science I have learnt.</td>
<td>a</td>
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<td>c</td>
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<td>e</td>
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<tr>
<td>56.</td>
<td>My parents share their knowledge of science with me in relevant situations.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
<td>e</td>
</tr>
<tr>
<td>57.</td>
<td>I feel free to raise science questions to facilitate understanding.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
<td>e</td>
</tr>
<tr>
<td>58.</td>
<td>My parents cannot help me with the activities I perform in science.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
<td>e</td>
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<td>59.</td>
<td>I can read/explore further about a scientific idea on which I am interested.</td>
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<td>b</td>
<td>c</td>
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<td>e</td>
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<td>60.</td>
<td>I apply the learnt science skills at the proper situation/context.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
<td>e</td>
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<td>61.</td>
<td>My parents provide me with extra reading materials relating to science.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
<td>e</td>
</tr>
<tr>
<td>62.</td>
<td>I get support to participate in science club activities/projects/science exhibitions.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
<td>e</td>
</tr>
<tr>
<td>63.</td>
<td>My parents are very much concerned about my achievement in science.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
<td>e</td>
</tr>
<tr>
<td>64.</td>
<td>My parents help me to use the internet to seek scientific information.</td>
<td>a</td>
<td>b</td>
<td>c</td>
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<td>65.</td>
<td>I get enough opportunities to apply the science I have learnt and master my science skills.</td>
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<td>I work hard with a goal to pursue a career in the field of science.</td>
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<td>b</td>
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<td>67.</td>
<td>No one listens to my explanation of the scientific reason behind incidents.</td>
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<td>68.</td>
<td>Everyone watch science educational programmes in the television.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
<td>e</td>
</tr>
<tr>
<td>69.</td>
<td>I have an encyclopedia/science library to refer science topics.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
<td>e</td>
</tr>
<tr>
<td>70.</td>
<td>I try to do science projects as per the instructions in science magazines.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
<td>e</td>
</tr>
<tr>
<td>71.</td>
<td>My parents take me to science museums and exhibitions.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
<td>e</td>
</tr>
<tr>
<td>72.</td>
<td>I get help from my family to complete my science assignments on time.</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
<td>e</td>
</tr>
</tbody>
</table>

**a- Strongly Agree  b-Agree  c-Not Sure  d-Disagree  e-Strongly Disagree**
73. I have a good collection of the contributions of famous scientists to mankind.
   a  b  c  d  e
74. I try to make still and working models having scientific applications.
   a  b  c  d  e
75. We regularly subscribe science magazines.
   a  b  c  d  e
76. My family is aware of the importance of science and technology in our society.
   a  b  c  d  e
77. My parents meet my science teacher to evaluate my progress in science.
   a  b  c  d  e
78. I get enough appreciation for my efforts/achievements in science.
   a  b  c  d  e
79. We discuss about the scientific achievements of our nation as it appear on headlines.
   a  b  c  d  e

Thank You

a- Strongly Agree         b-Agree           c-Not Sure         d-Disagree         e-Strongly Disagree
CONTEXTUAL VARIABLE SCALE
(ವಿನ್ಯಾಸ ವಿಧಾನ ಮಾನವು ಕ್ರಮಾಂಕವನ್ನು ಅರ್ಪಿಸಿ)

ನೇತೃತ್ವ ಕ್ರಮವಿಧಾನ ಪ್ರದರ್ಶನದಲ್ಲಿ ಮಾನವು ಕ್ರಮಾಂಕವನ್ನು ಅರ್ಪಿಸಿ

ಗುರುತಿಸುವ ವಿಧಾನ : ........................................................................................................................................
ಗುರುತಿಸುವ ವಿಧಾನ : ........................................................................................................................................

(ಪ್ರತಿ ಗುರುತಿಸುವ ವಿಧಾನ),

1. s / s : a. s b. s a b
2. s : a. 8 b. 9 c. 10 a b c
3. s ಗುರುತಿಸಿದ್ದಾಗಿ ಪ್ರತಿಯೊಂದು : a. s b. (s) a b
4. s ಗುರುತಿಸಿದ್ದಾಗಿ ಪ್ರತಿಯೊಂದು : a. s b. s a b
5. s ಗುರುತಿಸಿದ್ದಾಗಿ ಪ್ರತಿಯೊಂದು : a. s b. s a b
6. s ಗುರುತಿಸಿದ್ದಾಗಿ ಪ್ರತಿಯೊಂದು : a. s b. s c. 10 a b c d

(ಪ್ರತಿ ಗುರುತಿಸುವ ವಿಧಾನ) (ಪ್ರತಿ ಕ್ರಮಾಂಕವು)

1. s / s ಕ್ರಮಾಂಕ : a. s b. s a b
2. s ಕ್ರಮಾಂಕ : a. 8 b. 9 c. 10 a b c
3. s ಕ್ರಮಾಂಕ ಪ್ರತಿಯೊಂದು : a. s b. (s) a b
4. s ಕ್ರಮಾಂಕ ಪ್ರತಿಯೊಂದು : a. s b. s a b
5. s ಕ್ರಮಾಂಕ ಪ್ರತಿಯೊಂದು : a. s b. s a b
6. s ಕ್ರಮಾಂಕ ಪ್ರತಿಯೊಂದು : a. s b. s c. 10 a b c d
1. കഥയുടെ സ്കേപ്പിനുള്ള പ്രധാന ഭാഗങ്ങളാണ് അന്തരിപ്പം. കഥയുടെ രീതിയിൽ പേരിട്ട് പ്രധാന ഭാഗങ്ങള്‍ എന്താണ്‌? അതിന്റെ സാധ്യത സമാനമാണ്‌. 
2. കഥക്ക് പുല്‍ക്കുലെ പ്രത്യേകതകളും അതിന്റെ മറ്റു പ്രദർശനങ്ങളും (ടുക്: വിഭവമുണ്ട്, ലഭ്യതാവാണ്, പഠനപ്രാധാന്യം സൃഷ്ടിക്കും) പ്രത്യേകതകള്‍ കഥയുടെ പ്രധാനഭാഗങ്ങളാണ്‌. 
3. സ്കോപ്പ് പ്രവാചകന്റെ വിഭാഗം എന്നും കഥയുടെ പ്രധാനഭാഗങ്ങള്‍ എന്താണ്‌? അതിന്റെ സാധ്യത സമാനമാണ്‌. 
4. പ്രത്യേകിതാത്ത സ്കോപ്പ് (ഫോളോവ്) എന്നും കഥയുടെ പ്രധാനഭാഗങ്ങള്‍. 
5. സ്കോപ്പ് പ്രവാചകന്റെ വിഭാഗം എന്നും കഥയുടെ പ്രധാനഭാഗങ്ങള്‍. 
6. കഥയുടെ പ്രധാനഭാഗങ്ങള്‍ പുറത്തുള്ള പ്രത്യേകിതം എന്നും കഥയുടെ പ്രധാനഭാഗങ്ങള്‍. 
7. കഥയുടെ പ്രധാനഭാഗങ്ങള്‍ മറ്റു പ്രത്യേകതയും പ്രവാചകന്റെ വിഭാഗമാണ്‌. 
8. സ്കോപ്പ് പ്രവാചകന്റെ വിഭാഗം എന്നും കഥയുടെ പ്രധാനഭാഗങ്ങള്‍. 
9. കഥയുടെ പ്രധാനഭാഗങ്ങള്‍ പ്രവാചകന്റെ വിഭാഗമാണ്‌. 
10. കഥയുടെ പ്രവാചകന്റെ വിഭാഗം എന്നും കഥയുടെ പ്രധാനഭാഗങ്ങള്‍. 
11. കഥയുടെ പ്രവാചകന്റെ വിഭാഗം എന്നും കഥയുടെ പ്രധാനഭാഗങ്ങള്‍. 
12. കഥയുടെ പ്രവാചകന്റെ വിഭാഗം എന്നും കഥയുടെ പ്രധാനഭാഗങ്ങള്‍. 
13. കഥയുടെ പ്രവാചകന്റെ വിഭാഗം എന്നും കഥയുടെ പ്രധാനഭാഗങ്ങള്‍. 
14. കഥയുടെ പ്രവാചകന്റെ വിഭാഗം എന്നും കഥയുടെ പ്രധാനഭാഗങ്ങള്‍. 
15. കഥയുടെ പ്രവാചകന്റെ വിഭാഗം എന്നും കഥയുടെ പ്രധാനഭാഗങ്ങള്‍. 
16. കഥയുടെ പ്രവാചകന്റെ വിഭാഗം എന്നും കഥയുടെ പ്രധാനഭാഗങ്ങള്‍. 

a. സമ്പ്രദായം സംസ്കാരം 
b. അവാം പേര്‌നിര്‌ക്കു 

c. നിര്‌ക്കു 

d. പാരമ്പര്യം 

e. മാത്രമെ മാത്രമെ
17. എന്നിവ പ്രകാശക്കാരും പ്രാണിവും പ്രകൃതിരാജാവും കാലാവധിയും സമാനമായ ഭൂമിയിൽ നിലനിൽപ്പുന്നു.

18. കൃഷിരുത്ത് പുള്ളി വെള്ള എന്ന് പ്രകാശക്കും പ്രാണിവും പ്രകൃതിരാജാവും കാലാവധിയും തെങ്ങിൻ ഭൂമിയിൽ നിലനിൽപ്പുന്നു.

19. കണ്ണതോട്ടാറും പിരുന്നോട്ടായിരിക്കുന്നതും കൃഷിരുത്തിന്റെ ഹാരം എന്ന ഭ്രമണത്തിലും നിശ്ചയിതമായ ഭൂമിയിൽ നിൽപ്പുന്നു.

20. എന്നിവ തീയതിക്കും കേന്ദ്രരുത്തിന്റെ പ്രാണിവും പ്രകൃതിരാജാവും (അധിവിഷ്കാർ, പരിശീലനം, പരിശീലനത്തിൽ etc) നിരമ്പുന്നതുമായി.

21. ചിത്രം വേണം, എന്നിവ പ്രകൃതിരാജാവും പ്രകൃതിരാജാവും ഭൂമിയിൽ നിന്നും സൃഷ്ടിപ്പെട്ടു എന്നാണ്.

22. ഉപകരണം പ്രകാശക്കും / പ്രകാശക്കും കൃഷിരുത്തിന്റെ (പ്രക്രിയാരൂപം നിലനിൽപ്പുന്ന ഭൂമിയിൽ) നിന്നും പ്രകൃതിരാജാവും നിരമ്പുന്നതുമായി.

23. മുഖ്യമായും ചിത്രാകൃതിക്കും / കൃഷിരുത്തിന്റെ (പുച്ചവിൻ നിശ്ചയിതമായ) നിരമ്പുന്നതുമായി.

24. സുവാസികർ നാം കൃഷിരുത്തിന്റെ (സൃഷ്ടിപ്പെട്ടിട്ടുള്ള) നിരമ്പുന്നതും തോസിമ്പാത്തിന്റെ (ആരാധനാരൂപം നിലനിൽപ്പുന്ന) നിരമ്പുന്നതുമായി.

25. കണ്ണതോട്ടാറും പിരുന്നോട്ടായിരിക്കുന്നതും പ്രകൃതിരാജാവും (പുച്ചവിൻ നിശ്ചയിതമായ) നിരമ്പുന്നതുമായി.

26. എന്നിവ പ്രകാശക്കും / കൃഷിരുത്തിന്റെ (സൃഷ്ടിപ്പെട്ടിട്ടുള്ള) നിരമ്പുന്നതുമായി ഉപയോഗിക്കുന്നു.

27. എന്നിവ കണ്ണതോട്ടാറും / പിരുന്നോട്ടായിരിക്കുന്ന ഭൂമിയിലായിരിക്കുന്ന അതിന് വിവരണം നൽകുന്നു.

28. എന്നിവ പ്രകൃതിരാജാവും / പരാമാർശത്തിന്റെ (പ്രകൃതിരാജാവും) നിരമ്പുന്നതുമായി.

29. എന്നിവ പ്രകരണം (പ്രകൃതിരാജാവും) നിരമ്പുന്നതുമായി.

30. എന്നിവ പ്രകൃതിരാജാവും / പ്രകൃതിരാജാവും / (പ്രകൃതിരാജാവും) ക്രമീകരണം നിരമ്പുന്നതുമായി.

31. എന്നിവ പ്രകൃതിരാജാവും ക്രമീകരണം സമാപ്തിയാണ്.

   a. ഭൂമിയിൽ സാമാനികാവണം   b. പരാമാർശത്തിന്റെ നിരമ്പ   c. തീയതിക്കും   d. പ്രകൃതിരാജാവും   e. ഭൂമിയിൽ പ്രകൃതിരാജാവും
32. ഗാതകുരു പ്രാണിപാരാജകമായി മാത്ര പൊതുജനാധിപത്യം നെറിയത് ചെയ്യാവുന്നത്.
a b c d e

33. അധിനിബിംബം നിർമ്മിച്ച് പ്രേഷിക്കുന്നത് അപണിക്കാൻ കാരണമാരം ഉടയാതിരിക്കുന്നത്.
a b c d e

34. പരിശീലന്റെ നാടോടിനു പാലിക്കേറ്റം മാജിയറൽനിക്കൽ ഉപരിപാലനം നടത്താൻ കഴിയാത്തതിനാൽ കൊന്നത് ശ്രമമാരം.
a b c d e

35. പൊതുജനാധിപത്യം പാലിക്കേറ്റം നടത്താൻ കഴിയുന്നത് ആശ്രയിക്കുന്നത് പ്രായമാരിക്കാതിരിക്കുന്നത്.
a b c d e

36. പൊതുജനാധിപത്യം നിർമ്മിച്ച് പോലുള്ളതായി പ്രായമാരിക്കാതിരിക്കുന്നത് വളരെ അറിയില്ല അത് അത് അത് അത് അത് അത്.
a b c d e

37. പൊതുജനാധിപത്യം പാലിക്കേറ്റം മാജിയറൽനിക്കൽ ഉപരിപാലനം നടത്താൻ കഴിയുന്നത്.
a b c d e

38. പൊതുജനാധിപത്യം പാലിക്കേറ്റം നടത്താൻ കഴിയുന്നത് പാലിക്കേറ്റം നടത്താൻ കഴിയുന്നത്.
a b c d e

39. പൊതുജനാധിപത്യം പാലിക്കേറ്റം മാജിയറൽനിക്കൽ ഉപരിപാലനം നടത്താൻ കഴിയുന്നത് കുറയ്ക്കാൻ പ്രായമാരിക്കാതിരിക്കുന്നത്.
a b c d e

40. പൊതുജനാധിപത്യം പാലിക്കേറ്റം മാജിയറൽനിക്കൽ ഉപരിപാലനം നടത്താൻ കഴിയുന്നത്.
a b c d e

41. പൊതുജനാധിപത്യം പാലിക്കേറ്റം മാജിയറൽനിക്കൽ ഉപരിപാലനം നടത്താൻ കഴിയുന്നത്.
a b c d e

42. പൊതുജനാധിപത്യം പാലിക്കേറ്റം നടത്താൻ കഴിയുന്നത് പ്രായമാരിക്കാതിരിക്കുന്നത്.
a b c d e

43. പൊതുജനാധിപത്യം പാലിക്കേറ്റം മാജിയറൽനിക്കൽ ഉപരിപാലനം നടത്താൻ കഴിയുന്നത്.
a b c d e

44. പൊതുജനാധിപത്യം പാലിക്കേറ്റം മാജിയറൽനിക്കൽ ഉപരിപാലനം നടത്താൻ കഴിയുന്നത്.
a b c d e

45. പൊതുജനാധിപത്യം പാലിക്കേറ്റം മാജിയറൽനിക്കൽ ഉപരിപാലനം നടത്താൻ കഴിയുന്നത്.
a b c d e

46. പൊതുജനാധിപത്യം പാലിക്കേറ്റം നടത്താൻ കഴിയുന്നത് പ്രായമാരിക്കാതിരിക്കുന്നത്.
a b c d e

47. പൊതുജനാധിപത്യം പാലിക്കേറ്റം നടത്താൻ കഴിയുന്നത് മാജിയറൽനിക്കൽ ഉപരിപാലനം നടത്താൻ കഴിയുന്നത്.
a b c d e

48. പൊതുജനാധിപത്യം പാലിക്കേറ്റം, പൊതുജനാധിപത്യം മാജിയറൽനിക്കൽ ഉപരിപാലനം നടത്താൻ കഴിയുന്നത്.
a b c d e

49. പൊതുജനാധിപത്യം പാലിക്കേറ്റം നടത്താൻ കഴിയുന്നത് മാജിയറൽനിക്കൽ ഉപരിപാലനം നടത്താൻ കഴിയുന്നത്.
a b c d e

a. എല്ലാത്തരം പ്രായമാരിക്കാതിരിക്കുന്നത്
b. എല്ലാത്തരം
c. എല്ലാത്തരം
d. എല്ലാത്തരം
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<td>50.</td>
<td>എല്ലാം (ബാഗ്നിയോസ്റ്റിയൻ എന്റിപ്പാടം പരമാണുരീതികമായി എത്തി, എല്ലായിടത്തും ഉൽപ്പന്നത്തേയും വ്യാപാരസ്ഥാപനത്തേയും)</td>
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<td>51.</td>
<td>എല്ലാം തിരയാതെ പുനഃസ്ഥാപിപ്പിച്ചു വാക്കുകളിൽ എണ്ണം പെടുത്തി.</td>
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<td>52.</td>
<td>അതിനും എല്ലാം മാത്രമായി പുനഃസ്ഥാപിപ്പിക്കുന്ന എന്റിപ്പാടികൾ എന്റെ ഉപയോഗത്തിലാണ്.</td>
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<td>53.</td>
<td>ഗണിതാളിൽ പരമാണുരീതികമായി വ്യാപാരസ്ഥാപനത്തേയും ഉൽപ്പന്നത്തേയും</td>
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**പുതിയ പ്രശ്നം / കൂടുതൽ വിശദീകരണം...**

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<td>54.</td>
<td>കൂടുതൽ എല്ലാം വിവാഹസംസ്ഥാപനം (പ്രായോഗികം) (ബാഗ്നിയോസ്റ്റിയൻ പരമാണുരീതികമായി എത്തി, എന്റെ ഉപയോഗത്തിലാണ്)</td>
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<td>55.</td>
<td>പിന്നീട് എല്ലാം പരമാണുരീതികമായി ഉൽപ്പന്നത്തേയും വ്യാപാരസ്ഥാപനത്തേയും</td>
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<td>56.</td>
<td>ഉടെയെയും എല്ലാം ക്രീമോസ്റ്റിക പരമാണുരീതികമായി എത്തി ഉൽപ്പന്നത്തേയും വ്യാപാരസ്ഥാപനത്തേയും (നേരേയും) പെടുത്തി.</td>
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<td>57.</td>
<td>എന്റെ വ്യാപാരസ്ഥാപനം പരമാണുരീതികമായി ഉൽപ്പന്നത്തേയും വ്യാപാരസ്ഥാപനത്തേയും എന്റെ ഉപയോഗത്തിലാണ്.</td>
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<td>58.</td>
<td>ഗണിതാളിൽ എല്ലാം (ബാഗ്നിയോസ്റ്റിയൻ പരമാണുരീതികമായി)</td>
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<td>59.</td>
<td>എല്ലാം വ്യാപാരസ്ഥാപനം, എന്റെ ഉപയോഗത്തിലാണ് ഉൽപ്പന്നത്തേയും വ്യാപാരസ്ഥാപനത്തേയും</td>
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<td>60.</td>
<td>വാഴയുടെ പത്തെയും പരമാണുരീതികമായി എത്തി ഉൽപ്പന്നത്തേയും വ്യാപാരസ്ഥാപനത്തേയും</td>
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<td>61.</td>
<td>കൂടുതൽ എന്റെ ഉപയോഗത്തിലാണ് ഉൽപ്പന്നത്തേയും വ്യാപാരസ്ഥാപനത്തേയും എന്റെ ഉപയോഗത്തിലാണ്.</td>
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<td>62.</td>
<td>വാഴയുടെ പത്തെയും (ബാഗ്നിയോസ്റ്റിയൻ പരമാണുരീതികമായി) / എന്റെ ഉപയോഗത്തിലാണ് ഉൽപ്പന്നത്തേയും വ്യാപാരസ്ഥാപനത്തേയും</td>
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<td>63.</td>
<td>അതിനും ഉൽപ്പന്നത്തേയും വ്യാപാരസ്ഥാപനത്തേയും എന്റെ ഉപയോഗത്തിലാണ്.</td>
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<td>എല്ലാം വ്യാപാരസ്ഥാപനം എന്റെ ഉപയോഗത്തിലാണ് ഉൽപ്പന്നത്തേയും വ്യാപാരസ്ഥാപനത്തേയും</td>
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| a. എല്ലാം ഗാനിതസ്ഥാപനം | b. എല്ലാം ഗാനിതസ്ഥാപനം | c. എല്ലാം ഗാനിതസ്ഥാപനം | d. എല്ലാം ഗാനിതസ്ഥാപനം | e. എല്ലാം ഗാനിതസ്ഥാപനം |
Note: Each indicator is one of many behavioral examples which may be used to assess student competency in the particular process skill.

Basic science process skills

1. OBSERVING
   - use one or more of the senses to gather information about an object/event.
   - sense similarities and differences between objects
   - match objects to a given description
   - identify properties of an object, i.e., shape, color, size, and texture.

2. CLASSIFYING
   - identify properties useful for classifying objects
   - group objects by their properties/similarities and differences/criteria/observable traits
   - construct and use classification systems in tabular and other visual forms.

3. INFERRING
   - suggest explanations for events based on observations.
   - to analyse the cause and effect of decisions
   - organize the observed data in a logical sequence leading to possible solutions.

4. PREDICTING
   - make use of evidences to formulate the sequence of a forthcoming process of action or outcome.
   - use patterns or relationships to extrapolate to cases where no information has been gathered
   - forecast events based on observations/previous experiences/certain pattern of reliable data
5. USING SPACE/TIME RELATIONS

- describe an object's position i.e., above, below, beside, etc., in relation to other objects.
- describe the motion, direction, spatial arrangement, symmetry, and shape of an object compared to another object.
- Design patterns or interrelationship in a coherent manner and shape that promotes scientific appreciation and aesthetic sense.

6. USING NUMBERS

- compute results from raw data.
- Apply numerical values in place of variables and vice-verse to generate meaning.
- Resolve theoretical dilemmas in an academic pursuit using mathematical figures of scientific significance

7. MEASURING

- measure in a given situation using appropriate units to a suitable degree of accuracy
- using both standard and non-standard measures or estimates to describe the dimensions of an object.
- using both standard and non-standard measures or estimates in making comparisons or taking readings.

Integrated Science Process Skills

8. COMMUNICATING

- translate information into other forms such as graphs, tables and charts
- read information given in the form of graphs, tables, etc.,
- decide the best way of presenting information of a certain kind.

9. INTERPRETING DATA

- identify the relationship between the variables, from a given graph/table of data (relating to an investigation.)
- Drawing conclusions from the data by determining apparent patterns or relationships in it.
• Forming a reasonable conclusion which relates trends in the data to variables.

10. HYPOTHEIZING

• identify questions or statements which can and cannot be tested.
• design statements, i.e., questions, inferences, predictions, which can be tested by an experiment
• stating the expected outcome of an experiment
• develop testable explanation
• explain a given observation in terms of conceptual relationships.

11. EXPERIMENTING

• identify what is to be measured or compared in a given investigation
• select a suitable design for an investigation to test a hypothesis
• recognize limitations of methods and tools used in experiments, i.e. experimental error.
• utilize safe procedures while conducting investigations.
• using appropriate apparatus

12. IDENTIFYING AND CONTROLLING VARIABLES

• identify the manipulated (independent) variable, responding (dependent) variable, and variables-held-constant in an experiment.
• identify the variables that may affect the dependent variable as stated in a problem.
• Assign the limits of control of the selected variable in an investigation.
• Proposes degree of freedom of variables in an experiment to test hypothesis.
• Control the variable in an investigation.

13. DEFINING OPERATIONALLY

• Stating how to measure a variable in an experiment.
• Defining the variable according to the actions or operations to be performed on or with it.
• Formulate a meaningful statement that generate a sense of understanding.
APPENDIX – IV(A)

DRAFT FORM OF

SCIENCE PROCESS SKILL ELICITATION SCHEDULE-

SPROSES
• Please do not write on the test booklet.
• This booklet contains 70 multiple choice questions.
• Mark your answers in the given response sheet using a pencil.
• Return the test booklet and the response sheet soon after you finish the test.
1. Which of the following could be observed with the sense of sight?
   a) a change in the noise made by an engine
   b) a change in the height of a plant
   c) a change in the room temperature
   d) a change in the taste of a food.

2. Select the magnetic substances from the following list- wood, gold, coal, iron piece.
   a) wood & gold  
   b) gold & coal  
   c) wood & iron piece  
   d) only iron piece

3. Select the correct weight to balance the weight on the weighing scale.

   ![Weighing Scale Diagram]

   a) 600g  
   b) 1000g  
   c) 800g  
   d) 1200g

**Questions 4, 5 and 6 are based on the following:**
Sally planted bean seedlings in three pots of the same size, but having different types of soil. She wanted to know whether the type of soil would affect the growth of bean plants. The pots were placed near a sunny window and watered with the same amount of water everyday. The differences in the plant growth were recorded after a week.

4. The term 'plant growth' as stated in the question refers to:
   a) Height of the plant as measured from the top of the soil to the tip of its stem.
   b) Height of the plant as measured from the tip of the root to the tip of its stem.
   c) Height of the plant as measured from the base of the pot to the tip of its stem.
   d) Height of the plant as measured from the tip of the root to the base of the pot.

5. Here, bean growth will be measured in
   a) m/week  
   b) cm/day  
   c) cm/week  
   d) m/day

6. Which factor do you think made a difference in the growth rates of the bean seedlings?
   a) amount of sunlight  
   b) amount of water  
   c) type of soil  
   d) size of the pot
7. Acids differ from bases in many ways. Seema wanted to test whether her household detergent is acidic or basic. For this purpose, she made a solution using a little of the detergent. How should she proceed further to investigate herself safely?

a) wet a litmus paper with it and note the change in colour.
b) taste it to find whether it is bitter
c) smell it to sense whether it is good
d) mix it to find whether it is soapy

8. Which of the picture groups below shows the objects in order from the smallest to the largest numbers?

![Picture Group]

9. Force is measured in Newton (N). If 1kgwt = 9.8 N, what would be 50 kg wt?

a) 49N  b) 490N  c) 4.9N  d) 980N

10. Light travels faster than sound. This statement can be inferred from which if the following?

a) thunderclap and lightning occurs simultaneously
b) thunderclap is heard after seeing the lightening flash
c) lightning flash is seen after hearing the thunderclap
d) lightning flash is produced nearer to the observer

11. Sound waves need a material medium such as air for its propagation. Which of the following could be true about moon, which has no atmosphere?

a) there can be no sound transmission on the moon.
b) sound waves travel faster on the moon
c) sound waves travel slower in the moon
d) sound is heard louder on moon than on earth
Bar graphs are a type of graph that visually displays information using a series of bars, rectangles, or objects. A bar graph showing information about a group of children’s favorite color is given below. Use this bar graph to answer questions 12, 13 & 14

12. Which is the colour liked by majority of the students?
   a) Blue  b) pink  c) red  d) black

13. How many students like blue colour?
   a) 5   b) 15   c) 22  d) 10

14. The number of students in the group is
   a) 36   b) 25   c) 48  d) 54

15. The frequency polygon shows the amount of milk consumed in millilitres consumed by a number of families per day. Find out how many families consume 3000 millilitres of milk per day.
   a) 3  b) 4   c) 6  d) 8
16. Plants require nutrients for their proper growth. Compost is natural manure rich in organic nutrients, but lacks inorganic nutrients like nitrogen (N), phosphorous (P) and potassium (K). NPK fertilizers are man-made fertilizers rich in inorganic nutrients N, P & K. Which of the following soils yield better growth of outdoor potted plants, if watered regularly?
   a) soil mixed with compost
   b) soil mixed with NPK fertilizer
   c) soil mixed with NPK fertilizer and compost
   d) soil without any fertilizer

17. Observe the two pictures. Are they identical? If not, how many differences can you spot among them?

[Two pictures showing slightly different positions of objects]

a) 5       b) more than 5       c) less than 5       d) none

18. Look at the information about six students in a certain school in Kerala.

<table>
<thead>
<tr>
<th>Name</th>
<th>Gender</th>
<th>Nationality</th>
<th>Date of birth</th>
<th>Year of joining school</th>
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<td>Sam</td>
<td>Male</td>
<td>Indian</td>
<td>2-6-1990</td>
<td>1995</td>
</tr>
<tr>
<td>Ben</td>
<td>Male</td>
<td>Indian</td>
<td>4-11-1989</td>
<td>1995</td>
</tr>
<tr>
<td>Ann</td>
<td>Female</td>
<td>Indian</td>
<td>23-5-1990</td>
<td>1995</td>
</tr>
<tr>
<td>Mary</td>
<td>Female</td>
<td>Indian</td>
<td>17-10-1989</td>
<td>1995</td>
</tr>
<tr>
<td>John</td>
<td>Male</td>
<td>Indian</td>
<td>10-3-1990</td>
<td>1995</td>
</tr>
<tr>
<td>Shiny</td>
<td>Female</td>
<td>Indian</td>
<td>27-2-1990</td>
<td>1995</td>
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Which of the following categories would NOT allow you to separate these students into at least TWO different groups?
   a) date of birth
   b) gender and date of birth
   c) nationality and year of joining school
   d) gender
19. A thermometer is a device that measures temperature. The thermometer A reads 34°C. What is the reading shown in the thermometer B?

![Thermometer A and B](image)

a) 45°C  

b) 47°C  

c) 49°C  

d) 43°C  

20. What should she change in the recipe?
   a) amount of water  
   b) amount of sugar  
   c) amount of dried yeast  
   d) number of lemons

21. Which of the following should be kept constant in the recipe?
   a) amount of sugar and dried yeast  
   b) amount of water and sugar  
   c) number of lemons, amount of water and dried yeast  
   d) amount of sugar and number of lemons.

22. Manoj thinks that the more the air pressure in a football, the farther it moves ahead when kicked. To investigate this, he uses several footballs and an air pump with a pressure gauge. What should Manoj do to conduct the investigation?
   a) Kick the footballs having different air pressure from different points on the ground with different amount of forces.
   b) Kick the footballs having different air pressure from the same point on the ground with the same force.
   c) Kick a football with different amounts of force from the same point on the ground.
   d) Kick the footballs having the same air pressure at various angles on the ground.
23. 1000 mm makes a metre. The length in millimeters of a rope of length 10 metres is
   a) 100          b) 1000          c) 10000          d) 100000

24. Density = mass / volume. If a glass piece of density 2.5g/ cm³ displaces 10 cm³ of water, what will be its mass?
   a) 25g          b) 250g          c) 100g          d) 150g

25. One litre of water is poured into vessels of the following shapes. Which vessel contains water to the maximum height?

26. The human heart is a powerful pump that ceaselessly supplies blood to each and every part of the body. The pulse tells you about the condition of the heart. The normal pulse rate at rest, ranges from 60-100 beats per minute (bpm) in human adults. It was observed that Sam had a pulse rate of 123 bpm after an exercise session in the morning. This shows that
   a) Sam’s heart pumps blood faster during exercises.
   b) Sam’s heart pumps blood slower during exercises.
   c) Sam is having abnormal heartbeat.
   d) Sam is facing the risk of a heart attack.

27. The soil pH is a measure of the acidity or basicity in soils. It ranges from 0 to 14, with 7 being neutral. A pH below 7 is acidic and above 7 is basic. The optimum pH range for most plants is between 6 and 7.5. Paddy grows best when the soil pH is between 5 and 6.5. This means that
   a) Acidic soil is best for paddy.
   b) Basic soil is best for paddy.
   c) Neutral soil is best for paddy.
   d) Both acidic and neutral soil is best for paddy.
Questions 28 and 29 are based on the following graph:

The world population is the totality of all living humans on the planet Earth. The following graph relates to world population growth.

28. It is estimated that the world population would reach 10 billion in the year .......
   a) 2100   b) 2050   c) 2011   d) 2020

29. Which of the following statements are true, according to the above graph?
   a) The world population decreases continuously.
   b) The world population is decreasing in the recent years.
   c) The world population decreases steadily.
   d) The world population has experienced continuous growth.

30. The average height – weight chart of boys of different ages is given below. Based on this, what would be the height of a boy who weighs 55 kg?

<table>
<thead>
<tr>
<th>Age</th>
<th>Weight (kg)</th>
<th>Height (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 years</td>
<td>32.2</td>
<td>140.0</td>
</tr>
<tr>
<td>12 years</td>
<td>37.0</td>
<td>147.0</td>
</tr>
<tr>
<td>13 years</td>
<td>40.9</td>
<td>153.0</td>
</tr>
<tr>
<td>14 years</td>
<td>47.0</td>
<td>160.0</td>
</tr>
<tr>
<td>15 years</td>
<td>52.6</td>
<td>166.0</td>
</tr>
<tr>
<td>16 years</td>
<td>58.0</td>
<td>171.0</td>
</tr>
<tr>
<td>17 years</td>
<td>62.7</td>
<td>175.0</td>
</tr>
<tr>
<td>18 years</td>
<td>65.0</td>
<td>177.0</td>
</tr>
</tbody>
</table>

   a) 162cm   b) 172 cm   c) 155 cm   d) 169 cm
31. The magnitude of the force of attraction between molecules of a solid, liquid and gas is solid > liquid > gas. When liquid water is heated, it changes to gaseous water vapour. During this process, the force of attraction between the molecules of water will
   a) remain the same
   b) become stronger
   c) become weaker
   d) become bigger in size

32. Salt dissolves in water. The hotter the water, the faster salt will dissolve in it. Look at the jars. Equal amount of salt is added to equal volume of water taken in different jars kept at different temperatures. Put the jars in order from the slowest to the fastest dissolving.

   a) A C B D
   b) D B C A
   c) B A C D
   d) A B C D

**Questions 33 and 34 are based on the following:**
Anu helps her mother in the kitchen. She noticed that sugar dissolves more in hot water. Her mother told her that the amount of water, temperature and presence or absence of stirring, affect the amount of sugar that dissolves in water.

33. Which of the following is NOT likely to be a factor that affects the amount of sugar that dissolves in a given amount of water?
   a) amount of water
   b) room temperature
   c) stirring the solution
   d) temperature of water

34. Which of the following will help Anu to study the effect of temperature on the solubility of sugar in water?
   a) add more sugar
   b) add more water
   c) increase or reduce the flame of the gas stove.
   d) stir for longer time
35. The following figure shows the growth of a plant as an increase in its height. The height of the plant was measured and recorded on specific days. It measured 2cm on 26 Nov. How much did the plant grow in between 2\textsuperscript{nd} December and 15\textsuperscript{th} December?

![Plant Growth Diagram]

- a) 4 cm  
- b) 5 cm  
- c) 6.5 cm  
- d) 8 cm

36. Sunil wanted to test the fact that when water is boiled, the rate of water loss is affected by the size of the container used. He poured the same amount of water into containers made of the same material, but of various sizes. He applied the same amount of heat to all the containers for 30 minutes and measured the amount of water remaining in each container. Which of the following methods is the most suitable one to determine the rate of water loss in this investigation?

- a) Determine the time taken for the water to boil in each of the containers.
- b) Measure the amount of water left in each container after boiling.
- c) Determine the difference between the initial and final amounts of water, in a given time.
- d) Use different sizes of the containers to boil the water for 30 minutes.

37. Yesterday, the atmospheric temperature was 28°C. Today, it is 33°C. How many degrees warmer is it today when compared with yesterday?

- a) 8°C  
- b) 6°C  
- c) 4°C  
- d) 5°C
38. If 1 ton = 1000kg, what will be 20 tonnes?

a) 2000kg  b) 20000kg  c) 500kg  d) 50 kg

39. The apparatus contains a liquid. In which part is the figure wrong?

40. Stainless steel is used to make cutlery items and food containers. Which of the following properties make it suitable for both these uses?
   a) It is a good conductor of heat.
   b) It is a good conductor of electricity.
   c) It is resistant to corrosion.
   d) It is very strong.

41. Ice is about 9% less dense than water. When an ice cube is put into a beaker containing water, which among the following is more likely to happen?

42. Leena washed four towels and hung them up in different places to make it dry. She wanted to see if the places made any difference to how quickly they dried. Which of these places do you think the towel would dry quickest?

   a) in a cool room by an open window
   b) in a warm room by an open window
   c) in a warm room by a closed window
   d) in a cool room by a closed window
**Questions 43 and 44** are based on the following table.

A bird's beak and feet can tell us much about their habitat and lifestyle.

<table>
<thead>
<tr>
<th>Bird</th>
<th>Type of Feet</th>
<th>Type of Beak</th>
<th>Probable Diet</th>
<th>Probable Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicken</td>
<td>short, blunt</td>
<td>short &amp; rounded</td>
<td>seeds, insects</td>
<td>meadow</td>
</tr>
<tr>
<td>Duck</td>
<td>webbed</td>
<td>flat</td>
<td>algae</td>
<td>water</td>
</tr>
<tr>
<td>Eagle</td>
<td>talons</td>
<td>hooked</td>
<td>small animals</td>
<td>forest</td>
</tr>
<tr>
<td>Owl</td>
<td>talons</td>
<td>curved</td>
<td>small animals</td>
<td>forest</td>
</tr>
<tr>
<td>Pelican</td>
<td>webbed</td>
<td>scooped</td>
<td>fish</td>
<td>water</td>
</tr>
<tr>
<td>Woodpecker</td>
<td>2 toes on front, 2 on back</td>
<td>chisel</td>
<td>insects</td>
<td>forest</td>
</tr>
</tbody>
</table>

43. Name the water bird with webbed feet and flat beak
   a) pelican  b) eagle  c) duck  d) woodpecker

44. The bird with short, rounded beak that feeds on insects is
   a) chicken  b) woodpecker  c) duck  d) owl

Use the average height/weight chart of boys of ages 1 to 7 given below to answer **ques 45**.

<table>
<thead>
<tr>
<th>Age</th>
<th>Weight (kg)</th>
<th>Height (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year</td>
<td>10.2</td>
<td>76.1</td>
</tr>
<tr>
<td>2 years</td>
<td>12.3</td>
<td>85.6</td>
</tr>
<tr>
<td>3 years</td>
<td>14.6</td>
<td>94.9</td>
</tr>
<tr>
<td>4 years</td>
<td>16.7</td>
<td>102.9</td>
</tr>
<tr>
<td>5 years</td>
<td>18.7</td>
<td>109.9</td>
</tr>
<tr>
<td>6 years</td>
<td>20.7</td>
<td>116.1</td>
</tr>
<tr>
<td>7 years</td>
<td>22.9</td>
<td>121.7</td>
</tr>
</tbody>
</table>

45. Which of the following graphs show the relation between the height and weight of the boys?

![Graph options a) b) c) d)]:

- **a)**
- **b)**
- **c)**
- **d)**
Planets revolve round the sun. The time taken by a planet for one trip round the sun and its distance from the sun is shown in the following table. Use it to answer question 46.

<table>
<thead>
<tr>
<th>Planet</th>
<th>Distance from the sun (Million Kms)</th>
<th>Time for one trip round the sun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>58</td>
<td>86 days</td>
</tr>
<tr>
<td>Venus</td>
<td>108</td>
<td>225 days</td>
</tr>
<tr>
<td>Earth</td>
<td>150</td>
<td>1 year</td>
</tr>
<tr>
<td>Jupiter</td>
<td>760</td>
<td>12 years</td>
</tr>
<tr>
<td>Uranus</td>
<td>2,870</td>
<td>84 years</td>
</tr>
<tr>
<td>Neptune</td>
<td>4,500</td>
<td>165 years</td>
</tr>
</tbody>
</table>

46. About how long do you think another planet which is about 1,430 million kilometres away from the sun will take to make one trip round the sun?
   a) 10 years       b) 120 years      c) 1000 days     d) 30 years

47. Which of the following is the mirror image of the given word?
   a) MALAYALAM      b) MAJAYALAM      c) MAJAYALAM      d) MAGAYALAM

48. The circulatory system is an organ system that may be seen strictly as a blood distribution network. From the following list, identify those which are related to the circulatory system of our body- lungs, brain, heart, kidney, blood vessel, liver, aorta, and vein.
   a) heart       liver       aorta       kidney
   b) heart       aorta       vein       blood vessel
   c) heart       vein        liver       lungs
   d) heart       brain       aorta       liver
49. Which would be the best feature to use in classifying all the objects in the following figure?

a) circle vs triangle 

b) square vs not a square 

c) no straight sides vs four straight sides 

d) curved edge vs straight edge.

50. A burette is a vertical cylindrical piece of laboratory glassware. Burettes measure from the top since they are used to measure liquids dispensed out the bottom. The burette reading shown in the fig A is 9.6 ml. The burette reading shown in the figure B is ...........

51. A farmer wanted to increase the yield of his crop. He decided to study the factors that affect the yield of the crop produced. Which of the following factors could he control in his investigation?

   a) amount of fertilizer added and quality of seeds used 

   b) amount of rainfall and amount of sunlight 

   c) amount of sunlight and amount of fertilizer added 

   d) amount of wind and quality of seeds used
52. Mr. Azad was teaching conduction of heat through solids. He wanted his students to find out how quickly different types of solid materials conduct heat. He gave some steel pins, wax, candle and four rods of same length and diameter, but made of different types of material. He told them to attach the steel pins to the rods using wax, with a gap of 5cm between them. Using candle flame, they heated all the rods on one end at the same time. Which of the following methods would you select to examine the best conductor of heat?

a) measure the amount of wax collected down.
b) touch the rods and find out the extent of heat transferred
c) observe the change in colour on the rods and measure it.
d) count the number of pins that fell from each rod after 3 minutes

53. Ben started his journey at 6:15 and reached home at 18:30. How long was the journey time?

a) 12 hours 45 minutes  
b) 11 hours 45 minutes  
c) 11 hours 15 minutes  
d) 12 hours 15 minutes

54. Observe the picture. If two runners start at the same time from points A and B and arrive at the finish line C at the same moment, who runs faster?

a) The runner from point A is faster than the runner from point B.  
b) The runner from point B is faster than the runner from point A.  
c) The runner from points A and B raced at the same speed.  
d) The runner from point B is slower than the runner from point A.

55. The rainbow is a natural spectrum formed by dispersion of sunlight by tiny droplets of water suspended in the air. It is always formed in a direction opposite to that of the sun. When is it more likely to see a rainbow in the sky?

a) during the rain  
b) before the rain  
c) after the rain  
d) during night
56. Stripes of white filter paper is dipped in the following coloured solutions and kept for sometime. Which among the following does not occur?

![Coloured solutions](image)

**a)** red  
**b)** blue  
**c)** green  
**d)** pink

57. John is trying to draw a sketch of his school classroom in his notebook. A convenient scale for him to use would be

- a) 1 cm = 1 mm  
- b) 1 cm = 1 cm  
- c) 1 cm = 1 m  
- d) 1 cm = 1 km

Use the following table showing the melting point and boiling point of some substances to answer questions 58 & 59.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Melting point °C</th>
<th>Boiling point °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>-7</td>
<td>59</td>
</tr>
<tr>
<td>B</td>
<td>1083</td>
<td>2567</td>
</tr>
<tr>
<td>C</td>
<td>-2</td>
<td>23</td>
</tr>
<tr>
<td>D</td>
<td>317</td>
<td>553</td>
</tr>
</tbody>
</table>

58. Which one of the substances A to D is a metal?

- a) A  
- b) B  
- c) C  
- d) D

59. Which one of the substances A to D is a liquid at room temperature (27°C)?

- a) A  
- b) B  
- c) C  
- d) D
60. Which of the following statements indicate only an observation?
   a) The chair looks like it is made of steel.
   b) The soil is wet. So, it might have rained
   c) The metal bar is red. So, it must be hot.
   d) My new toy car is red in colour

61. Which of the following diagrams is the odd one out?

   a) A  b) B  c) C  d) D

62. Sixty seconds make a minute and sixty minutes make an hour. The number of seconds in an hour is
   a) 600  b) 360  c) 3600  d) 36000

Study the following illustration and answer **question 63**
63. Which inference is best supported by the above illustration?
   a) liquids A & C are the same
   b) liquids A & B are not the same
   c) liquids B & C are the same
   d) liquids A, B & C are the same

64. The following explains an experiment related to **photosynthesis**.

   Take a few healthy twigs of a water plant. Place it in a funnel and invert the funnel in a beaker of water. Invert a test-tube over the stem of the funnel. Leave the set-up in sunlight. After sometime, bubbles can be seen rising in the test-tube. Remove the test-tube carefully and insert a glowing splinter deep into it. The splinter burns brightly. The experimental arrangement is as shown below.

The above experiment shows that
   a) Carbon dioxide is used during photosynthesis
   b) Oxygen is evolved during photosynthesis
   c) Carbon dioxide is evolved during photosynthesis
   d) Oxygen is used during photosynthesis

65. Combustion is the burning of a substance in air. Oxygen in the air is a supporter of combustion. What happens if a burning candle is covered by a glass tumbler?
   a) the candle continues to burn
   b) the candle burns less brightly
   c) the candle burns more brightly
   d) the candle is put off after some time

66. A shadow is an area where direct light from a light source cannot reach due to obstruction by an object. The sun causes many objects to have shadows. Shadow length changes dramatically throughout the day. The shadow of an object is shortest ..............

   a) in the early morning  b) in the evening
   c) in the afternoon  d) at noon
67. Identify the plant that has all the listed parts – leaf, bud, thorn, root, stem, and flower.
   a) pea   b) rose   c) pumpkin   d) jasmine

68. An object whose density is greater than that of the liquid in which it is put, tends to sink. Which of the following items will sink fastest in a bucket of water?
   a) an empty can   b) a wooden box
   c) a glass marble   d) a piece of sponge

69. A pebble and a piece of paper are dropped simultaneously from the same height. The pebble will hit the ground first. When the above experiment is repeated by crumpling the same paper into a small paper ball, both of them would reach the ground almost at the same time. The paper ball moves faster than the piece of paper because the resistance offered by air is less because of its shape. This experiment proves that
   a. the resistance offered by air does not affect the rate of fall of freely falling objects.
   b. the resistance offered by air affects the rate of fall of freely falling objects
   c. the resistance offered by air affects the mass of freely falling objects
   d. the resistance offered by air does not affect the mass of freely falling objects

70. Pressure due to liquid depends on its depth. The greater the depth, the greater is the pressure due to the liquid. Three small holes are made at different heights on a plastic container which is kept under a tap from which water flows into it. Which among the following could be identical to the real situation, if it is filled with water?
### APPENDIX-IV(B)

Science Process Skills Test Items, Answer Key – SPROSES Draft

<table>
<thead>
<tr>
<th>SPROSES (Draft).item No:</th>
<th>SCIENCE PROCESS SKILL</th>
<th>Basic/integrated</th>
<th>Answer key</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Observing</td>
<td>Basic</td>
<td>b</td>
</tr>
<tr>
<td>2</td>
<td>Classifying</td>
<td>Basic</td>
<td>d</td>
</tr>
<tr>
<td>3</td>
<td>Measuring</td>
<td>Basic</td>
<td>c</td>
</tr>
<tr>
<td>4</td>
<td>Defining Operationally</td>
<td>Integrated</td>
<td>a</td>
</tr>
<tr>
<td>5</td>
<td>Defining Operationally</td>
<td>Integrated</td>
<td>c</td>
</tr>
<tr>
<td>6</td>
<td>Identifying and controlling variables</td>
<td>Integrated</td>
<td>c</td>
</tr>
<tr>
<td>7</td>
<td>Experimenting</td>
<td>integrated</td>
<td>a</td>
</tr>
<tr>
<td>8</td>
<td>Using numbers</td>
<td>Basic</td>
<td>c</td>
</tr>
<tr>
<td>9</td>
<td>Using numbers</td>
<td>basic</td>
<td>b</td>
</tr>
<tr>
<td>10</td>
<td>Inferring</td>
<td>Basic</td>
<td>b</td>
</tr>
<tr>
<td>11</td>
<td>Formulating Hypothesis</td>
<td>integrated</td>
<td>a</td>
</tr>
<tr>
<td>12</td>
<td>Communicating</td>
<td>Basic</td>
<td>c</td>
</tr>
<tr>
<td>13</td>
<td>Communicating</td>
<td>Basic</td>
<td>b</td>
</tr>
<tr>
<td>14</td>
<td>Communicating</td>
<td>Basic</td>
<td>d</td>
</tr>
<tr>
<td>15</td>
<td>Interpreting data</td>
<td>Integrated</td>
<td>b</td>
</tr>
<tr>
<td>16</td>
<td>Predicting</td>
<td>Basic</td>
<td>c</td>
</tr>
<tr>
<td>17</td>
<td>Observing</td>
<td>Basic</td>
<td>b</td>
</tr>
<tr>
<td>18</td>
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<td>c</td>
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<td>19</td>
<td>Measuring</td>
<td>Basic</td>
<td>b</td>
</tr>
<tr>
<td>20</td>
<td>Identifying and controlling variables</td>
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<td>b</td>
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<td>23</td>
<td>Using numbers</td>
<td>Basic</td>
<td>c</td>
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<tr>
<td>SPROSES (Draft).item No:</td>
<td>SCIENCE PROCESS SKILL</td>
<td>Basic/integrated</td>
<td>Answer key</td>
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<tr>
<td>-------------------------</td>
<td>-------------------------------------------</td>
<td>------------------</td>
<td>------------</td>
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<td>24</td>
<td>Using numbers</td>
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<td>a</td>
</tr>
<tr>
<td>25</td>
<td>Using time/space relations</td>
<td>Basic</td>
<td>c</td>
</tr>
<tr>
<td>26</td>
<td>Inferring</td>
<td>Basic</td>
<td>a</td>
</tr>
<tr>
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<td>Formulating Hypothesis</td>
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</tr>
<tr>
<td>28</td>
<td>Communicating</td>
<td>Basic</td>
<td>b</td>
</tr>
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<td>29</td>
<td>Interpreting data</td>
<td>Integrated</td>
<td>d</td>
</tr>
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<td>Basic</td>
<td>d</td>
</tr>
<tr>
<td>31</td>
<td>Inferring</td>
<td>Basic</td>
<td>c</td>
</tr>
<tr>
<td>32</td>
<td>Classifying</td>
<td>Basic</td>
<td>a</td>
</tr>
<tr>
<td>33</td>
<td>Identifying and controlling variables</td>
<td>integrated</td>
<td>b</td>
</tr>
<tr>
<td>34</td>
<td>Identifying and controlling variables</td>
<td>Integrated</td>
<td>c</td>
</tr>
<tr>
<td>35</td>
<td>measuring</td>
<td>basic</td>
<td>b</td>
</tr>
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<td>36</td>
<td>Experimenting</td>
<td>Basic</td>
<td>c</td>
</tr>
<tr>
<td>37</td>
<td>Using numbers</td>
<td>Basic</td>
<td>d</td>
</tr>
<tr>
<td>38</td>
<td>Using numbers</td>
<td>Basic</td>
<td>b</td>
</tr>
<tr>
<td>39</td>
<td>Using time/space relations</td>
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</tr>
<tr>
<td>40</td>
<td>Inferring</td>
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</tr>
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<tr>
<td>45</td>
<td>Interpreting data</td>
<td>Integrated</td>
<td>c</td>
</tr>
<tr>
<td>46</td>
<td>Predicting</td>
<td>Basic</td>
<td>d</td>
</tr>
<tr>
<td>47</td>
<td>Observing</td>
<td>Basic</td>
<td>c</td>
</tr>
<tr>
<td>48</td>
<td>Classifying</td>
<td>Basic</td>
<td>b</td>
</tr>
<tr>
<td>49</td>
<td>Classifying</td>
<td>Basic</td>
<td>d</td>
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<td>50</td>
<td>Measuring</td>
<td>Basic</td>
<td>c</td>
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<tr>
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<td>SCIENCE PROCESS SKILL</td>
<td>Basic/integrated</td>
<td>Answer key</td>
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<td>----------------------------------------------------</td>
<td>------------------</td>
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<tr>
<td>51</td>
<td>Identifying and controlling variables</td>
<td>Integrated</td>
<td>a</td>
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<tr>
<td>52</td>
<td>Experimenting</td>
<td>Integrated</td>
<td>d</td>
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<td>53</td>
<td>Using numbers</td>
<td>Basic</td>
<td>d</td>
</tr>
<tr>
<td>54</td>
<td>Using time/space relations</td>
<td>Basic</td>
<td>b</td>
</tr>
<tr>
<td>55</td>
<td>Inferring</td>
<td>Basic</td>
<td>c</td>
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<tr>
<td>56</td>
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<td>basic</td>
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<tr>
<td>57</td>
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<td>Predicting</td>
<td>Basic</td>
<td>b</td>
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<td>59</td>
<td>Predicting</td>
<td>Basic</td>
<td>a</td>
</tr>
<tr>
<td>60</td>
<td>Observing</td>
<td>Basic</td>
<td>d</td>
</tr>
<tr>
<td>61</td>
<td>Classifying</td>
<td>Basic</td>
<td>d</td>
</tr>
<tr>
<td>62</td>
<td>Using numbers</td>
<td>Basic</td>
<td>c</td>
</tr>
<tr>
<td>63</td>
<td>Inferring</td>
<td>Basic</td>
<td>c</td>
</tr>
<tr>
<td>64</td>
<td>Formulating Hypothesis</td>
<td>Integrated</td>
<td>b</td>
</tr>
<tr>
<td>65</td>
<td>Predicting</td>
<td>Basic</td>
<td>d</td>
</tr>
<tr>
<td>66</td>
<td>Observing</td>
<td>Basic</td>
<td>d</td>
</tr>
<tr>
<td>67</td>
<td>Classifying</td>
<td>Basic</td>
<td>b</td>
</tr>
<tr>
<td>68</td>
<td>Predicting</td>
<td>Basic</td>
<td>c</td>
</tr>
<tr>
<td>69</td>
<td>Formulating Hypothesis</td>
<td>Integrated</td>
<td>b</td>
</tr>
<tr>
<td>70</td>
<td>Predicting</td>
<td>Basic</td>
<td>b</td>
</tr>
</tbody>
</table>
APPENDIX – V(A)

FINAL FORM OF

SCIENCE PROCESS SKILL ELICITATION SCHEDULE-

SPROSES

(ENGLISH & MALAYALAM VERSIONS)
Please do not write on the test booklet.

This booklet contains 50 multiple choice questions.

Mark your answers in the given response sheet using a pencil.

Return the test booklet along with the response sheet after the completion of the test.

Time duration of the test is 45 minutes.
1. Which of the following statements indicate only an observation?
   a) The chair looks like it is made of steel.
   b) The soil is wet. So, it might have rained
   c) The metal bar is red. So, it must be hot.
   d) My new toy car is red in colour

2. The circulatory system is an organ system that may be seen strictly as a blood distribution network. From the following list, identify those which are related to the circulatory system of our body- lungs, brain, heart, kidney, blood vessel, liver, aorta, and vein.
   a) heart  liver  aorta  kidney
   b) heart  aorta  vein  blood vessel
   c) heart  vein  liver  lungs
   d) heart  brain  aorta  liver

3. The following figure shows the growth of a plant as an increase in its height. The height of the plant was measured and recorded on specific days. It measured 2cm on 26 Nov. How much did the plant grow in between 2\textsuperscript{nd} December and 15\textsuperscript{th} December?

   a) 4 cm  b) 5 cm  c) 6.5 cm  d) 8 cm
Questions 4, 5 and 6 are based on the following:
Sally planted bean seedlings in three pots of the same size, but having different types of soil. She wanted to know whether the type of soil would affect the growth of bean plants. The pots were placed near a sunny window and watered with the same amount of water everyday. The differences in the plant growth were recorded after a week.

4. The term ‘plant growth’ as stated in the question refers to:
   a) Height of the plant as measured from the top of the soil to the tip of its stem.
   b) Height of the plant as measured from the tip of the root to the tip of its stem.
   c) Height of the plant as measured from the base of the pot to the tip of its stem.
   d) Height of the plant as measured from the tip of the root to the base of the pot.

5. Here, bean growth will be measured in
   a) m/week       b) cm/day       c) cm/week       d) m/day

6. Which factor do you think made a difference in the growth rates of the bean seedlings?
   a) amount of sunlight  b) amount of water
   c) type of soil        d) size of the pot

7. One litre of water is poured into vessels of the following shapes. Which vessel contains water to the maximum height?

8. The soil pH is a measure of the acidity or basicity in soils. It ranges from 0 to 14, with 7 being neutral. A pH below 7 is acidic and above 7 is basic. The optimum pH range for most plants is between 6 and 7.5. Paddy grows best when the soil pH is between 5 and 6.5. This means that
   a) Acidic soil is best for paddy.
   b) Basic soil is best for paddy.
   c) Neutral soil is best for paddy.
   d) Both acidic and neutral soil is best for paddy.
9. A farmer wanted to increase the yield of his crop. He decided to study the factors that affect the yield of the crop produced. Which of the following factors could he control in his investigation?

   a) amount of fertilizer added and quality of seeds used
   b) amount of rainfall and amount of sunlight
   c) amount of sunlight and amount of fertilizer added
   d) amount of wind and quality of seeds used

10. Sound waves need a material medium such as air for its propagation. Which of the following could be true about moon, which has no atmosphere?

   a) there can be no sound transmission on the moon.
   b) sound waves travel faster on the moon
   c) sound waves travel slower in the moon
   d) sound is heard louder on moon than on earth

11. The frequency polygon shows the amount of milk consumed in millilitres consumed by a number of families per day. Find out how many families consume 3000 millilitres of milk per day.

![Graph showing milk consumption](image)

   a) 3  b) 4  c) 6  d) 8

12. Stainless steel is used to make cutlery items and food containers. Which of the following property make it suitable for both these uses?

   a) It is a good conductor of heat.
   b) It is a good conductor of electricity.
   c) It is resistant to corrosion.
   d) It is very strong.
13. Look at the information about six students in a certain school in Kerala.

<table>
<thead>
<tr>
<th>Name</th>
<th>Gender</th>
<th>Nationality</th>
<th>Date of birth</th>
<th>Year of joining school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sam</td>
<td>Male</td>
<td>Indian</td>
<td>2-6-1990</td>
<td>1995</td>
</tr>
<tr>
<td>Ben</td>
<td>Male</td>
<td>Indian</td>
<td>4-11-1989</td>
<td>1995</td>
</tr>
<tr>
<td>Ann</td>
<td>Female</td>
<td>Indian</td>
<td>23-5-1990</td>
<td>1995</td>
</tr>
<tr>
<td>Mary</td>
<td>Female</td>
<td>Indian</td>
<td>17-10-1989</td>
<td>1995</td>
</tr>
<tr>
<td>John</td>
<td>Male</td>
<td>Indian</td>
<td>10-3-1990</td>
<td>1995</td>
</tr>
<tr>
<td>Shiny</td>
<td>Female</td>
<td>Indian</td>
<td>27-2-1990</td>
<td>1995</td>
</tr>
</tbody>
</table>

Which of the following categories would NOT allow you to separate these students into at least TWO different groups?

a) date of birth  
b) gender and date of birth  
c) nationality and year of joining school  
d) gender

Questions 14 and 15 are based on the following:

Mrs. Latha made a lemonade drink for her friends using 4 litres of water, 2 lemons, 500g sugar and 5g of dried yeast. One of her friends told her that the fizziness of the drink depends on the amount of sugar added. When Mrs. Latha next made lemonade, she wanted to test whether this was true.

14. What should she change in the recipe?

a) amount of water  
b) amount of sugar  
c) amount of dried yeast  
d) number of lemons

15. Which of the following should be kept constant in the recipe?

a) amount of sugar and dried yeast  
b) amount of water and sugar  
c) number of lemons, amount of water and dried yeast  
d) amount of sugar and number of lemons.

16. Density = mass / volume. If a glass piece of density 2.5g/cm³ displaces 10 cm³ of water, what will be its mass?

a) 25g  
b) 250g  
c) 100g  
d) 150g
17. Light travels faster than sound. This statement can be inferred from which of the following?
   a) thunderclap and lightning occurs simultaneously
   b) thunderclap is heard after seeing the lightening flash
   c) lightning flash is seen after hearing the thunderclap
   d) lightning flash is produced nearer to the observer

18. Mr. Azad was teaching conduction of heat through solids. He wanted his students to find out how quickly different types of solid materials conduct heat. He gave some steel pins, wax, candle and four rods of same length and diameter, but made of different types of material. He told them to attach the steel pins to the rods using wax, with a gap of 5cm between them. Using candle flame, they heated all the rods on one end at the same time. Which of following methods would you select to examine the best conductor of heat?
   a) measure the amount of wax collected down.
   b) touch the rods and find out the extend of heat transferred
   c) observe the change in colour on the rods and measure it.
   d) count the number of pins that fell from each rod after 3 minutes

19. Ben started his journey at 6:15 and reached home at 18:30. How long was the journey time?
   a) 12 hours 45 minutes  b) 11 hours 45 minutes
   c) 11 hours 15 minutes  d) 12 hours 15 minutes

20. Observe the picture. If two runners start at the same time from points A and B and arrive at the finish line C at the same moment, who runs faster?

   a) The runner from point A is faster than the runner from point B.
   b) The runner from point B is faster than the runner from point A.
   c) The runner from points A and B raced at the same speed.
   d) The runner from point B is slower the runner from point than A.
Questions 21 and 22 are based on the following:
Anu helps her mother in the kitchen. She noticed that sugar dissolves more in hot water. Her mother told her that the amount of water, temperature and presence or absence of stirring, affect the amount of sugar that dissolves in water.

21. Which of the following is NOT likely to be a factor that affects the amount of sugar that dissolves in a given amount of water?
   a) amount of water     b) room temperature
   c) stirring the solution    d) temperature of water

22. Which of the following will help Anu to study the effect of temperature on the solubility of sugar in water?
   a) add more sugar
   b) add more water
   c) increase or reduce the flame of the gas stove.
   d) stir for longer time

23. A burette is a vertical cylindrical piece of laboratory glassware. Burettes measure from the top since they are used to measure liquids dispensed out the bottom. The burette reading shown in the fig A is 9.6 ml. The burette reading shown in the figure B is …………

   a) 24 ml  b) 25.8 ml  c) 23.9 ml  d) 24.1 ml

24. John is trying to draw a sketch of his school classroom in his notebook. A convenient scale for him to use would be
   a) 1 cm = 1 mm     b) 1 cm = 1cm
   c) 1 cm = 1 m    d) 1 cm = 1 km
Question 25 is based on the following graph:

The world population is the totality of all living humans on the planet Earth. The following graph relates to world population growth.

25. Which of the following statements are true, according to the above graph?
   a) The world population decreases continuously.
   b) The world population is decreasing in the recent years.
   c) The world population decreases steadily.
   d) The world population has experienced continuous growth.

26. Identify the plant that has all the listed parts – leaf, bud, thorn, root, stem, and flower.
   a) pea    b) rose    c) pumpkin    d) jasmine

27. Sunil wanted to test the fact that when water is boiled, the rate of water loss is affected by the size of the container used. He poured the same amount of water into containers made of the same material, but of various sizes. He applied the same amount of heat to all the containers for 30 minutes and measured the amount of water remaining in each container. Which of the following methods is the most suitable one to determine the rate of water loss in this investigation?
   a) Determine the time taken for the water to boil in each of the containers.
   b) Measure the amount of water left in each container after boiling.
   c) Determine the difference between the initial and final amounts of water, in a given time.
   d) Use different sizes of the containers to boil the water for 30 minutes.
28. Salt dissolves in water. The hotter the water, the faster salt will dissolve in it. Look at the jars. Equal amount of salt is added to equal volume of water taken in different jars kept at different temperatures. Put the jars in order from the slowest to the fastest dissolving.

   ![Salt Dissolution Jars]

   a) A C B D
   b) D B C A
   c) B A C D
   d) A B C D

29. The following explains an experiment related to **photosynthesis**.

   Take a few healthy twigs of a water plant. Place it in a funnel and invert the funnel in a beaker of water. Invert a test-tube over the stem of the funnel. Leave the setup in sunlight. After sometime, bubbles can be seen rising in the test-tube. Remove the test-tube carefully and insert a glowing splinter deep into it. The splinter burns brightly. The experimental arrangement is as shown below.

   ![Photosynthesis Experiment Diagram]

   The above experiment shows that
   a) Carbon dioxide is used during photosynthesis
   b) Oxygen is evolved during photosynthesis
   c) Carbon dioxide is evolved during photosynthesis
   d) Oxygen is used during photosynthesis
30. The human heart is a powerful pump that ceaselessly supplies blood to each and every part of the body. The pulse tells you about the condition of the heart. The normal pulse rate at rest, ranges from 60-100 beats per minute (bpm) in human adults. It was observed that Sam had a pulse rate of 123 bpm after an exercise session in the morning. This shows that
   a) Sam’s heart pumps blood faster during exercises.
   b) Sam’s heart pumps blood slower during exercises.
   c) Sam is having abnormal heartbeat.
   d) Sam is facing the risk of a heart attack.

31. Observe the two pictures. Are they identical? If not, how many differences can you spot among them?

   ![Two Pictures](image)

   a) 5  b) more than 5  c) less than 5  d) none

32. Manoj thinks that the more the air pressure in a football, the farther it moves ahead when kicked. To investigate this, he uses several footballs and an air pump with a pressure gauge. What should Manoj do to conduct the investigation?
   a) Kick the footballs having different air pressure from different points on the ground with different amount of forces.
   b) Kick the footballs having different air pressure from the same point on the ground with the same force.
   c) Kick a football with different amounts of force from the same point on the ground.
   d) Kick the footballs having the same air pressure at various angles on the ground.

33. Ice is about 9% less dense than water. When an ice cube is put into a beaker containing water, which among the following is more likely to happen?

   ![Four Options](image)
34. The apparatus contains a liquid. In which part is the figure wrong?

![Diagram of apparatus](image)

35. Leena washed four towels and hung them up in different places to make it dry. She wanted to see if the places made any difference to how quickly they dried. Which of these places do you think the towel would dry quickest?

   a) in a cool room by an open window  
   b) in a warm room by an open window  
   c) in a warm room by a closed window  
   d) in a cool room by an closed window

**Question 36** is based on the following table.
A bird's beak and feet can tell us much about their habitat and lifestyle.

<table>
<thead>
<tr>
<th>Bird</th>
<th>Type of Feet</th>
<th>Type of Beak</th>
<th>Probable Diet</th>
<th>Probable Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicken</td>
<td>short, blunt</td>
<td>short &amp; rounded</td>
<td>seeds, insects</td>
<td>meadow</td>
</tr>
<tr>
<td>Duck</td>
<td>webbed</td>
<td>flat</td>
<td>algae</td>
<td>water</td>
</tr>
<tr>
<td>Eagle</td>
<td>talons</td>
<td>hooked</td>
<td>small animals</td>
<td>forest</td>
</tr>
<tr>
<td>Owl</td>
<td>talons</td>
<td>curved</td>
<td>small animals</td>
<td>forest</td>
</tr>
<tr>
<td>Pelican</td>
<td>webbed</td>
<td>scooped</td>
<td>fish</td>
<td>water</td>
</tr>
<tr>
<td>Woodpecker</td>
<td>2 toes on front, 2 on back</td>
<td>chisel</td>
<td>insects</td>
<td>forest</td>
</tr>
</tbody>
</table>

36. The bird with short, rounded beak that feeds on insects is

   a) chicken  
   b) woodpecker  
   c) duck  
   d) owl
37. Which inference is best supported by the above illustration?
   a) liquids A & C are the same  
   b) liquids A & B are not the same  
   c) liquids B & C are the same  
   d) liquids A, B & C are the same

38. Combustion is the burning of a substance in air. Oxygen in the air is a supporter of combustion. What happens if a burning candle is covered by a glass tumbler?
   a) the candle continues to burn  
   b) the candle burns less brightly  
   c) the candle burns more brightly  
   d) the candle is put off after some time

39. A shadow is an area where direct light from a light source cannot reach due to obstruction by an object. The sun causes many objects to have shadows. Shadow length changes dramatically throughout the day. The shadow of an object is shortest .........
   a) in the early morning  
   b) in the evening  
   c) in the afternoon  
   d) at noon

40. Sixty seconds make a minute and sixty minutes make an hour. The number of seconds in an hour is
   a) 600  
   b) 360  
   c) 3600  
   d) 36000
Use the average height/weight chart of boys of ages 1 to 7 given below to answer qn 41

<table>
<thead>
<tr>
<th>Age</th>
<th>Weight (kg)</th>
<th>Height (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year</td>
<td>10.2</td>
<td>76.1</td>
</tr>
<tr>
<td>2 years</td>
<td>12.3</td>
<td>85.6</td>
</tr>
<tr>
<td>3 years</td>
<td>14.6</td>
<td>94.9</td>
</tr>
<tr>
<td>4 years</td>
<td>16.7</td>
<td>102.9</td>
</tr>
<tr>
<td>5 years</td>
<td>18.7</td>
<td>109.9</td>
</tr>
<tr>
<td>6 years</td>
<td>20.7</td>
<td>116.1</td>
</tr>
<tr>
<td>7 years</td>
<td>22.9</td>
<td>121.7</td>
</tr>
</tbody>
</table>

41. Which of the following graphs show the relation between the height and weight of the boys?

42. An object whose density is greater than that of the liquid in which it is put, tends to sink. Which of the following items will sink fastest in a bucket of water?
   a) an empty can   b) a wooden box
   c) a glass marble d) a piece of sponge

43. Which would be the best feature to use in classifying all the objects in the following figure?
   a) circle vs triangle
   b) square vs not a square
   c) no straight sides vs four straight sides
   d) curved edge vs straight edge.
44. The rainbow is a natural spectrum formed by dispersion of sunlight by tiny droplets of water suspended in the air. It is always formed in a direction opposite to that of the sun. When is it more likely to see a rainbow in the sky?

a) during the rain  b) before the rain  
c) after the rain   d) during night

45. The average height – weight chart of boys of different ages is given below. Based on this, what would be the height of a boy who weighs 55 kg?

<table>
<thead>
<tr>
<th>Age</th>
<th>Weight (kg)</th>
<th>Height (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 years</td>
<td>32.2</td>
<td>140.0</td>
</tr>
<tr>
<td>12 years</td>
<td>37.0</td>
<td>147.0</td>
</tr>
<tr>
<td>13 years</td>
<td>40.9</td>
<td>153.0</td>
</tr>
<tr>
<td>14 years</td>
<td>47.0</td>
<td>160.0</td>
</tr>
<tr>
<td>15 years</td>
<td>52.6</td>
<td>166.0</td>
</tr>
<tr>
<td>16 years</td>
<td>58.0</td>
<td>171.0</td>
</tr>
<tr>
<td>17 years</td>
<td>62.7</td>
<td>175.0</td>
</tr>
<tr>
<td>18 years</td>
<td>65.0</td>
<td>177.0</td>
</tr>
</tbody>
</table>

a) 162 cm  b) 172 cm  c) 155 cm  d) 169 cm

Use the following table showing the melting point and boiling point of some substances to answer question 46. The boiling point of water is 100°C and the melting point of ice is 0°C. Metals are generally hard substances having very high melting and boiling point.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Melting point °C</th>
<th>Boiling point °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>-7</td>
<td>59</td>
</tr>
<tr>
<td>B</td>
<td>1083</td>
<td>2567</td>
</tr>
<tr>
<td>C</td>
<td>-2</td>
<td>23</td>
</tr>
<tr>
<td>D</td>
<td>317</td>
<td>553</td>
</tr>
</tbody>
</table>

46. Which one of the substances A to D is a liquid at room temperature (27°C)?

a) A  b) B  c) C  d) D
Planets revolve round the sun. The time taken by a planet for one trip round the sun and its distance from the sun is shown in the following table. Use it to answer question 47

<table>
<thead>
<tr>
<th>Planet</th>
<th>Distance from the sun (Million Kms)</th>
<th>Time for one trip round the sun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>58</td>
<td>80 days</td>
</tr>
<tr>
<td>Venus</td>
<td>108</td>
<td>225 days</td>
</tr>
<tr>
<td>Earth</td>
<td>150</td>
<td>1 year</td>
</tr>
<tr>
<td>Jupiter</td>
<td>780</td>
<td>12 years</td>
</tr>
<tr>
<td>Uranus</td>
<td>2,670</td>
<td>84 years</td>
</tr>
<tr>
<td>Neptune</td>
<td>4,500</td>
<td>165 years</td>
</tr>
</tbody>
</table>

47. About how long do you think another planet which is about 1,430 million kilometers away from the sun will take to make one trip round the sun?
   a) 10 years  b) 120 years  c) 1000 days  d) 30 years

48. Stripes of white filter paper is dipped in the following coloured solutions and kept for sometime. Which among the following does not occur?

[Images of striped filter papers with different colors]
49. The magnitude of the force of attraction between molecules of a solid, liquid and gas is solid > liquid > gas. When liquid water is heated, it changes to gaseous water vapor. During this process, the force of attraction between the molecules of water will
   a) remain the same
   b) become stronger
   c) become weaker
   d) become bigger in size

50. Pressure due to liquid depends on its depth. The greater the depth, the greater is the pressure due to the liquid. Three small holes are made at different heights on a plastic container which is kept under a tap from which water flows into it. Which among the following could be identical to the real situation, if it is filled with water?
1. What is the effect of [some variable] on [some other variable]? 
   a) [Effect 1]
   b) [Effect 2]
   c) [Effect 3]
   d) [Effect 4]

2. Discuss the effect of [some variable] on [some other variable]. 
   a) [Discussion 1]
   b) [Discussion 2]
   c) [Discussion 3]
   d) [Discussion 4]

3. What is the effect of [some variable] on [some other variable]? 
   a) [Effect 1]
   b) [Effect 2]
   c) [Effect 3]
   d) [Effect 4]

4. The effect of [some variable] on [some other variable]
   a) [Effect 1]
   b) [Effect 2]
   c) [Effect 3]
   d) [Effect 4]
5.  ചെവിയുള്ള കരിങ്കളിൽ രൂപീകരിക്കുന്നത്
   a) മൈക് / പെട്രേ
   b) മൈക് / പെട്രേ
   c) മൈക് / പെട്രേ
   d) മൈക് / പെട്രേ

6.  ഒട്ടുമ്പി ചെറുനാട്ടിയിലെ കരിങ്കളിലും എന്തൊക്കെ ചെവികളെയാണ് ഏതാണ്ട് അടയാളം?
   a) മൈക് / പെട്രേ
   b) മൈക് / പെട്രേ
   c) മൈക് / പെട്രേ
   d) മൈക് / പെട്രേ

7.  എന്തുമുള്ള രൂപത്തിൽ പരിപാലിക്കുന്ന കരിങ്കളിൽ ചെവികളെ ഏതാണ്ട് കാണാം. എന്തൊക്കെ ചെവികളും ഏതാണ്ട് പെട്രേകളെ കാണാം?

8.  മൈക് ചെവിയുള്ള രൂപത്തിൽ കരിങ്കളിൽ മൈക് പെട്രേ വിവരം. എന്തൊക്കെ 0 ഉള്ളത് 14 മുതൽ 
    പരമ്പരാഗതം. pH എന്തൊക്കെ 7 വരെ പരിപാലിക്കുന്നത് എന്തൊക്കെ, 7 മുതൽ 14 വരെ എന്തൊക്കെ. എന്തൊക്കെ ചെവിയുള്ള കരിങ്കളിൽ pH 
    എന്തൊക്കെ 6 മുതൽ 7.5 വരെ പരമ്പരാഗതം. pH എന്തൊക്കെ 5 മുതൽ 6.5 വരെ പരമ്പരാഗതം എന്തൊക്കെ എന്തൊക്കെ. എന്തൊക്കെ എന്തൊക്കെ?
    a) എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ
    b) എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ
    c) എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ
    d) എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ

9.  മൈക് എന്തൊക്കെ ചെവിയുള്ള എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ 
    പരമ്പരാഗതം. മൈക് പെട്രേ അതൊക്കാണ് എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ 
    എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ 
    എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ 
    a) എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ 
    b) എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ 
    c) എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ 
    d) എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ 

10. മൈക് ചെവിയുള്ള എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ 
    എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ 
    a) എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ 
    b) എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ 
    c) എന്തൊക്കെ എന്തൊക്കെ എന്തൊക്കെ 
    d) എന്തൊക്കെ എന്തൊക്കെ 

11. ക്രമേണ അണുപ്പാടത്തിൽ (ഫ്രീകുനെഡി ഗ്ലോബാൾ പോളിറ്റ്) എണ്ണത്തിൽ സമ്പൂർണ്ണപ്രയോഗം വെച്ചിരിക്കുന്ന അണുപ്പാടത്തിനെ അടക്കം പ്രായനന്ദം (Frequency Polygon) കൈയ്യെടുക്കുക. 3000 അണുപ്പാടത്തിങ്ങില്‍ പ്രയോജനം അടക്കം പ്രായനന്ദം സൃഷ്ടിയ്ക്കുവെന്ന് എന്തൊരു സ്ഥലത്താണ് സൃഷ്ടിയ്ക്കുകയാണ്‌?

   a) 3  
   b) 4  
   c) 6  
   d) 8

12. ക്രമേണ അണുപ്പാടത്തിൽ അണുപ്പാടത്തിന്റെ എണ്ണത്തിന്റെ അടക്കം പ്രായനന്ദം ഉദ്ദേശിക്കുന്നതെങ്കിലും ഡി.ഇസി.工伤യാല്‍ അണുപ്പാടത്തിന് അടക്കം പ്രായനന്ദത്തെ വിസ്തരിച്ച പ്രായനന്ദത്തെ എണ്ണത്തിലെ ജന്മദേശം കണ്ടെത്തുക?

   a) കേരളം അണുപ്പാടത്തിന്റെ പ്രായനന്ദത്തിനെ എണ്ണത്തിൽ
   b) കേരളത്തിന് പ്രായനന്ദത്തിന്റെ പ്രായനന്ദത്തിലെ
   c) തെലം അണുപ്പാടത്തിന്റെ പ്രായനന്ദത്തിന്റെ
   d) ജനറലിന്റെ പ്രായനന്ദത്തിലെ

13. ക്രമേണ അണുപ്പാടത്തിൽ സമ്പൂർണ്ണം 6 പ്രായനന്ദത്തിന്റെ പ്രായനന്ദത്തിലെ വിസ്തരിച്ച പ്രായനന്ദത്തെ എണ്ണത്തിലെ

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<td>1995</td>
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അണുപ്പാടത്തിന്റെ അണുപ്പാടത്തിന് ആധുനികമായി സൃഷ്ടിയ്ക്കുന്ന പ്രായനന്ദത്തിന് എന്ത് പ്രായനന്ദത്തെ എണ്ണത്തിലെ ക്രമേണ അണുപ്പാടത്തിൽ കൊണ്ടുപോകുകയോ?

   a) ലയണായികം എണ്ണത്തിൽ
   b) എണ്ണത്തിൽ ലയണായികം
   c) എണ്ണത്തിൽ ലക്ഷ്യപ്പെട്ടിരിക്കുന്നത് (പ്രായനന്ദം എണ്ണം-മുഴുവൻ)
   d) ലയണായികം
14. എന്ത് ആഹാരമാണ് ഇതിനെറിയുന്നത്?
   a) വെള്ളത്തോടെ ചെറിയ കൊവിഡു
   b) പ്രത്യേകതയേറിയ ചെറിയ
   c) പൂവിൽ നിന്നും
   d) മുറിലാണ് ഇത്

15. എന്ത് ആഹാരമാണ് ഇതിനെറിയുന്നത്?
   a) പ്രത്യേകാംശാത്തികമായ ചെറിയ
   b) പ്രത്യേകാംശാത്തികമായ ചെറിയ
   c) പ്രത്യേകാംശാത്തികമായ ചെറിയ
   d) പ്രത്യേകാംശാത്തികമായ ചെറിയ

16. കാറ്റ് = 45 ഗ്രാം. 2.5 ഗ്രാം/മീന്മാർ വെള്ള നിറയെ 10 മീന്മാർ വെള്ളം. എന്തോടെ?
   a) 25 g   b) 250 g   c) 100 g   d) 150 g

17. പ്രത്യേകാംശാത്തികമാണ് എന്തിനാണ് ഇതിനെറിയുന്നത്?
   a) പ്രത്യേകാംശാത്തികമായ ചെറിയ
   b) പ്രത്യേകാംശാത്തികമായ ചെറിയ
   c) പ്രത്യേകാംശാത്തികമായ ചെറിയ
   d) പ്രത്യേകാംശാത്തികമായ ചെറിയ

18. എന്ത് ആഹാരമാണ് ഇതിനെറിയുന്നത്?
   a) പ്രത്യേകാംശാത്തികമായ ചെറിയ
   b) പ്രത്യേകാംശാത്തികമായ ചെറിയ
   c) പ്രത്യേകാംശാത്തികമായ ചെറിയ
   d) പ്രത്യേകാംശാത്തികമായ ചെറിയ

19. എന്ത് ആഹാരമാണ്?
   a) 6:15 മുതൽ 18:30 വരെ ഇതിനെറിയുന്നത്
   b) 12 ഓഗസ്റ്റ് 45 ദിവസം
   c) 11 ഓഗസ്റ്റ് 15 ദിവസം
   d) 12 ഓഗസ്റ്റ് 15 ദിവസം
20. ഇന്നത്തെ സമയാംശങ്ങളിലാണ് നാല് പ്രത്യേകിച്ചാണ് ഉൾപ്പെടുന്നത്. A, B, C എന്നിവയും ഉൾപ്പെടുന്നത് ഒരു പ്രശ്നത്തെ പ്രാർത്ഥിക്കുന്നതിനാണ് ചെയ്യുന്നത്. C എന്ന പ്രശ്നത്തിന്റെയും നടപടിയുടെയും ഒരേ നാലിന്റെയും ഉൾപ്പെടുന്നത് എന്ന പ്രാർത്ഥിക്കുകയാണ്. ഇതിനു സാധ്യതയുണ്ടോ? 

a) A ഏകദേശം സ്വാതന്ത്ര്യതയുടെ B ഏകദേശം സ്വാതന്ത്ര്യതയുടെ 
   സ്വാതന്ത്ര്യതയുടെ C ഏകദേശം സ്വാതന്ത്ര്യതയുടെ 

b) B ഏകദേശം സ്വാതന്ത്ര്യതയുടെ A ഏകദേശം സ്വാതന്ത്ര്യതയുടെ C ഏകദേശം സ്വാതന്ത്ര്യതയുടെ 

c) C ഏകദേശം സ്വാതന്ത്ര്യതയുടെ A ഏകദേശം സ്വാതന്ത്ര്യതയുടെ 

d) A ഏകദേശം സ്വാതന്ത്ര്യതയുടെ B ഏകദേശം സ്വാതന്ത്ര്യതയുടെ 

(തെളിവാർത്താ സമയാംശങ്ങൾ സിദ്ധാംതത്തിലെ 21, 22 സമയാംശങ്ങൾ പ്രായോഗികതയിൽ) 

21. വാതിലിലെ അംശശില്പികളുടെ സ്ഥാനം പ്രായോഗികതയിലെ പ്രായോഗികതയിലെ പ്രായോഗികതയിലെ 
   പ്രായോഗികതയിലെ A ശേഖരണം B ശേഖരണം C ശേഖരണം D ശേഖരണം 

22. വാതിലിലെ അംശശില്പികളുടെ സ്ഥാനം പ്രായോഗികതയിലെ പ്രായോഗികതയിലെ 
   പ്രായോഗികതയിലെ A ശേഖരണം B ശേഖരണം C ശേഖരണം D ശേഖരണം 

23. (യുക്തിപ്രസ്താവനകളുടെ രൂപം) ഒരു പ്രശ്നത്തിന്റെ യോജകങ്ങളിൽ അംശശില്പികളുടെ യോജകങ്ങളിൽ യോജകങ്ങളിൽ  യോജകങ്ങളിൽ  
   യോജകങ്ങളിൽ  യോജകങ്ങൾ (Burette), 
   യോജകങ്ങൾ (Burette) അടക്കം പ്രായോഗികതയിലെ പ്രായോഗികതയിലെ, അംശശില്പികളുടെ രൂപം 
   ഒരു പ്രായോഗികതയിലെ യോജകങ്ങളിലെ യോജകങ്ങൾ. അവന്റെ പ്രൊഫഷണൽ (A) പ്രശ്നത്തിന്റെ 9.3 എഡി  അംശശില്പികൾ. അന്താരാഷ്ട്രം അംശശില്പികൾ (B) പ്രശ്നത്തിന്റെ 

   a) 24 എഡി. 
   b) 25.8 എഡി. 
   c) 23.9 എഡി. 
   d) 24.1 എഡി.
24. ദേശീയമായ ഒരു സൂത്രം എന്ന് അപകടകാരിയാണ് തെറ്റിയിട്ടുള്ള ഉണ്ടാക്കിയ സൂത്രം എന്ന് പറയുന്നതാണ് (പരിഷ്കരണ). എന്നാൽ ദേശീയമായ ഒരു സൂത്രം എന്ന് അപകടകാരിയാണ് തെറ്റിയിട്ടുള്ള സൂത്രം
   a) 1 cm = 1 mm    b) 1 cm = 1 cm    c) 1 cm = 1 m    d) 1 cm = 1 km

25. സ്വദേശിയെ യാതൊരു ദ്വാരത്തോട്ടത്തിൽ എന്നാൽ എന്താണ് എന്റെ സ്ഥാനം? എന്താണ് എന്റെ സ്ഥാനം? എന്താണ് എന്റെ സ്ഥാനം?
   a) 1 cm = 1 cm    b) 1 cm = 1 m    c) 1 cm = 1 m    d) 1 cm = 1 km

26. ശവം, മാർഗ്ഗം, പദാർത്ഥം, പദാർത്ഥം, പദാർത്ഥം എന്നും എന്താണ് എന്താണ് എന്താണ്
   a) പദാർത്ഥം    b) പദാർത്ഥം    c) പദാർത്ഥം    d) പദാർത്ഥം

27. മെഴുക്കു ഉണ്ടമെന്തു ഉദ്യോഗരു സ്വദേശിയോട് എന്താണ് ഉദ്യോഗരു സ്വദേശിയോട് എന്താണ് ഉദ്യോഗരു സ്വദേശിയോട്
   a) പദാർത്ഥം    b) പദാർത്ഥം    c) പദാർത്ഥം    d) പദാർത്ഥം
   ഉദ്യോഗരു സ്വദേശിയോട് എന്താണ് ഉദ്യോഗരു സ്വദേശിയോട് എന്താണ് ഉദ്യോഗരു സ്വദേശിയോട്
   (Rate of water loss) എന്താണ് ഉദ്യോഗരു സ്വദേശിയോട്
   a) പദാർത്ഥം    b) പദാർത്ഥം    c) പദാർത്ഥം    d) പദാർത്ഥം
   ഉദ്യോഗരു സ്വദേശിയോട് എന്താണ് ഉദ്യോഗരു സ്വദേശിയോട് എന്താണ് ഉദ്യോഗരു സ്വദേശിയോട്
28. а) А, Б, В, Д б) Д, Б, В, А в) Б, А, В, Д г) А, Б, В, Д

29. а) Фотосинтез (Photosynthesis) б) дихотомия в) коррекция г) заключение

30. а) 123 bpm б) 60-100 bpm в) 60-100 bpm г) 60-100 bpm
31. സോഡ പോർട്ടച്ഛന്തയുടെ തേറ്റ് എല്ലാവശേഷം ഒട്ടുമില്ലെങ്കിൽ. എന്ന പ്രക്രിയയാണ്? കൂടുതൽ നിര അടുത്ത പോർട്ടായായ കാണിപ്പിക്കുന്നു? 

32. നെൽക്കോടിക്കിട്ടുന്ന ഉപകരണങ്ങളുടെ അനുക്രമത്തില്‍ നിന്നും മൂന്ന് ഉപകരണങ്ങള്‍ സ്ഥാപിക്കാറുണ്ട്. അവിടെയുള്ള ഉപകരണങ്ങള്‍ പ്രയോജനപ്പെടുത്തുന്നതിന് എങ്ങനെന്ന് അവിടെയുള്ള ഉപകരണങ്ങള്‍ പ്രയോജനപ്പെടുത്തുകയോ പോലും ചെയ്യുകയോ ചെയ്യണം? 

a) ഗ്രീവിയും പ്രയോജനപ്പെടുത്തി പ്രയോജനപ്പെടുത്തി പ്രയോജനപ്പെടുത്തി പ്രയോജനപ്പെടുത്തി 

b) തന്നെ പ്രയോജനപ്പെടുത്തി 

c) തന്നെ പ്രയോജനപ്പെടുത്തി 

d) പ്രയോജനപ്പെടുത്തി പ്രയോജനപ്പെടുത്തി 

33. എല്ലാം ശേഷം 9% ഇടക്കിസ്സ് കളിയാണ്‌. എന്ന പ്രക്രിയയില്‍ ഒരു ശേഷം കളിയാണ്‌. എങ്ങനെ അത് പ്രയോജനപ്പെടുകയോ പോലും ചെയ്യണം? 

34. ഉദ്യാനം എന്ന് ചെളി വേണ്ടത്രെ. ഓണത്തില്‍ കളിയാണ്‌. എങ്ങനെ ഓണാംഗങ്ങൾ രൂപപ്പെടുത്തുന്നത്?
35. ഏകം ശബ്ദവും അടുത്തുള്ള ശബ്ദവും സമീപനം ചെയ്യാൻ എന്താണ് കൊണ്ടാണ് കൊണ്ടാണ്

കൊണ്ടാണ് കൊണ്ടാണ് കൊണ്ടാണ് കൊണ്ടാണ് കൊണ്ടാണ്

[ആശ്ചര്യം വിവരിക്കുന്ന പദങ്ങളിലായി കോണ്ടാണ് കോണ്ടാണ് കോണ്ടാണ് കോണ്ടാണ്]

a) ഈ ശബ്ദവുമല്ലെല്ലാം സ്വാഭാവികമാണോ?
b) ഈ ശബ്ദവുമല്ലെല്ലാം സ്വാഭാവികമാണോ?
c) ഈ ശബ്ദവുമല്ലെല്ലാം സ്വാഭാവികമാണോ?
d) ഈ ശബ്ദവുമല്ലെല്ലാം സ്വാഭാവികമാണോ?

(അശീർഷ്ട രേഖാചിത്രം പ്രസ്തുതമാണ് സിക്കിമപ്പെട്ടിക്കിടക്കുന്നത്)

36. എന്താണ് കൊണ്ടാണ് കൊണ്ടാണ് കൊണ്ടാണ് കൊണ്ടാണ്

a) കൊണ്ടാണ്
b) കൊണ്ടാണ്
c) കൊണ്ടാണ്

d) മൂല

(അശീർഷ്ട രേഖാചിത്രം പ്രസ്തുതമാണ് സിക്കിമപ്പെട്ടിക്കിടക്കുന്നത്)

37. അശീർഷ്ട രേഖാചിത്രം എന്താണ് സമൃഖതാന്ത്രികരാണ് ഗഭോജിക്കുന്നത്?
38. The combustion of a fuel is a process by which chemical energy is released in the form of heat and light (Combustion). The process involves the interaction of fuel with oxygen. Can you describe the combustion process in detail?
   a) combustion by oxygen
   b) combustion by inert gases
   c) combustion by oxygen under certain conditions
   d) combustion by inert gases under certain conditions

39. The combustion of a fuel is a process by which chemical energy is released in the form of heat and light. The process involves the interaction of fuel with oxygen. Can you describe the combustion process in detail?
   a) combustion by oxygen
   b) combustion by inert gases
   c) combustion by oxygen under certain conditions
   d) combustion by inert gases under certain conditions

40. The combustion of a fuel is a process by which chemical energy is released in the form of heat and light. The process involves the interaction of fuel with oxygen. Can you describe the combustion process in detail?
   a) 600
   b) 360
   c) 3600
   d) 36000

(1 atm = 760 mm Hg = 101325 Pa)

41. The combustion of a fuel is a process by which chemical energy is released in the form of heat and light. The process involves the interaction of fuel with oxygen. Can you describe the combustion process in detail?
   a) 600
   b) 360
   c) 3600
   d) 36000

41. The combustion of a fuel is a process by which chemical energy is released in the form of heat and light. The process involves the interaction of fuel with oxygen. Can you describe the combustion process in detail?

<table>
<thead>
<tr>
<th>Duration</th>
<th>Weight (g)</th>
<th>Height (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year</td>
<td>10.2</td>
<td>76.1</td>
</tr>
<tr>
<td>2 years</td>
<td>12.3</td>
<td>85.6</td>
</tr>
<tr>
<td>3 years</td>
<td>14.6</td>
<td>94.9</td>
</tr>
<tr>
<td>4 years</td>
<td>16.7</td>
<td>102.9</td>
</tr>
<tr>
<td>5 years</td>
<td>18.7</td>
<td>109.9</td>
</tr>
<tr>
<td>6 years</td>
<td>20.7</td>
<td>116.1</td>
</tr>
<tr>
<td>7 years</td>
<td>22.9</td>
<td>121.7</td>
</tr>
</tbody>
</table>

42. The combustion of a fuel is a process by which chemical energy is released in the form of heat and light. The process involves the interaction of fuel with oxygen. Can you describe the combustion process in detail?
   a) 600
   b) 360
   c) 3600
   d) 36000

(1 atm = 760 mm Hg = 101325 Pa)
43. നജാറവെള്ളം പുറത്തോട്ടെ വായ്ത്തയായി എന്തികളെയാണ് പാടുന്നത് (പഴയകാല മാലയാളികളെയാണോ?)

44. സെറിൽബ്രേഷൻ നാലി നശഞ്ഞാവശ്യം സാക്ഷ്യം-വെള്ളനിർമ്മാണം നിർദ്ദേശിക്കപ്പെട്ടിട്ടുള്ള പ്രക്രിയയും നാലി നശഞ്ഞാവശ്യം എന്നാണ് പ്രക്രിയയും. എന്നായിരുന്നു. എന്നായിരുന്നു സെറിൽബ്രേഷൻ / സെറിൽബ്രേഷൻ എന്നായിരുന്നു?
   a) എ നാലി നശഞ്ഞാവശ്യം  b) നാലി നശഞ്ഞാവശ്യം  c) നാലി നശഞ്ഞാവശ്യം  d) എന്നായിരുന്നു

45. നാലി (പ്രക്രിയാപ്രയോഗം എന്നിരിക്കുന്നു) ലെവലി നാലി എന്തോ? എന്നായിരുന്നു പ്രക്രിയയും. എന്നായിരുന്നു ലെവലി പ്രക്കാശകാരണം എന്നായിരുന്നു 55 എന്നായിരുന്നു ലെവലി പ്രക്രിയയും എന്നായിരുന്നു?

<table>
<thead>
<tr>
<th>Age</th>
<th>Weight (kg)</th>
<th>Height (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 years</td>
<td>32.2</td>
<td>140.0</td>
</tr>
<tr>
<td>12 years</td>
<td>37.0</td>
<td>147.0</td>
</tr>
<tr>
<td>13 years</td>
<td>40.9</td>
<td>153.0</td>
</tr>
<tr>
<td>14 years</td>
<td>47.0</td>
<td>160.0</td>
</tr>
<tr>
<td>15 years</td>
<td>52.6</td>
<td>166.0</td>
</tr>
<tr>
<td>16 years</td>
<td>56.0</td>
<td>171.0</td>
</tr>
<tr>
<td>17 years</td>
<td>62.7</td>
<td>175.0</td>
</tr>
<tr>
<td>18 years</td>
<td>65.0</td>
<td>177.0</td>
</tr>
</tbody>
</table>

   a) 162 cm    b) 172 cm    c) 155 cm    d) 169 cm

46. പ്രക്രിയാപ്രയോഗം (പ്രക്രിയാപ്രയോഗം മൂലികയും പുറത്തോട്ടെ മൂലികയും പ്രക്രിയാപ്രയോഗത്തിന്റെ 46-ാം വാലി എന്നാണ്. ഹ്യൂമൻ മൂലികയും 100°C എന്നാണ്. സെറിൽബ്രേഷൻ (പുറത്തോട്ടെ മൂലികയും മൂലികയും പ്രക്രിയാപ്രയോഗത്തിന്റെ 46-ാം വാലി എന്നാണ്.)

<table>
<thead>
<tr>
<th>Substance</th>
<th>Melting point °C</th>
<th>Boiling point °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>-7°C</td>
<td>59</td>
</tr>
<tr>
<td>B</td>
<td>1083</td>
<td>2567</td>
</tr>
<tr>
<td>C</td>
<td>-2</td>
<td>23</td>
</tr>
<tr>
<td>D</td>
<td>317</td>
<td>553</td>
</tr>
</tbody>
</table>

46. ഹ്യൂമൻ മൂലികയും 27°C പുറത്തോട്ടെ മൂലികയും A മൂലികയും D മൂലികയും പ്രക്രിയാപ്രയോഗത്തിന്റെ 46-ാം വാലിയാണ്?  
   a) A    b) B    c) C    d) D
47. 1430 വേരൊരു മേഖലകളെ മേഖലകൾ ലഭ്യമായ പ്രകാശം (പ്രതി മുട്ടൻ മുട്ടു) എങ്ങനെ കുറവ് അനുകൂലമായി?
   a) 10 വേരൊരു    b) 120 വേരൊരു    c) 1000 വേരൊരു    d) 30 വേരൊരു

48. ക്രോണിയ ഗിയാറിൽ അക്സരം അക്കാഡീമിക്‌സ് പ്രാദേശിക ഗിയാറിൽ അക്കാഡീമിക്‌ എത്താം പാശ്ചാത്യ ഗിയാറിൽ. അതിന് ക്രോണിയാലിപ്പുകൾ എന്താണ് പ്രബലമാകുന്നത്?

<table>
<thead>
<tr>
<th>Planet</th>
<th>Distance from the sun (Million Kms)</th>
<th>Time for one trip round the sun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>55</td>
<td>88 days</td>
</tr>
<tr>
<td>Venus</td>
<td>108</td>
<td>225 days</td>
</tr>
<tr>
<td>Earth</td>
<td>150</td>
<td>1 year</td>
</tr>
<tr>
<td>Jupiter</td>
<td>780</td>
<td>12 years</td>
</tr>
<tr>
<td>Uranus</td>
<td>2,870</td>
<td>84 years</td>
</tr>
<tr>
<td>Neptune</td>
<td>4,600</td>
<td>165 years</td>
</tr>
</tbody>
</table>

49. മണി, യൂറോപ്പ്, യൂറോപ്പ് ക്രോണിയാലിപ്പുകൾ ക്രിയയാണെങ്കിൽ ക്രിയചാരാവശേഷ ക്രിയകളിൽ കാണുന്നു. മണി > (ഇറ്റാലി) > യൂറോപ്പ് അത്യാതിപ്രധാനപ്പെട്ട യൂറോപ്പ്, യൂറോപ്പ് ക്രിയകളിൽ യൂറോപ്പ് മണിയിൽ കാണുന്നു. എന്നാല്‍ ക്രിയകളിലെ ക്രിയകളിലെ യൂറോപ്പ് മണിയിൽ കാണുന്നു.
   a) മണിയുടെ പ്രധാനപ്പെട്ട ക്രിയ ആണുണ്ടാക്കണം    b) യൂറോപ്പ് മണിയുടെ പ്രധാനപ്പെട്ട ക്രിയ ആണുണ്ടാക്കണം
   c) മണിയുടെ പ്രധാനപ്പെട്ട ക്രിയ ആണുണ്ടാക്കണം    d) യൂറോപ്പ് മണിയുടെ പ്രധാനപ്പെട്ട ക്രിയ ആണുണ്ടാക്കണം

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   a) b) c) d)
## APPENDIX - V(B)

Science Process Skills Test Items, Answer Key – SPROSES Final

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APPENDIX – $V(C)$

RESPONSE SHEET FOR SPROSES (FINAL)
Dear student,

The given test booklet of ‘The Science Process Skill Elicitation Schedule’ contains multiple choice questions which measures how well you do some of the procedures of doing things in science. Each question has four suggested answers (a, b, c, d) of which you have to select the best from it. Mark your answers on the other side of this paper, by putting a cross mark (X) against the box having the same letter as that of your answer. Your score is the total number of correct answers you mark in the response sheet. You can make your best score by answering all the questions.

- Please do not write on the test booklet.
- Read each question carefully and mark your answer for a particular question in any one of the 4 boxes – a, b, c, d against the question number in the response sheet.
- Answer all the given questions.
- Use a pencil for marking your answers so that if you wish to change your answer, you can erase and do.
- Return the test booklet and this response sheet soon after you complete the test.

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Please write your answers on the other side of this paper.
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APPENDIX – VI(A)

DRAFT FORM OF SCIENCE TEACHERS’ INSTRUCTIONAL PREFERENCE ANALYSIS SCALE – STIPAS
SCIENCE TEACHERS’ INSTRUCTIONAL PREFERENCE ANALYSIS SCALE

Name of the teacher (optional) : Mr. /Mrs. /Ms. …………………………………………………………………………………………………

Name of the school : ……………………………………………………………………………………………………………………………...

Circle the letter on the right which best describes you.

1. Gender :
   a-Female   b-Male
   a   b

2. Classes taught :
   a-8   b-9   c-10
   a   b   c

3. Location of your school :
   a-Urban   b-Rural
   a   b

4. School management :
   a-Government   b-Private
   a   b

5. Science teaching experience :
   a-less than 5 years b-5 to 9 years
c-10 to 14 years d-above 15 years
   a   b   c   d

6. Number of in-service training classes attended in the past 2 years
   : a-0   b-1 or 2   c-3 or 4   d-5 and above
   a   b   c   d

7. Your rating for your school science laboratory facilities:
   : a-Excellent b-Good c-Average d-Poor
   a   b   c   d

Dear Sir/Madam,

Given below are some statements relating to you as a teacher of science. Please read each statement carefully. Circle the letter at the right of the statement that best indicates your perception of your teaching, using the following categories.

   a-Always   b-Often   c-Sometimes   d-Seldom   e-Never

Your honest response to the statement is what is wanted and it will be kept confidential.

   a-Always   b-Often   c-Sometimes   d-Seldom   e-Never
In my science class..........., 

1. I encourage active participation of my students throughout the lesson. 
2. I provide evidence to my students as of how a concept is correlated to their everyday life. 
3. I depend only on the prescribed textbook to present the lesson. 
4. I encourage student inquiry by asking thoughtful and open-ended questions. 
5. I seek elaboration of the initial response of my students. 
6. I feel difficulty in implementing innovative assessment techniques. 
7. I maintain a supportive learning environment, facilitating interdisciplinary learning. 
8. I impart a visual treat to my students using ICT presentations on the topics taught. 
9. My students feel that pursuing a career in science is not that challenging. 
10. I execute the new methodologies discussed during in-service training classes. 
11. I believe that teacher-student learning experience is a partnership and my role is to facilitate the learning process. 
12. I ignore resolving students' misconceptions in science topics. 
13. I nurture students' natural curiosity through the use of various teaching-learning materials. 
14. I ensure that content and science process skills are integrated throughout the lesson. 
15. I feel it is not necessary to give wait time after posing questions. 
16. I use multiple forms of assessments to ascertain what my students know and can do as a result of their science learning experiences. 
17. I guide and encourage my students to maintain a science corner in their classroom. 
18. I doubt whether my students understand the role of science and technology in society.

a-Always      b-Often      c-Sometimes      d-Seldom      e-Never
19. I motivate my students to work hard with a goal to pursue a career in the field of science.  
20. I use information from students, colleagues and others to improve teaching and facilitate professional growth.  
21. I discourage students' initiativeness to lead discussions.  
22. I ensure that learning science pose an enjoyable challenge to my students.  
23. I check my students' understanding of the science concept before teaching any concept.  
24. I give importance to ‘what’ of science than ‘why’ and ‘how’ of science.  
25. I lead my students through different cognitive levels to reach higher order thinking skills.  
26. I design assessments that tell what my students can do and cannot do.  
27. I feel interdisciplinary approaches fail to help students understand the importance of science.  
28. I look for my students to appreciate the contributions of science and technology to our society.  
29. I initiate my students to take individual decisions in diet, health, lifestyles etc. based on their science learning experiences.  
30. I fail to demonstrate excellent knowledge of the subject matter.  
31. I encourage students to discuss or ask questions to me as well as among themselves.  
32. I encourage my students to observe the examples of scientific concepts in daily life.  
33. My students learn better by reading the textbook than listening to my explanations.  
34. I provide hands-on experience to my students emphasizing on the science process skills (like observing, measuring, hypothesizing, etc.).  
35. I encourage my students to solve science problems without parent or teacher interventions.  
36. I depend entirely on the evaluation of written tests to assess student learning.

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<td>25. I lead my students through different cognitive levels to reach higher order thinking skills.</td>
<td>a b c d e</td>
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<td>26. I design assessments that tell what my students can do and cannot do.</td>
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<tr>
<td>27. I feel interdisciplinary approaches fail to help students understand the importance of science.</td>
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<tr>
<td>28. I look for my students to appreciate the contributions of science and technology to our society.</td>
<td>a b c d e</td>
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<tr>
<td>29. I initiate my students to take individual decisions in diet, health, lifestyles etc. based on their science learning experiences.</td>
<td>a b c d e</td>
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<tr>
<td>30. I fail to demonstrate excellent knowledge of the subject matter.</td>
<td>a b c d e</td>
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<tr>
<td>31. I encourage students to discuss or ask questions to me as well as among themselves.</td>
<td>a b c d e</td>
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<td>32. I encourage my students to observe the examples of scientific concepts in daily life.</td>
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<td>33. My students learn better by reading the textbook than listening to my explanations.</td>
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<td>34. I provide hands-on experience to my students emphasizing on the science process skills (like observing, measuring, hypothesizing, etc.).</td>
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<td>35. I encourage my students to solve science problems without parent or teacher interventions.</td>
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<td>36. I depend entirely on the evaluation of written tests to assess student learning.</td>
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</table>
37. I make purposeful correlations of the science concepts with other school subjects. 

38. I encourage my students to make ICT presentations relating to various science concepts. 

39. I incorporate minimum use of community resources in my lessons. 

40. I use the information gained through in-service training to modify classroom practices. 

41. I appreciate my students for their efforts/achievements in science. 

42. I am hesitant to check my students’ ability to apply the learned science concepts and skills. 

43. During the lesson, I adopt various teaching methodologies (like brainstorming, experimenting, discussing, etc.) to facilitate students’ conceptual understanding. 

44. I insist my students to try experiments more than once to check their result. 

45. My students are hesitant to raise science questions. 

46. I engage students in ongoing self-assessment. 

47. I allow my students to discuss science articles from newspapers or magazines. 

48. I limit the use of ICT techniques to the minimum during instruction. 

49. I discuss the impact of science and technology on personal and community health. 

50. I make use of the information gained through in-service workshops to enhance student learning. 

51. I feel that my students are nervous to approach me for clearing their doubts. 

52. I guide my students to practice safe techniques for the storage, use and disposal of chemicals. 

53. I ensure that my students are actively engaged in gaining physical or mental learning experiences throughout the lesson. 

54. I discourage discussions on how scientific inquiries are conducted. 

55. I foster students’ creative and analytical thinking skills. 

a-Always  b-Often  c-Sometimes  d-Seldom  e-Never
56. I use cognitive terminology like 'classify', 'infer', 'predict', etc. while framing tasks to my students. a  b  c  d  e
57. I give assignments that require my students to use only a few resources. a  b  c  d  e
58. I impart understanding of scientific principles involved in common household devices. a  b  c  d  e
59. I discuss how science is related to one’s personal health, well being and safety. a  b  c  d  e
60. I find it difficult to practice collaborative and co-operative learning methods. a  b  c  d  e
Select science teacher instructional preference categories and their corresponding statement numbers in the DRAFT form of STIPAS

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<thead>
<tr>
<th>Science Teacher Instructional Preference Categories</th>
<th>Statement Number</th>
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<tbody>
<tr>
<td>Teacher- Pupil Interaction Dynamics</td>
<td>1 11 21 31 41 51</td>
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<tr>
<td>Influence of Life-Skill Integration</td>
<td>2 12 22 32 42 52</td>
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<tr>
<td>Flexible cum Viable Instructional Strategy Integration</td>
<td>3 13 23 33 43 53</td>
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<tr>
<td>Process Skill Application in Procedures</td>
<td>4 14 24 34 44 54</td>
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<tr>
<td>Styles of Meta-Cognitive Strengthening</td>
<td>5 15 25 35 45 55</td>
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<td>Adaptation of Multi-Pronged Assessment Techniques</td>
<td>6 16 26 36 46 56</td>
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<td>Adoption of the Spirit of Inter-Disciplinarity</td>
<td>7 17 27 37 47 57</td>
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<tr>
<td>Technology Woven Procedural Enrichment</td>
<td>8 18 28 38 48 58</td>
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<tr>
<td>Preference for Quality of Life Enhancement</td>
<td>9 19 29 39 49 59</td>
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<tr>
<td>Professional Growth and Auto-Empowerment</td>
<td>10 20 30 40 50 60</td>
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</table>

Total statements – 60

Twenty Negative statements

3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57 & 60
APPENDIX – VII(A)

FINAL FORM OF SCIENCE TEACHERS’ INSTRUCTIONAL PREFERENCE ANALYSIS SCALE – STIPAS
Dear Sir/Madam,

Given below are some statements relating to you as a teacher of science. Please read each statement carefully. Circle the letter at the right of the statement that best indicates your perception of your teaching, using the following categories.

a-Always         b-Often         c-Sometimes   d-Seldom         e-Never

Your honest response to the statement is what is wanted and it will be kept confidential.

a-Always         b-Often         c-Sometimes   d-Seldom         e-Never
In my science class..........., 

1. I encourage active participation of my students throughout the lesson. 
2. I provide evidence to my students as of how a concept is correlated to their everyday life. 
3. I encourage student inquiry by asking thoughtful and open-ended questions. 
4. I seek elaboration of the initial response of my students. 
5. I feel difficulty in implementing innovative assessment techniques. 
6. I maintain a supportive learning environment, facilitating interdisciplinary learning. 
7. I impart a visual treat to my students using ICT presentations on the topics taught. 
8. My students feel that pursuing a career in science is not that challenging. 
9. I execute the new methodologies discussed during in-service training classes. 
10. I believe that teacher-student learning experience is a partnership and my role is to facilitate the learning process. 
11. I ignore resolving students’ misconceptions in science topics. 
12. I ensure that content and science process skills are integrated throughout the lesson. 
13. I use multiple forms of assessments to ascertain what my students know and can do as a result of their science learning experiences. 
14. I guide and encourage my students to maintain a science corner in their classroom. 
15. I doubt whether my students understand the role of science and technology in society. 
16. I motivate my students to work hard with a goal to pursue a career in the field of science. 
17. I use information from students, colleagues and others to improve teaching and facilitate professional growth.
18. I discourage students' initiativeness to lead discussions.  
   a b c d e

19. I ensure that learning science pose an enjoyable challenge to my students.  
   a b c d e

20. I check my students' understanding of the science concept before teaching any concept.  
   a b c d e

21. I lead my students through different cognitive levels to reach higher order thinking skills.  
   a b c d e

22. I design assessments that tell what my students can do and cannot do.  
   a b c d e

23. I feel interdisciplinary approaches fail to help students understand the importance of science.  
   a b c d e

24. I look for my students to appreciate the contributions of science and technology to our society.  
   a b c d e

25. I initiate my students to take individual decisions in diet, health, lifestyles etc. based on  
    their science learning experiences.  
   a b c d e

26. I fail to demonstrate excellent knowledge of the subject matter.  
   a b c d e

27. I encourage students to discuss or ask questions to me as well as among themselves.  
   a b c d e

28. I encourage my students to observe the examples of scientific concepts in daily life.  
   a b c d e

29. My students learn better by reading the textbook than listening to my explanations.  
   a b c d e

30. I provide hands-on experience to my students emphasizing on the science process skills  
    (like observing, measuring, hypothesizing, etc.).  
   a b c d e

31. I encourage my students to solve science problems without parent or teacher interventions.  
   a b c d e

32. I depend entirely on the evaluation of written tests to assess student learning.  
   a b c d e

33. I make purposeful correlations of the science concepts with other school subjects.  
   a b c d e

34. I encourage my students to make ICT presentations relating to various science concepts.  
   a b c d e

35. I use the information gained through in-service training to modify classroom practices.  
   a b c d e

36. I appreciate my students for their efforts/ achievements in science.  
   a b c d e

a - Always       b - Often       c - Sometimes       d - Seldom       e - Never
37. I am hesitant to check my students’ ability to apply the learned science concepts and skills. a b c d e
38. During the lesson, I adopt various teaching methodologies (like brainstorming, experimenting, discussing, etc.) to facilitate students’ conceptual understanding. a b c d e
39. I insist my students to try experiments more than once to check their result. a b c d e
40. My students are hesitant to raise science questions. a b c d e
41. I engage students in ongoing self-assessment. a b c d e
42. I limit the use of ICT techniques to the minimum during instruction. a b c d e
43. I discuss the impact of science and technology on personal and community health. a b c d e
44. I make use of the information gained through in-service workshops to enhance student learning. a b c d e
45. I feel that my students are nervous to approach me for clearing their doubts. a b c d e
46. I guide my students to practice safe techniques for the storage, use and disposal of chemicals. a b c d e
47. I ensure that my students are actively engaged in gaining physical or mental learning experiences throughout the lesson. a b c d e
48. I discourage discussions on how scientific inquiries are conducted. a b c d e
49. I foster students’ creative and analytical thinking skills. a b c d e
50. I use cognitive terminology like ‘classify’, ‘infer’, ‘predict’, etc. while framing tasks to my students. a b c d e
51. I impart understanding of scientific principles involved in common household devices. a b c d e
52. I discuss how science is related to one’s personal health, well being and safety. a b c d e
53. I find it difficult to practice collaborative and co-operative learning methods. a b c d e

******************************************************************************

a-Always b-Often c-Sometimes d-Seldom e-Never
### Science Teacher Instructional Preference Categories and their Corresponding Statement Numbers in the FINAL form of STIPAS

<table>
<thead>
<tr>
<th>Science Teacher Instructional Preference Categories</th>
<th>Statement Number</th>
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<tbody>
<tr>
<td>Teacher- Pupil Interaction Dynamics</td>
<td>1 10 18 27 36 45</td>
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<td>2 11 19 28 37 46</td>
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<td>Flexible cum Viable Instructional Strategy Integration</td>
<td>- - 20 29 38 47</td>
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<td>Process Skill Application in Procedures</td>
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</tr>
<tr>
<td>Professional Growth and Auto-Empowerment</td>
<td>9 17 26 35 44 53</td>
</tr>
</tbody>
</table>

**Total statements – 53**

**Fifteen Negative statements**

5, 8, 11, 15, 18, 23, 26, 29, 32, 37, 40, 42, 45, 48 & 53
APPENDIX VIII

(a) List of schools from which the sample was drawn

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<td>Govt Model Boys HSS, Thycadu, Trivandrum</td>
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<td>St. Marys HSS, Pattom, Trivandrum</td>
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<td>Kanniakulangara Govt Boys HS, Trivandrum</td>
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<td>Girls HSS, Karaungapally, Kollam</td>
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(b) Break-up of student sample

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### APPENDIX - X

Consolidated Data Sheet for tabulation of final data

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