APPENDIX I

ACHIEVEMENT IN SCIENCE EDUCATION
(Try out)

Structured & Administered by: Mr. P.NATARAJAN Guided by: Prof. N. NATESAN

Name of the student: 
Teacher:
Age:
Sex:
SSLC Marks in science:
Subject : Science Education
Max Marks: 200

Time: 3 Hours

Instruction:-
(i) Answer all the questions.
(ii) Encircle the alphabet for the correct responses in the answer sheet.
(iii) Each question carries 1 marks

1. Boom’s Taxonomy of educational objectives consists of
   a) Three domains   b) Four domains
   c) Two domains   d) Five domains

2. The student must be able to solve the problems in finding the refractive index of a substance using the principles of refraction
   a) Knowledge   b) Understanding
   c) Application   d) Skill

3. Tests which are administered to find out how quickly an activity or a performance is completed are called
   a) Prognostic tests   b) Speed tests
   c) Power test   d) Standardized tests

4. The characteristics of a test which must be used with pupils who possess the proper intellectual maturity and background experience
   a) Validity   b) Objectivity
   c) Reliability   d) Practicability

5. The patron of the science club
   a) The Head teacher
   b) The senior science teacher
   c) District educational officer
   d) Elected from the pupil

6. The aid which is found in all classrooms
   a) Chalk Board   b) Flannel Board
   c) Magnetic Board   d) Bulletin Board

7. The method in which it is just like binding together pearls of different known facts into garland of unknown facts
   a) Deductive method
   b) Analytical method
   c) Inductive method
   d) Synthetic method

8. The flow chart shows
   a) Sequence in the delineation
   b) Growth development
   c) Organizational elements and their functional relationships
   d) Chronological in nature

9. A way of learning which guide the students to understand how parts are related to the whole
   a) Cooperative learning   b) Heuristics
   c) Guided learning   d) CAI

10. The student must be able to manipulate the apparatus for studying the refractive index of a glass slab using the principles of refraction
    a) Knowledge   b) Understanding
    c) Application   d) Skill

11. A system which enables the students learn through presentations received from audio visual aids
    a) Micro teaching
    b) Mass media approach
    c) Individualized instruction
    d) Team teaching

12. The characteristic of a test depends on the efficiency with
which a test measures what it does measure.
a) Validity b) Objectivity
c) Reliability d) Practicability

13. Tests which are coupled up with performance and speed
a) Prognostic tests b) Objective tests
c) Power test d) Standardized tests

14. Which of the following cognitive domain step is used to apply proper formula to solve a scientific problem?
a) Understanding b) Application
c) Analysis d) Knowledge

15. The Sponsor of the science club
a) The Head teacher b) The senior science teacher
c) District educational officer d) Elected from the pupil

16. The method in which physical verification of facts presumed through investigating and inquiry experiments
a) Deductive method b) Analytical method
c) Experimental method d) Synthetic method

17. This is a box which gives the effect of seeing a three dimensional item just with two dimensional films
a) Mock-ups b) view master
c) Specimens d) kit box

18. A way of learning which leads a project presentation at the end of the lesson
a) Cooperative learning b) CAI
c) Guided learning d) Heuristics

19. A system through which armature teachers developed different skills needed for class room teaching and get them perfected
a) Micro teaching b) Mass media approach
c) Individualized instruction d) Team teaching

20. The deciding and stating instructional objectives of the unit plan represents
a) ‘Why’ aspect b) ‘What’ aspect
c) ‘How’ aspect d) ‘Evidence for achievement’

21. The characteristic in which the students must be able to finish the test within the stipulated time.
a) Validity b) Objectivity
c) Reliability d) Practicability

22. To display the activities of the school as a whole or some announcement to be made and are kept in some place outside the classrooms
a) Chalk Board b) Flannel Board
c) Magnetic Board d) Bulletin Board

23. Which has the greatest potential for education through audio visual means?
a) SITE programmes b) Teaching machines
c) The computer d) the language laboratory

24. Which of the following affective domain is used, children should commit themselves and work for that particular value?
a) Understanding b) Application
c) Valuing d) Receiving

25. The individual learning strategies used for outside the classroom
a) Science library b) Science club
c) Mass media d) Home assignment

26. An example of projected aids
a) Mock-ups b) Maps
c) Specimens d) Over head projectors

27. A sheet of metal that attracts a piece of magnet can be used for
a) Chalk Board b) Flannel Board
c) Magnetic Board d) Bulletin Board

28. It alters the essential elements that are being studied in the original and concentrates on these elements only
a) Mock-ups b) view master
c) Specimens d) kit box

29. The general objectives in science learning used for reading and stating
the meaning of scientific facts and concepts
a) Knowledge  b) Manipulative skills
c) Scientific attitude  d) Interests

30. The specific objectives in which students must be able to recognize and recall what they had learnt
a) Knowledge  b) Understanding
c) Application  d) Skill

31. The tool for evaluation of the unit plan represents
a) ‘Why’ aspect  b) ‘What’ aspect
c) ‘How’ aspect  d) ‘Evidence for achievement’

32. The characteristic in which the scores of the test should be easily interpretable on a common and acceptable basis
a) Validity  b) adequacy
c) Interpretability  d) Practicability

33. In which of the following respects is a theory ‘not’ different from a belief?
a) Antecedent consequent relationships  b) Acceptability  c) Verifiability  d) Demonstrability

34. The simple experiments which may arise out of any teaching situation and does not require any previous rehearsal
a) Casual experiments  b) Major experiments
c) Serial experiments  d) Marathon experiments

35. An example of non projected aids
a) Mock-ups  b) slide
c) Filmstrip  d) Over head projectors

36. The group learning strategies used for outside the classroom
a) Quiz  b) Science club
c) CAI  d) Home assignment

37. The board can be effectively used in teaching ideas which involve displacements of materials
a) Chalk Board  b) Flannel Board
c) Magnetic Board  d) Bulletin Board

38. A recognizable three dimensional representation of real things
a) Mock-ups  b) view master
c) Models  d) objects

39. The general objectives in science learning used for the ability to handle and manipulate scientific equipment
a) Knowledge  b) Manipulative skills
c) Scientific attitude  d) Interests

40. The specific objectives in which students must be able to apply certain principles to predict the results, solve problems of real life
a) Knowledge  b) Understanding
c) Application  d) Skill

41. The method and learning experience of the unit plan represents
a) ‘Why’ aspect  b) ‘What’ aspect
c) ‘How’ aspect  d) ‘Evidence for achievement’

42. The degree to which a test samples sufficiently and widely into the subject so that the resulting scores are representative of relative to all performance in the areas measured
a) Validity  b) adequacy
c) Interpretability  d) Practicability

43. Classroom discipline can be maintained effectively by
a) Knowing the cause of indiscipline and handling it with stern hand
b) Providing a programme which is according to the need and interest of the pupils
c) By putting on fancy clothes in the classroom  d) none of the above

44. The type of experiments which require a long time for completion
a) Casual experiments  b) Major experiments
c) Serial experiments  d) Marathon experiments

45. The group learning strategies used for inside the classroom
a) Quiz  b) Science club
c) CAI  d) Home assignment

46. The optical instrument used to project enlarged images of any transparent object
a) Mock-ups  b) slide
47. The booklets containing pasted pictures in succession under classified sections and headings
   a) Maps       b) Albums
   c) Graphs     d) Charts

48. The human anatomy is usually explained with the help of
   a) Mock-ups   b) view master
   c) Models     d) objects

49. The general objectives in science learning used for collecting specimens, researching, learning to apply incidental observations to what is being learnt
   a) Knowledge b) Manipulative skills
   c) Scientific attitude d) Interests

50. The specific objectives in which students must be able to explain facts and theories
   a) Knowledge b) Understanding
   c) Application d) Skill

51. The analysis of the unit of the unit plan represents
   a) Why’ aspect b) ‘What’ aspect
   c) ‘How’ aspect d) ‘Evidence for achievement’

52. The test used for lower classes and for diagnostic work to determine learning difficulties
   a) Subjective test b) Objective test
   c) Oral test    d) Performance test

53. All are the examples of the media of two way communication except
   a) Padyatra   b) Public meeting
   c) Street plays d) Procession and rallies

54. The type of experiments which require complicated apparatus and usually involve a great strain on the part of the teacher during prior preparation and actual demonstration
   a) Casual experiments
   b) Major experiments
   c) Serial experiments
   d) Marathon experiments

55. The individual learning strategies used for inside the classroom
   a) Quiz       b) Science club
   c) CAI        d) Home assignment

56. The optical instrument used to project enlarged images of opaque objects
   a) Mock-ups   b) slide
   c) Diascope   d) episcopes

57. An accurate representation in the form of a diagram, of the surface of the earth or some part of it, drawn to scale
   a) Maps       b) Albums
   c) Graphs     d) Charts

58. Real things which have been removed as units from their natural setting
   a) Mock-ups   b) view master
   c) Models     d) objects

59. The general objectives in science learning used for gaining the ability to use controls and making generalizations only with sufficient evidence
   a) Knowledge b) Manipulative skills
   c) Scientific attitude d) Interests

60. The specific objectives in which students must be able to distinguish fact from hypothesis
   a) Knowledge b) Understanding
   c) Application d) Analysis

61. This type of evaluation is usually done in the beginning of the teaching learning process
   a) Diagnostic b) Formatives
   c) Summative d) Standardized tests

62. Learning leads to the formations of
   a) Attitudes   b) Thinking
   c) Habits      d) Morality

63. The test contain questions the answers for which are fixed and closed
   a) Subjective test b) Objective test
   c) Oral test    d) Performance test

64. A number of experiments following each other in a continuous or logical order
a) Casual experiments  
b) Major experiments  
c) Serial experiments  
d) Marathon experiments

65. The method in which the spoken word is supplemented with demonstration,  
a) Verbal method  
b) Demonstration method  
c) Lecture cum demonstration method  
d) Lecture method

66. The most frequently used aids of all the graphic material  
a) Maps  
b) Albums  
c) Graphs  
d) Charts

67. A visual combination of bold design, colour and message which is intended to catch and hold the attention of the passer by just long enough to implant a significant idea in his mind  
a) Cartoon  
b) Posters  
c) Graphs  
d) Diagrams

68. Direct sensory contact which involves  
a) Doing  
b) Observing  
c) Symbolizing  
d) Analyzing

69. The science teacher’s activity to give learning experience to students is  
a) Process  
b) Product  
c) Process and Product  
d) Interests

70. The pupil uses appropriate units for various physical quantities  
a) Knowledge  
b) Understanding  
c) Application  
d) Skill

71. This type of evaluation is usually done in the development of students at various levels  
a) Diagnostic  
b) Formatives  
c) Summative  
d) Standardized tests

72. When the extent and matter to be written is not fixed the tests are categorized as  
a) Subjective tests  
b) Objective tests  
c) Oral tests  
d) Performance test

73. Primary education helps  
a) Socialization of child  
b) Democratization of child

c) In course understanding  
d) all the above

74. The science club members may visit the corresponding organization of the other schools for exchange of ideas relating to the mutual interest  
a) Community trips  
b) Inter school trips  
c) Tour or journey  
d) Individual trips

75. The method in which the pupil is led to discover truth for himself  
a) Deductive method  
b) Analytical method  
c) Inductive method  
d) Synthetic method

76. A pictorial representation or caricature of a person, idea or situation that is designed to influence public opinion  
a) Cartoon  
b) Posters  
c) Graphs  
d) Diagrams

77. The genealogical chart shows  
a) Sequence in the delineation  
b) Growth development  
c) Organizational elements and their functional relationships  
d) Chronological in nature

78. Oral or printed words which involve  
a) Doing  
b) Observing  
c) Symbolizing  
d) Analyzing

79. The students’ activity indicating learning outcomes is  
a) Process  
b) Product  
c) Process and Product  
d) Interests

80. The pupil performs experiments with reasonable speed and neatness  
a) Knowledge  
b) Understanding  
c) Application  
d) Skill

81. This type of evaluation is done after finishing a particular unit or course  
a) Diagnostic  
b) Formatives  
c) Summative  
d) Standardized tests

82. The test measuring skills or activity oriented knowledge is known as
83. The first important step in teaching is
   a) Planning beforehand
   b) Organizing materials to be taught
   c) Knowing the background of the students
   d) None of the above

84. A group of pupils may take this type of trips for completing an assignment of some responsibility in connection with some curriculum
   a) Community trips
   b) Inter school trips
   c) Tour or journey
   d) Individual trips

85. The method in which rules, generalization and principles are provided to the students and then they are asked to verify them with the help of particular examples
   a) Deductive method
   b) Analytical method
   c) Inductive method
   d) Synthetic method

86. A visual representation of numerical data
   a) Cartoon
   b) Posters
   c) Graphs
   d) Diagrams

87. The sequence chart shows
   a) Sequence in the delineation
   b) Growth development
   c) Organizational elements and their functional relationships
   d) Chronological in nature

88. Pictures or some other forms of representation of objects which involve
   a) Doing
   b) Observing
   c) Symbolizing
   d) Analyzing

89. A system of teaching in which a group of expert teachers present their lessons in a complementary and integrated fashion
   a) Micro teaching
   b) Mass media approach
   c) Individualized instruction
   d) Team teaching

90. The pupil labels the parts of a diagram accurately
   a) Knowledge
   b) Understanding
   c) Application
   d) Skill

91. The characteristics of a test make for the elimination of the opinion and bias judgment of the person who scores it
   a) Validity
   b) Objectivity
   c) Reliability
   d) Practicability

92. A teacher in the class is
   a) The president of the group
   b) A director of the group
   c) A leader and guide of the group
   d) All the above

93. The questions are framed in such a way that exact answer is elicited from the students
   a) Prognostic test
   b) Speed test
   c) Power test
   d) Standardized test

94. It is the usual trip to some near by places like a zoo or museum or botanical gardens
   a) Community trips
   b) Inter school trips
   c) Tour or journey
   d) Individual trips

95. The method in which it starts its journey from the unknown and the students reach by their discoveries to known facts
   a) Deductive method
   b) Analytical method
   c) Inductive method
   d) Synthetic method

96. Simplified drawing designed to show inter relationship primarily by means of lines and symbols
   a) Cartoon
   b) Posters
   c) Graphs
   d) Diagrams

97. The time line chart shows
   a) Sequence in the delineation
   b) Growth development
   c) Organizational elements and their functional relationships
   d) Chronological in nature

98. A way of learning which enables discovery through using trial and error methods
   a) Cooperative learning
   b) CAI
   c) Heuristics
   d) Guided learning

99. A system of making the students learn by themselves which includes the Programmed learning material
   a) Micro teaching
   b) Mass media approach
100. The student must be able to describe the term ‘refraction’
   a) Knowledge  b) Understanding
   c) Application  d) Skill

101. The time taken by the moon to complete one revolution around the earth is
   a) 365 1/4 days  b) 29.5 days
   c) 24 hours  d) 24 days

102. Which of the following does not change its shape at the room temperature?
   a) Cool drink  b) Carbon dioxide
   c) Milk  d) Cricket bat

103. During which process the volume of matter increases largely?
   a) Freezing  b) Melting
   c) Evaporation  d) Condensation

104. NH₄ is a
   a) Simple radical  b) negative radical
   c) Compound radical  d) positive radical

105. Goat is a / an
   a) Herbivore  b) Parasite
   c) Carnivore  d) Omnivore

106. The example for tap root modification is
   a) Potato  b) Beet – root
   c) Onion  d) Co acacia

107. Which is the gas used in air ships now?
   a) Hydrogen  b) helium
   c) Krypton  d) argon

108. The energy possessed by a torch cell is
   a) Chemical energy  b) Kinetic energy
   c) Light energy  d) Magnetic energy

109. The percentage of carbon dioxide present in air is about
   a) 21%  b) 78%
   c) 0.03%  d) 0.93%

110. An example for anomalies is
    a) Bacteria  b) Earth worm
    c) Amoeba  d) Yeast

111. Example for micro-algae is
    a) Clemydomonas  b) Sargasam
    c) Chara  d) Hydrilla

112. The plant part is especially meant for reproduction is
    a) Leaf  b) Root  c) Internodes  d) Flower

113. In a physical change
    a) The molecules of the substances do not change.
    b) The molecules of the substances change.
    c) Atoms forming the molecules undergo change.
    d) New substances are formed.

114. The radio active inert gas is
    a) Radon  b) xenon  c) krypton  d) argon

115. The conversion of complex food into simple food is called
    a) Respiration  b) Excretion
    c) Nutrition  d) Digestion

116. The human blood appears red due to the presence of
    a) Oxygen  b) Carbon-di-oxide
    c) Hemoglobin  d) Plasma

117. The word ‘environment’ was defined by
    a) Reiter  b) Earnest Haeckel
    c) Odum  d) Darwin

118. The particle that carries a positive charge in an atom is
    a) Electron  b) neutron
    c) Proton  d) none

119. The gas given out during photosynthesis is
    a) Oxygen  b) Carbon-di-oxide
    c) Nitrogen  d) Carbon-Monooxide

120. Rubber Plant was first discovered by
    a) Galileo  b) Christopher Columbus
    c) Aristotle  d) Socrates

121. Plant used to cure jaundice is
    a) Grass  b) Kizhanelli
    c) Bean  d) Hibiscus
122. The oil recommended to heart patient is
   a) Coconut oil   b) Gingerly oil
   c) Castor oil   d) Sun flower oil

123. The vitamin essential for eyes is
   a) Vitamin A   b) Vitamin D
   c) Vitamin E   d) Vitamin B

124. Locomotors organs found in Amoeba is
   a) Flagella   b) Fins
   c) Legs   d) Pseudopodia

125. Gestation period of man is
   a) 103 days   b) 60 days
   c) 280 days   d) 149 days

126. The virus which causes AIDS is
   a) T4 b) TMV c) HIV d) Animal virus

127. Respiratory problem is caused by
   a) Air pollution b) Water pollution
   c) Land pollution d) Noise pollution

128. Cold is caused by more than hundreds of
   a) Bacteria   b) Parasites
   c) Viruses   d) Unicellular Organisms

129. The food which is useful for growth of the body is
   a) Fat   b) Water
   c) Mineral salt   d) Protein

130. Volume of a cylinder
   a) \( \frac{4}{3} \pi r^3 \)   b) \( lh \)
   c) \( \pi r^2h \)   d) \( \frac{1}{3} \pi r^2h \)

131. The maximum displacement of the bob from the mean position is called
   a) Amplitude   b) Period of oscillation
   c) Length of the pendulum   d) Velocity

132. Boiling point of water is
   a) \( 0^\circ C \)   b) \( 100^\circ C \)
   c) \( 357^\circ C \)   d) \( -39^\circ C \)

133. The substance used for the softening of hard water is
   a) Copper sulphate   b) Sodium hydroxide
   c) Sodium chloride   d) Sodium Carbonate

134. The electric device with a thermostat is
   a) Electric bulb b) Fan
   c) Radio d) Iron-box

135. The amount of heat energy 1 calorie is equal to
   a) 42 joule   b) 0.42. joule
   c) 4.2 joule   d) 4200 joule

136. The speed of light in air or vacuum is
   a) \( 3,00,000 \) m/s   b) \( 3 \times 10^8 \) km/s
   c) \( 3 \times 10^8 \) m/s   d) 330 m/s

137. If the angle of incidence of a ray of light on a plane mirror is 30º, then the angle of reflection is
   a) 30º   b) 45º   c) 120º   d) 60º

138. The mirror used in a periscope, a) Concave b) Convex
   c) Plane   d) Spherical

139. The geometric centre of spherical surface of the mirror is called
   a) Centre of Curvature   b) Pole
   c) Principal focus   d) Radius of curvature

140. Two upper ends of the tuning fork are called as
   a) Stem   b) Prongs
   c) Frequency   d) Sonometer

141. The Audible frequency
   a) Below 20 Hz   b) Above 20,000 Hz
   c) Between 20 Hz and 20,000 Hz   d) Above 70,000 Hz

142. The compressions and rarefactions are produced in
   a) Light b) Electromagnetic Waves
   c) Sound   d) Heat

143. A glass rod rubbed with any one of the following which acquires positive Charge
   a) Wool b) Metal c) Silk d) Cotton

144. Charges escape readily from
   a) Blunt edges b) Sharp edges
   c) Spherical Conductors   d) Circular edges
145. Lighting conductor was first constructed by
   a) Edison  b) Newton  
   c) Volta  d) Franklin

146. The suicidal bags in an animal cell are
   a) Mitochondria  b) Lysosomes  
   c) Endoplasmic reticulum  d) Golgi apparatus

147 The chemical symbol for neon is
   a) N  b) Ni c) Ne  d) Na

148. Riccia belongs to this class
   a) Hepaticopsida  b) Bryopsida  
   c) Pteropsida  d) Gnetopsida

149. An example for cave dwelling animal is
   a) Shark  b) toad  c) Proteus  
   d) dragonfly

150. The nucleus was discovered by
   a) Robert Hooke  b) Purkinjie  
   c) Robert Brown  d) Mohl

151. The glandular hairs are present in
   a) Jatropha  b) Nettles  
   c) Cucurbita  d) Hairs

152. In crocodile, the skin is covered by
   a) Hooves  b) Bony scales  
   c) beaks  d) Hairs

153. The solid outer portion of the earth containing soil and rock is called
   a) Hydrosphere  b) Atmosphere  
   c) Lithosphere  d) Ionosphere

154. The plants that are growing in dry lands are called
   a) Hydrophytes  b) Mesophytes  
   c) Xerophytes  d) Halophytes

155. Malarial fever is caused to man by
   a) Mosquito  b) Plasmodium  
   c) Bacterium  d) Virus

156. Parts of Karnataka, kerala and Tamil Nadu are included in
   a) Uttarkhand Biosphere Reserve  
   b) The Nanda Devi Biosphere Reserve  
   c) The Nilgiri Biosphere Reserve  d) The Nokrek Biosphere Reserve

157. Oxygen carrying capacity of blood is reduced by
   a) Nitrogen  b) Carbon dioxide  
   c) Carbon monoxide  d) Sulphur dioxide

158. Mango fruit is bored by larvae of
   a) Mango Weevil  b) Mango Maggot  
   c) Mango moth  d) Mango flies

159. The binomial of potato is
   a) Solanum tuberosum  b) Musa Paradisiaca  
   c) Oryza sativa  d) Mangefera indica

160. Rearing of bees is called
   a) Vermiculture  b) Sericulture  
   c) Apiculture  d) Agriculture

161. Soyabeen oil contains
   a) 30 to 45% of protein  b) 2 to 10% of protein  
   c) 30 to 45% of fat  d) 2 to 10% of fat

162. Fish contains maximum
   a) Protein  b) Carbohydrates  
   c) Fats  d) Vitamins

163. Mango has chief source of vitamin
   a) B  b) A  c) K  d) E

164. Number of milk teeth in man
   a) 24  b) 20  c) 18  d) 22

165. This is the contribution of Louis Pasteur
   a) Canning  b) Pasteurization  
   c) Drying  d) Dehydration

166. In Children vitamin D deficiency disease is
   a) Beri-Beri  b) Night Blindness  
   c) Marasmus  d) Rickets
167. The body of the organism is not differentiated into cells in a) protozoans  b) lower invertebrates c) Higher invertebrates d) vertebrates

168. Felis domestica is the scientific name of a) Cockroach  b) tiger  c) cat d) dog

169. Insects are grouped under a) Protozoa  b) invertebrates
    c) Vertebrates d) none of the above

170. The function of cilia in a paramecium is a) Locomotion  b) feeding
    c) Sensory receptor d) all the above

171. Osmoregulation in paramecium is maintained by a) Food vacuoles  b) mitochondria
    c) Cilia d) contractile vacuole

172. The number of segments in the body of an earthworm is a) 100 to 200  b) 200 to 300
    c) Above 500 d) 50 to 60

173. The glandular thickening of the body wall between the 14th and 16th Segments in an earthworm is called a) Setae  b) clitellum
    c) prostomium d) peristomium

174. The heart of frog has a) A single auricle  b) two chambers
    c) Three chambers d) four chambers

175. The single, lower chamber in the heart of frog is called a) Auricle  b) ventricle
    d) truncus arteriosus d) sinus venosus

176. The contents of the precavals and the post caval are emptied into the a) Right auricle  b) left auricle
    c) conus arteriosus d) sinus venosus

177. The valves present at the origin of the aorta are a) Semi-lunar valves  b) bicuspid valve
    c) Tricuspid valve d) both (b) and (c)

178. The nerve sheet that connect the cerebral lobes is called a) meninges  b) gyri
    c) sulci  d) corpus callosum

179. Infectious diseases are a) Communicable diseases  b) Non-communicable diseases
    c) Genetic diseases d) Organic diseases

180. Diabetes mellitus is a (an) a) Infectious disease  b) Non-communicable disease
    c) Deficiency disease d) Contact disease

181. Cholera is caused by a) Leptospira  b) Mycobacterium Leprae
    c) Mycobacterium tuberculosis d) Vibrio cholerae

182. Water soluble vitamins are a) Vitamins A and B  b) vitamins B and C
    c) Vitamins D and K d) vitamins A and C

183. Citrus fruits are rich sources of a) Vitamin A  b) Vitamin B
    c) Vitamin C  d) Vitamin D

184. Beri-beri is caused due to the deficiency of a) Vitamin A  b) Vitamin B
    c) Vitamin D  d) Vitamin K

185. Anemia is caused due to lack of a) Vitamins b) iodine c) iron d) Calcium

186. Fish culture is also known as a) Pisciculture  b) Apiculture
    c) Sericulture  d) Aqua culture

187. Lean fish is recommended for a) Infants  b) patients
    c) Every one  d) old people

188. Who invented the vernier calliper? a) Paul Calliper  b) Pierre Vernier
    c) Peter Victor d) Newton
189. The small scale which slides along the main scale is the
   a) Centimeter scale b) vernier scale
   c) metre scale d) measuring scale

190. When the zero of the vernier scale coincides with the zero of the main scale, the error is
   a) Positive b) nil c) negative
   d) Less negative

191. The distance between two successive screw threads is
   a) the length of the screw
   b) the pitch of the screw
   c) the diameter of the screw
   d) the radius of the screw

192. If the zero of head scale is below the reference line, the error in the Instrument is
   a) Positive b) negative
   c) nil d) less negative

193. The specific latent heat of fusion of ice in SI unit is
   a) 2100 J K\(^{-1}\) b) 4200 J K\(^{-1}\)
   c) 33600 J K\(^{-1}\) d) 2260000 J

194. When light travels from a denser to a rarer medium.
   a) \( r = i \) b) \( r > i \) c) \( r < i \) d) \( r = 2i \)

195. Light travels fastest in
   a) Solids b) liquids c) gases d) vacuum

196. After refraction through a rectangular glass slab, the emergent and the incident rays are
   a) in the same straight line b) parallel c) Perpendicular
   d) inclined at an angle

197. A convex lens does not produce a
   a) Real, diminished image b) Real, magnified image
   c) Virtual, diminished image d) Virtual, magnified image

198. For total internal reflection to occur.
   a) \( i = C \) b) \( i < C \) c) \( i = 2C \) d) \( i > C \)

199. The distance traveled by a wave during one complete vibration of the source of sound is called
   a) Amplitude b) wavelength
c) Frequency d) period

200. Sound waves are
   a) Electromagnetic b) transverse
c) Longitudinal d) Transverse and electromagnetic

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APPENDIX II

ACHIEVEMENT IN SCIENCE EDUCATION
(Validated)

After the validation of the tool the following items are deleted. 1, 3, 6, 11, 22, 26, 31, 35, 40, 45, 47, 51, 55, 61, 62, 66, 70, 77, 84, 87, 92, 94, 97, 98, 102, 105, 106, 108, 112, 115, 118, 123, 128, 132, 135, 138, 144, 146, 150, 155, 159, 164, 168, 174, 182, 183, 192, 195 and 198.

After deletion, 150 items are administered to the final sample.
APPENDIX III

SCIENCE TEACHING COMPETENCY SCALE (STCS) (TRYOUT)

Structured & Administered by: Mr. P. NATARAJAN Guided by: Prof. N. NATESAN
Name of the student Teacher: Age:
Name of the DIET/TTT: Sex:
Name of the observer: class: VI Standard
Subject: Science Topic:

INSTRUCTION:

Read each statement and put a tick mark (✓) in the appropriate place depending upon your reaction as to how precisely the statement describes the science teaching performance of the student teachers.

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<td>Demonstrates knowledge of the science subject matter.</td>
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<td>Choose proper teaching strategies.</td>
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<td>Be able to express ideas clearly.</td>
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<td>Have good board-writing skills.</td>
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<td>Have good practical demonstration skills.</td>
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II MATERIAL ORGANIZATION AND PRESENTATION

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### IV MANAGEMENT OF THE LEARNING ENVIRONMENT

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<td>Creation of interest for future acquisition of knowledge.</td>
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<td>52</td>
<td>Conclusion by the motivation of the original skills.</td>
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APPENDIX IV

SCIENCE TEACHING COMPETENCY SCALE (STCS)
(Validated)

Structured & Administered by: Mr. P. NATARAJAN    Guided by: Prof. N. NATESAN

Name of the student Teacher: 
Name of the DIET/TTT : 
Name of the observer : 
Subject : Science

Age : 
Sex : 
class : VI Standard

Topic :

INSTRUCTION:
Read each statement and put a tick mark (✓) in the appropriate place depending upon your reaction as to how precisely the statement describes the science teaching performance of the student teachers.

<table>
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<tr>
<th>S.No</th>
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<th>Above Average (4)</th>
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<td>TEACHING FOR FACTS AND SKILLS</td>
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<tr>
<td>1</td>
<td>Clearly point out the learning objectives.</td>
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<td>2</td>
<td>Demonstrates knowledge of the science subject matter.</td>
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<td>Choose proper teaching strategies.</td>
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<td>Explain students’ misconception at right time.</td>
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<td>Apply teaching activities effectively.</td>
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<td>Be able to express ideas clearly.</td>
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<td>Have good board-writing skills.</td>
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<td>II</td>
<td>MATERIAL ORGANIZATION AND PRESENTATION</td>
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<td>Using oral questions during development of a concept.</td>
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<td>Present lectures effectively.</td>
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<td>Using aids to illustrate facts</td>
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<td>Help students understand the application of science.</td>
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<td>Clarification of students doubts.</td>
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<td>Arrange proper assignments</td>
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<td>Starting instructional objectives in behavioral terms</td>
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<td>Adequate Cooperativeness</td>
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<td>Build two-way communication.</td>
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<td>Display teaching enthusiasm.</td>
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**VI CONCLUSION**

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APPENDIX V

ACHIEVEMENT TEST FOR CONSEQUENCE COMPETENCY
(TRYOUT)

Structured & Administered by: Mr. P. NATARAJAN
Guided by: Prof. N. NATESAN

Name of the student: [Student Name]
Teacher: [Teacher Name]
Name of the DIET/TTT: [TTT Name]
Sex: [Sex]
Name of the Student: [Student Name]
class: VI Standard
Name of the School: [School Name]
Subject: Science
Max Marks: 100
Time: 90 Minutes

Instruction:-
(i) Answer all the questions.
(ii) Encircle the alphabet for the correct responses in the answer sheet.
(iii) Each question carries 1 marks

1. Among the following, which is a fundamental unit?
   a) Area   b) length   c) Volume   d) Force

2. The units of length, mass and time are called
   a) SI units b) derived units   c) Fundamental units d) Basic units

3. In the SI system, length is measured in
   a) Meter b) centimeter c) Kilometer d) millimeter

4. The extent of the surface of a body is its
   a) Length b) area   c) Volume d) density

5. The amount of matter contained in a body is its
   a) Mass b) volume   c) weight d) area

6. Among the following which is a scalar quantity?
   a) Mass b) weight   c) Force d) velocity

7. Among these pick out the vector quantity
   a) Velocity b) speed   c) Distance d) mass

8. A car moving along a highway is an example of
   a) Linear motion b) oscillatory motion c) Random motion d) periodic motion

9. A baby sleeping in a cradle suspended from the ceiling is in
   a) Oscillatory motion b) random motion c) Circular motion d) periodic motion

10. The movement of the earth round the sun is an example of
    a) Periodic motion b) translatory motion c) Vibratory motion d) random motion

11. A fluid is
    a) a liquid or a gas   b) Solid or liquid c) solid or gas d) none of the above

12. Viruses were discovered by
    a) Tworf   b) Herelle c) Iwanowsky d) adolf Meyer

13. Density is expressed in the SI system as
    a) gram b) meter c) Kilogram per cubic meter d) Meter per second

14) The unit of thrust in the SI system is
    a) Second b) Newton c) Metre d) pascal

15) Pressure in a liquid
    a) Does not change b) Increases with depth c) Decreases with depth d) Increases with height
16) Which one of the following is not a fuel?
   a) Firewood  b) Water  c) Kerosene  d) petrol

17) A gap is left between two rails to provide space for
   a) Evaporation  b) Expansion  c) Boiling  d) contraction

18) Water should be used to put out
   a) Fire in a thatched building  b) Electrical  c) Fire in a car  d) Fire in a petrol bunk

19) Expansion is maximum in
   a) Solids  b) Liquids  c) Gases  d) all the above

20) The SI unit of temperature is
   a) °C  b) °F  c) °K  d) per °C

21) Bodies that emit their own light are
   a) Transparent  b) Translucent  c) Luminous  d) reflection

22) An example of a natural source of light is
   a) Lamp  b) Star  c) Torch  d) battery

23) The straight line along which light travels is known as
   a) Line ray  b) Ray of light  c) Curved ray  d) straight ray

24) During a lunar eclipse, the Earth lies between the
   a) Sun and the Moon  b) Stars and the Moon  c) Mars and the Moon  d) Venus and the moon

25) An extended source produces a shadow with a region of partial darkness called.
   a) Umbra  b) Penumbra  c) Eclipse  d) dark shadow

26) The Positive rays were discovered by
   a) Chadwick  b) J.J. Thomson  c) Goldstein  d) Rutherford

27) The apparatus used for the discovery of electrons is
   a) Discharge tube  b) calorimeter  c) Microscope  d) voltmeter

28) Frequencies above 20000 Hz is
   a) Infrasonic  b) ultrasonic  c) Noise  d) sound

29) The number of vibrations produced in one second is
   a) Wavelength  b) velocity  c) Frequency  d) wave velocity

30) Loudness of a musical sound depends on
   a) Frequency  b) Amplitude  c) Mixture of sounds  d) wavelength

31) Sweet potato is a source of
   a) Protein  b) oil  c) fiber  d) sugar

32) A cirus is
   a) a nucleoprotein particle  b) a unicellular organism  c) a plant  d) an animal

33. An example of a rod-shaped virus is
   a) Influence virus  b) HIV  c) TMV  d) Bacteriophage

34. Kingdom Monera includes
   a) Bacteria and virus  b) Bacteria and cyanobacteria  c) Algae  d) Viruses and all animals

35. Chlamydomononas belongs to kingdom
   a) Monera  b) Protista  c) Bryophyta  d) Pteridophyta

36. Ferns and horsetails are examples of
   a) Bryophyta  b) pteridophyta  c) Gymnosperms  d) Angiosperms

37. A group of cells performing a specific function is called
   a) organ  b) tissue  c) colony  d) volvox

38. In the hibiscus plant, the leaf margin is
   a) smooth  b) wavy  c) serrated  d) lobed
39. Plants absorb water and mineral salts through
   a) Roots  b) stem  
   c) Branches  d) leaves

40. Rhizome is a
   a) Regular stem  b) modified stem 
   c) Root  d) modified root

41. Biology is divided into two branches called 
   a) Botany  b) Zoology  
   c) Both (a) and (b)  d) Plants and animals

42. The streamlined body of a fish helps it to
   a) Respire  b) Swim easily  
   c) Rest at the bottom of water  d) None of the above

43. The largest animal is the
   a) Elephant  b) Shark  
   c) Ostrich  d) Blue whale.

44. Example of radial symmetry is 
   a) Amoeba  b) Butterfly  
   c) Starfish  d) Frog

45. In amoeba the locomotor’s organs are
   a) Fins  b) Feetm  
   c) Wings  d) Pseudopodia

46. Organisms that get nourishment from other living organisms are called 
   a) Autotrophs  b) Parasites  
   c) Heterotrophs  d) Saprophytes

47. Food is digested by 
   a) the water we drink  
   b) the curries we eat along with rice  
   c) enzymes  d) none of the above

48. The main pumping organ of blood is the 
   a) Arteries  b) veins  
   c) Heart  d) none of the above

49. The heart beats 
   a) 50 times per minute  
   b) 75 times per minute  
   c) 70 times per minute  
   d) 72 times per minute

50. The metabolic wastes are removed from the blood by the 
   a) Kidneys  b) ureter  
   c) Urinary bladder  d) none of the above

51. One to and fro movement of the bob of a pendulum is called
   a) amplitude  b) oscillation  
   c) length of the pendulum  d) frequency

52. The SI unit of time is 
   a) gram  b) second  c) meter  d) Pascal

53. The SI unit of work is 
   a) Watt  b) joule  c) gram  d) volt

54. The capacity of an object to do work is its 
   a) Energy  b) power  c) force  d) impulse

55. One kilowatt is equal to 
   a)100 W  b)1000 W  c)10W d) 1kWh

56. The expression for potential energy is 
   a) mgh joule  b) mg/h joule  
   c) m/g joule  d) h/mg joule

57. The unit of pressure in the SI system is 
   a) Pascal  b) Newton  c) gram  d) joule

58. which one of these seeks their own level 
   a) Liquids  b) solids  
   c) Gases  d) molecules

59. The total force acting perpendicular to a surface is its 
   a) Pressure  b) thrust  
   c) Temperature  d) volume

60. The pressure in a liquid 
   a) Decreases with depth  
   b) Increases with depth  
   c) Constant with depth  d) zero

61. This device is used to lift vehicles in a service station 
   a) a hydraulic press  b) a hydraulic pump  
   c) a hydraulic brake  d) none of the above
62. The unit of resistance is
   a) Kelvin          b) calorie
   c) ohm               d) kilo joule

63. The change from solid to vapour state is called
   a) Fusion          b) sublimation
   c) evaporation     d) vaporization

64. Unit of heat energy is
   a) Kilogram        b) Metre
   c) Joule           d) Degree

65. The specific latent heat of steam is
   a) 4200 J          b) 2100 J
   c) 336 x 10^3 Jkg^-1 d) 2260 x 10^3 Jkg^-1

66. A polished calorimeter should be placed in an insulated wooden box to reduce heat loss due to
   a) Conduction      b) convection
   c) radiation       d) conduction and radiation

67. Jkg^-1 is the SI unit of
   a) Heat capacity   b) specific heat capacity
   c) Specific latent heat d) quantity of heat

68. A body is charged positively by friction. It has
   a) an excess of electrons
   b) lost electrons   c) gained protons
   d) lost protons

69. An insulated conductor is touched with a negatively charged rod. The conductor
   a) is not charged
   b) is positively charged
   c) is negatively charged
   d) becomes an insulator

70. A negatively charged rod is brought near an insulated conductor. The conductor
   a) has its nearer end to the charged rod positive and the other end negative
   b) Positively charged.
   c) has its nearer end to the charged rod negative and the other end positive.
   d) Negatively charged.

71. A positive charge
   a) repels a negative charge
   b) repels negative and positive charges
   c) attracts negative and positive charges
   d) attracts a negative charge

72. The fundamental units of matter are atoms. This was proposed by
   a) Crooke          b) John Dalton
   c) Thomson         d) Bohr

73. According to Modern Periodic Law, the chemical and physical properties of elements are periodic functions of their atomic
   a) Weights         b) numbers
   c) masses          d) sizes

74. A gas which obeys the gas laws at all temperatures and pressures is called
   a) an ideal gas
   b) a noble gas
   c) a real gas
   d) an inert gas

75. A gas will approach ideal behaviour at
   a) Low temperature, low pressure
   b) high temperature, high pressure
   c) Low temperature, high pressure
   d) high temperature, low pressure.

76. The valency of the element carbon is
   a) 2              b) 3              c) 4              d) 5

77. Amplitude of a wave is determined by its
   a) Energy          b) Period
   c) Frequency       d) speed

78. For good acoustic effect, the reverberation time for speech should be
   a) 0.5 s          b) 5 s          c) 0.25 s         d) 2.5 s

79. Resonance is also called
   a) Free vibration b) forced vibration
   c) sympathetic vibration d) Reverberation

80. A fast to and fro motion is called
   a) Pitch          b) music
   c) Vibration      d) oscillation

81. The nearest planet to the sun is
   a) Pluto          b) Earth
   c) Mercury        d) Venus
82. The unit of force is
   a) Newton       b) Joule
   c) watt         d) Pascal

83. The force Involved in the falling leaf from a tree is
   a) Magnetic      b) Electric force
   c) Gravitational force
   d) Muscular force

84. The branch of science that deals with the luring organisms is called
   a) Physics       b) Chemistry
   c) Biology       d) Zoology

85. The time taken for one oscillation is called
   a) Second       b) Mass
   c) Period of oscillation d) Minute

86 The unit of specific latent heat capacity is
   a) J kg\(^{-1}\) K\(^{-1}\) b) joule
   c) J kg\(^{-1}\) d) kilocalorie

87. A neutron is a
   a) Positively Charged Particle
   b) Negatively Charged Particle
   c) Neutral charged particle
   d) Positively and negatively charged particle

88. The vernier scale is graduated in
   a) mm b) cm c) metre d) division

89. The pitch scale is graduated in
   a) Millimeter b) metre
   c) division d) cm

90. To measure very small lengths we use
   a) a physical balance b) a metre scale
   c) screw guage d) pirani guage

91. The mass of light bodies is measured in terms of
   a) gram b) kilogram
   c) quintal d) milligram

92. The force which is responsible for wearing out of a bicycle tire is
   a) Magnetic force b) Electric force
   c) Gravitational force d) Frictional force

93. Hydrogen turns
   a) blue litmus red b) red litmus blue
   c) both red and blue litmus colourless d) blue litmus black

94. Which gas is popularly used in sign boards?
   a) Neon b) xenon c) krypton d) argon

95. In PbCl\(_4\), the valency of lead is
   a) 2 b) 1 c) 4 d) 5

96. The orbit nearest to the nucleus of an atom is the
   a) M-shell b) L-shell
   c) K-shell d) N-shell

97. Hydrogen gas is by nature
   a) Acidic b) basic
   c) neutral d) none of these

98 Which metal can displace hydrogen even in cold water?
   a) Calcium b) Zinc c) Gold d) Carbon

99. How many electrons can be accommodated in the M-shell?
   a) 18 b) 32 c) 8 d) 16

100. Thermal power stations produce the highly toxic
   a) Fly ash b) carbon soot
    c) Krypton d) ozone

***************
**ACHIEVEMENT TEST FOR CONSEQUENCE COMPETENCY - ANSWER SHEET**

(TRY OUT)

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APPENDIX VI

ACHIEVEMENT TEST FOR CONSEQUENCE COMPETENCY
(Validated)

After the validation of the tool the following items are deleted. 1, 2, 3, 9, 13, 16, 18, 25, 39, 41, 51, 52, 53, 54, 55, 56, 62, 64, 67, 71, 81, 82, 83, 84, 85, 87, 88, 90, 91 and 97.

After deletion, 70 items are administered to the final sample.
APPENDIX VII

ATTITUDE TOWARDS SCIENCE TEACHING SCALE (TRYOUT)

Structured & Administered by: Mr. P. NATARAJAN    Guided by: Prof. N. NATESAN
Name of the student Teacher:                        Age : 
Name of the DIE/TTT :                                Sex : 

Directions:

Given below are some statements about science teaching. Some of these statements are describe how you might feel about science teaching. You may agree some of these statements are and you may disagree with others. After have you read a statement carefully, decide whether or not you agree with it.

If you agree strongly with a statement put a ‘tick mark’ on the category SA (strongly agree), if you agree with a statement put a ‘tick mark’ on the category A (agree), if you are undecided put a ‘tick mark’ on U (undecided), if you disagree with a statement put a ‘tick mark’ on D (disagree) and if you strongly disagree put a ‘tick mark’ on the category SD (strongly disagree). You are asked to give your free and frank opinion.

ATTITUDE TOWARDS SCIENCE TEACHING SCALE

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>STATEMENTS</th>
<th>SA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>SD</th>
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<td>1</td>
<td>Science teaching helps the human to become a good citizen.</td>
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<td>2</td>
<td>Science teaching does not foster the creative thinking of the teachers.</td>
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<td>3</td>
<td>Science teaching brews leadership qualities</td>
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<td>4</td>
<td>There is no use in learning science.</td>
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<td>5</td>
<td>Science teachers help students view themselves as capable learners.</td>
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<td>6</td>
<td>Science teaching does not deal with ever changing human society.</td>
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<td>Science teaching helps one to face the challenges in life.</td>
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<td>8</td>
<td>Science teaching does not make the human cooperative in family, school and society.</td>
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<td>9</td>
<td>Science teaching develops the spirit of tolerance.</td>
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<td>10</td>
<td>Science teaching does not foster broad mindedness.</td>
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<td>11</td>
<td>Science teaching creates awareness about the past.</td>
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<td>12.</td>
<td>The scientific thinking is not inculcated by Science teaching.</td>
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<td>13.</td>
<td>Science teachers are friendlier towards their pupils.</td>
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<td>14.</td>
<td>Most of the science teachers do not use the teaching aids in spite of availability.</td>
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<td>15.</td>
<td>There is a lot of scope for group discussion in Science teaching.</td>
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<td>16.</td>
<td>Most of the science teachers make the pupils very dull by their lectures.</td>
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<td>17.</td>
<td>There is a lot of scope for Science teaching with models.</td>
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<td>18.</td>
<td>The infrastructural facilities in schools are inadequate to teach in science.</td>
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<td>19.</td>
<td>There are no proper teaching aids to teach in science in school.</td>
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<td>20.</td>
<td>There is no chance for learning by doing in Science teaching.</td>
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<td>21.</td>
<td>Laboratory is being used properly by the science teacher during their teaching.</td>
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<td>22.</td>
<td>Science teacher do not teach in an attractive manner.</td>
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<td>23.</td>
<td>Science teachers relate the current events with the subject matter during their teaching.</td>
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<td>24.</td>
<td>Audio visual aids are not used by the science teachers during their teaching.</td>
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<td>25.</td>
<td>Science teachers arrange field trips to important places for improving scientific thinking.</td>
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<td>26.</td>
<td>The experience science teachers do not show concern for their teaching.</td>
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<td>27.</td>
<td>Science teachers adopt remedial measures to remove the learning difficulties of their pupils.</td>
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<td>Too much emphasis on Science teaching would bring down moral standards.</td>
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<td>Science teaching sharpens the logical thinking of the students.</td>
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<td>30.</td>
<td>A student gets discouraged when he fails to answer certain questions in Science teaching.</td>
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<td>Science teaching is useful for getting a success in the competitive examinations.</td>
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<td>32.</td>
<td>Science teaching has turned the impossibilities into possibilities.</td>
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<td>Science teaching alone is responsible for technical progress.</td>
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<td>34.</td>
<td>Science teachers are not identifying the core ideas of their science discipline across all standards.</td>
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<td>35.</td>
<td>Science teachers believe their responsibility is to teach the material.</td>
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<td>36.</td>
<td>Science teachers are not waiting at least three seconds following a student’s response to a question before continuing.</td>
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<td>37.</td>
<td>The science teachers are able to modify instruction to help struggling students improve.</td>
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<td>38.</td>
<td>Science teachers are not waiting at least three seconds after asking a question before rephrasing it.</td>
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<td>Science teachers can teach effectively and that effective teaching lead to positive learning outcomes</td>
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<td>Science teachers are not delay including abstract science concepts with young children if these concepts cannot be introduced with concrete materials.</td>
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<td>41.</td>
<td>Science teachers reflect on and consider learners’ prior knowledge and interests when selecting and using specific teaching strategies.</td>
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<td>Science teachers are not aim the level of instruction slightly beyond the capabilities of individual learners.</td>
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<td>Science teachers create a challenging, learning environment.</td>
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<td>44.</td>
<td>Science teachers do not conduct frequent assessments as a seamless part of teaching for individual learners.</td>
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<td>Science teachers commit to the learning growth of all learners.</td>
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<td>46.</td>
<td>Science teachers are not use teaching strategies that include familiar physical models to guide learners toward accepted scientific concepts.</td>
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<td>47.</td>
<td>If laboratory activities are included, Science teachers focus only on the development of lab skills and techniques, not on constructing new scientific ideas through inquiry</td>
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<td>48.</td>
<td>When determining the order in which to introduce science concepts in a given domain, science teachers are not consider the ways those concepts are interdependent.</td>
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<td>49.</td>
<td>Science teachers maintain a high level of consistency among the goals and objectives of each lesson.</td>
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<td>Science teachers are not employing a repertoire of teaching approaches that range from open and guided inquiry to direct instruction</td>
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<td>Science teaching design discussions among students as on-going learning experiences</td>
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<td>52</td>
<td>Science teachers are not adapting available curriculum materials to fit the diverse needs of all students.</td>
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<td>53</td>
<td>Science teachers ask a blend of high-level, questions to activate students’ thinking.</td>
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<td>The sense of equality among the students is not developed through Science teaching.</td>
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<td>55</td>
<td>Science teaching provide opportunities for students to claim ownership of their learning</td>
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<td>Science teachers are not sensitive to students’ verbal and nonverbal behaviour when teaching a unit that students may perceive as containing controversial ideas</td>
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<td>57</td>
<td>Science teachers use concrete materials to help students directly experience scientific phenomena.</td>
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<td>58</td>
<td>Science teachers are not clarifying the difference between understanding and believing.</td>
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<td>59</td>
<td>Science teachers use peer-group discussions to help students become aware of other students’ thoughts about the concept.</td>
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<td>60</td>
<td>Science teaching strategies that not help learners become aware of inconsistencies in their thinking.</td>
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APPENDIX VIII

ATTITUDE TOWARDS SCIENCE TEACHING SCALE
(Validated)

After the validation of the tool the following items are deleted. 11, 14, 16, 18, 19, 24, 26, 27, 40 and 59.

After deletion, 50 items are administered to the final sample.
Appendix IX

Teacher Values Inventory (TVI)

Administered by: Mr. P. NATARAJAN

Name of the student: 
Teacher: 
Age: 

Name of the DIET/TTT: 
Sex: 

Please read each question carefully along with its six possible answers and decide on their first, second, third, fourth, fifth and last place. In the answer sheet write ‘1’ in the box under the alternative which appeals to you most; ‘2’ in the box under the alternative which appeals to you second best, and, similarly, write ‘3’, ‘4’, ‘5’, and ‘6’ in the remaining boxes according to the desirability of the alternatives. Please remember that your first preference is marked as ‘1’ and last preference as ‘6’.

1. What would you prefer to study in your spare time?
   a) Business Management
   b) Fine Arts
   c) Philosophy
   d) Human Relations
   e) Public Speaking
   f) More about your Religion

2. What order of priority would you give in reading the following events printed on the first page of your daily newspaper?
   a) New Experiments in Space Travel
   b) China’s Entry into the U.N.O
   c) Great Improvements in Market Conditions
   d) Thousands hit by Severe cyclonic Storm in East Bengal
   e) Famous Twelfth Century Paintings Found
   f) World Religious Leaders Meet

3. If you were alone for some time in a room waiting to see somebody and the following magazines were lying on the table, in which order of preference would you choose to read them?
   a) Arts and Decorations
   b) The Harijan Welfare
   c) The Divine Light
   d) Scientific Monthly
   e) The Financial Times
   f) The Political observer

4. Suppose you had sufficient leisure time, how would you prefer to use it?
   a) By working with a group to improve the living conditions in slums
b) My writing some philosophical article

c) By learning music

d) By taking up some part time job

e) By participating in religious gatherings

f) By taking more active part in politics

5. **What order of priority would you give the following objectives in guiding the educational policies of our institutions if you were in a position to do so?**

   a) To make education job-oriented
   b) To inculcate in students a strong belief in God
   c) To stimulate the study of social problems
   d) To develop in students an analytical mind and the habit of critical thinking
   e) To promote the study and participation in music and fine arts
   f) To inculcate in students qualities of obedience and respect for authority

6. **What type of friends would you prefer to have?**

   a) Those who are of a philosophic nature
   b) Those who are materially very prosperous
   c) Those who have an aesthetic sense
   d) Those who are very pious in thoughts and deeds
   e) Those who posses good leadership qualities
   f) Those who find pleasure in helping others

7. **What would you like to do (in order of preference) during your next summer vacations? (If you had ability and other conditions would permit)**

   a) Go to a place where you can enjoy and appreciate beautiful scenery
   b) Visit famous places of worship
   c) Read books on Indian and Western Philosophy
   d) Organize and run a youth club in you locality
   e) Work for the relief of needy people through the Red Cross
   f) Learn some trade that may help supplement your income

8. **What order of priority would you give in accepting to look after the following activities in you school besides your teaching work?**

   a) The Literary Society
   b) Social Service League
   c) Devotional Music Singing Club
   d) Drama club
   e) Student’s Co-operative stores
   f) N.C.C.

9. **What character traits do you consider more desirable?**

   a) Unselfishness and sympathy
   b) Faith in God
   c) Frugality
   d) Love for knowledge
   e) Sense of beauty
   f) Political consciousness
10. **To what extent the following activities appeal to you?**

   a) Visiting a flower show  
   b) Giving company to a lonely elderly neighbour  
   c) Conducting a scientific experiment in the laboratory  
   d) Collecting money and making purchases for the school picnic  
   e) Presiding over a round-table discussion  
   f) Listening to devotional music

11. **Which of your following ex-students would give you greater pride?**

   a) Who has become an IAS officer  
   b) Who has set up a flourishing business  
   c) Who is a well known painter  
   d) Who has been mainly preoccupied with serving the mentally and physically handicapped children  
   e) Who has made a thorough study of spiritual aspect of human life  
   f) Who has developed the improved procedures in scientific research

12. **Which qualities would you prefer your children to have?**

   a) Ability to manage money  
   b) Desire to help others  
   c) Ability to lead others  
   d) Ability to reason  
   e) Aesthetic sense  
   f) Understanding of and love for the tenets of your faith

13. **Which subject would you like to know more about?**

   a) Modern trends in art  
   b) Local politics  
   c) Applied economics  
   d) Religions of the world  
   e) Ideologies of great world thinkers  
   f) Working of the social welfare agencies in your area

14. **In which position would you prefer to work?**

   a) Where you can earn a lot of money  
   b) Where you are the boss  
   c) Where you can serve the needy people  
   d) Where you can use your artistic skills  
   e) Where you can have the company of holy people  
   f) Where you can engage yourself in intellectual pursuits

15. **Suppose you won a prize of Rs. one lakh in a State Lottery, what would you be inclined to do with the money?**

   a) Stand for elections to the State Assembly  
   b) Buy paintings of famous artists  
   c) Build a Temple (Gurdwara, Mosque, Church)  
   d) Help the helpless people  
   e) Invest it in some business  
   f) Set up your personal library of books by world’s famous thinkers
16. **Which would you rather prefer to visit or attend?**

   a) A music concert
   b) A small scales industries fair
   c) An election meeting
   d) A religious sermon
   e) A child welfare society meeting
   f) A literary society meeting

17. **If you had the necessary ability and qualifications, in which order of priority would you like to teach the following subjects (irrespective of what subjects you are teaching at present)?**

   a) Any branch of Fine Arts
   b) Pure Sciences
   c) Commercial subjects
   d) Public Administration
   e) Divinity
   f) Sociology

18. **When do you get comparatively more satisfaction?**

   a) While reading a serious book or essay
   b) While presiding over a meeting
   c) While listening to music of your choice
   d) While doing social service work
   e) While reading your scriptures
   f) While discussing money matters

19. **If you were asked to deliver a talk on any one of the following topics, which one would be your first choice? (Please also indicate your second, third, fourth, fifth and sixth choices).**

   a) Art for art’s sake
   b) The pursuit of truth
   c) How to make friends?
   d) Democracy Vs. Dictatorship
   e) Importance of prayer
   f) Money makes the mare go

20. **Which would you be rather famous for?**

   a) Business success
   b) Contribution to human welfare
   c) Achievements in the field of arts of music
   d) Political Leadership
   e) Development of a new scientific theory
   f) Living the life of a true seeker of God

21. **If you wish to donate some money, what would be your order of preference for the following organizations?**

   a) A Scientific Research Foundation
   b) Dance and drama Society
   c) Your favourite political party
d) The Red Cross  
e) A Temple (Gurdwara, Mosque or Church)  
f) A school of Commerce (which is being closed down due to shortage of funds)

22. **In your opinion, what should be the guiding principle of one's life?**

   a) To work hard and become rich  
   b) To secure for oneself a position of power and authority  
   c) To be true to one's religious faith  
   d) To appreciate and enjoy everything beautiful  
   e) To serve the needy and the handicapped people  
   f) To remain in constant search of truth

23. **Whose biography would you care to read more eagerly?**

   a) Winston Churchill (Statesman)  
   b) G.D. Birla (Industrialist)  
   c) Einstein (Scientist)  
   d) Pandit Ravi Shanker (Sitarist)  
   e) Sant Kabir (Saint)  
   f) Vinoba Bhave (Social Reformer)

24. **A country should be considered ‘great’ if**

   a) It has achieved sufficient material advancement  
   b) It patronizes artists and takes special interest in establishing picture galleries, theatres etc.  
   c) It is superior to other countries as far as military strength is concerned  
   d) It actively works for the advancement of various religions  
   e) Its main endeavour is to uplift the poor people  
   f) Intellectuals are patronized by the State

25. **In your opinion, what brings happiness?**

   a) Wealth  
   b) Status  
   c) Faith in God  
   d) Selfless friends  
   e) Aesthetic experience  
   f) Discovery of new facts.

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APPENDIX X

16. P.F.
(PERSONALITY FACTORS)

By
Raymond Cattell’s

Administered by: Mr. P. NATARAJAN

Name of the student: Teacher: Age:
Name of the DIET/TTT: Sex:

WHAT TO DO: Inside this booklet are some questions to see what attitudes and interest
you have. There are no “Right” and “Wrong” answers because everyone has the right to
his own views. To be able to get the best advice from you results you will want to answer
them exactly and truly.

Write your name and all other information asked for on the top line of the Answer sheet.
There are three possible answers to each question.
Indicate you choice by encircling a, b, or c the letter which reflects your answer. When
you answer keep these four points in mind.

1. You are asked not to spend time pondering. Giver the first, natural answer as it
comes to you. Of course, the questions are too short to give you all the particulars
you would sometimes like to have. Give the best answer you can at rate not slower
then five or six a minute. You should finish in a little more than half an hour.

2. Try not to fall back no the middle, ‘uncertain’ answer except when the answer at
either end is really impossible for you-per once every four or five questions.

3. Be sure to skip anything, but answer every question, some how. Some may not
apply to you very well, but give your best guess. Some may seem
personal, but
remember that the answer sheets are kept confidential and cannot be scored
without a special stencil key Answers to particular questions are net inspected.

4. Answer as honestly as possible what is true of you. Do not merely mark what
seems “the right thing to say” to impress the examiner. This booklet is reusable,
please return it.

1. I have the instructions for this test
   clearly in mind.
      a) Yes  b) Uncertain  c) No

2. I am ready to answer each question
   as truthfully as possible.
      a) Yes  b) Uncertain  c) No

3. I would rather have a house:
      a) In a sociable suburb  b) In between
         c) Alone in the deep woods

4. I can find enough energy to face my
difficulties.
      a) Always  b) Generally  c) Seldom

5. I feel a fit nervous of wild animals
   even when they are in strong cages.
      a) Yet (true)  b) Uncertain  c) No (false)

6. I hold back from criticizing people
   and their ideas.
7. I make smart, sarcastic remarks to people if I think they deserve it.
a) Generally b) Sometimes c) Never

8. I prefer semi classical music to popular tunes.
a) True b) Uncertain c) False

9. If I saw two neighbors, children fighting I would:
a) Leave them to settle it b) Uncertain c) Reason with them

10. On social occasions I:
a) Readily come forward b) In between c) Prefer to stay quietly in the background

11. It would be more interesting to be:
a) A construction engineer b) Uncertain c) A writer of plays

12. I would rather stop in the street to watch an artist painting than listen to some people having a quarrel.
a) True b) Uncertain c) False

13. I can generally put up with conceited people, even though they brag or show they think too well of themselves.
a) Yes b) In between c) No

14. You can almost always notice on a man's face when he is dishonest.
a) Yes b) In between c) No

15. It would be good for everyone if vacations (holidays) were longer and every one had to take them.
a) Agree b) Uncertain c) Disagree

16. I would rather take the gamble of a job with possibly large but uneven earnings, than one with a steady, small salary.
a) Yes b) Uncertain c) No

17. I talk about my feelings:
a) Only if necessary, b) In between c) Readily, whenever I have a chance

18. Once in a while I have a sense of vague danger or sudden dread for reasons that I do not understand.
a) Yes b) In between c) No

19. When criticized wrongly for something I did not do:
a) Have no feeling of guilt b) In-between c) Still feel a bit guilty

20. Money can buy almost every thing.
a) Yes b) Uncertain c) No

21. My decisions are governed more by my:
a) Heart b) Feelings and reason equally c) Head

22. Most people would be happier if they lived more with their fellows and did the same things as others.
a) Yes b) In between c) No

23. I occasionally get puzzled, when looking in a mirror, as to which is my right and left.
a) True b) Uncertain c) False

24. When talking, I like:
a) To say things, just as they occur to me b) In between c) To get my thoughts well organized first

25. When something really makes me furious, I find I calm down again quite quickly.
a) Yes b) In between c) No

26. With the same hours and pay, if would be more interesting to be:
a) A carpenter or cook b) Uncertain c) No

27. I have been elected to:
a) Only a few offices b) Several c) Many offices

28. Spade” to “dig”, as “knife” is to:
a) Sharp b) Cut c) Point

29. I something can't get to sleep because an idea keeps running through my mind.
a) True b) Uncertain c) Point
30. In my personal life I reach the goals I set almost all the time.
   a) True    b) Uncertain    c) Point

31. An out-dated law should be changed:
   a) Only after considerable discussion
   b) In between
   c) Promptly

32. I am uncomfortable when I work on a project requiring quick action affecting others.
   a) True    b) Uncertain    c) False

33. Most of the people know would rate me as an amusing talker
   a) Yes    b) Uncertain    c) No

34. When I see “Sloppy”, untidy people, I:
   a) Just accept it
   b) In between
   c) Get disgusted and annoyed

35. I get slightly embarrassed if I suddenly become the focus of attention in a social group.
   a) Yes    b) In between    c) No

36. I am always glad to join a large gathering for example, a party, dance, or public meeting.
   a) Yes    b) In between    c) No

37. In school I preferred (or prefer):
   a) Music
   b) Uncertain
   c) Handwork and crafts.

38. When I have been put in charge of something, I insist that my instructions are followed or else I resign.
   a) Yes    b) Sometimes    c) No

39. For parents, it is more important to:
   a) Help their children develop their affections
   b) In between
   c) Teacher their children how

40. In a group task I would rather:
   a) Try to improve arrangements
   b) In between
   c) Keep the records and see that rules are followed

41. I feel a need every now and then to engage in a though physical activity.
   a) Yes    b) In between    c) No

42. I would rather mix with polite people than rough, rebellious individuals.
   a) Yes    b) In between    c) No

43. I feel terribly dejected when people criticize me in a group.
   a) True    b) In between    c) False

44. If I am called in by my boss, I:
   a) Make it a chance to ask for something I want
   b) In between
   c) Fear I've done something wrong

45. What this world needs is:
   a) More steady and “solid” citizens
   b) Uncertain
   c) More “idealists” with plans for a better world

46. I am always keenly aware of attempts at propaganda in things I read.
   a) Yes    b) Uncertain    c) No

47. As a teenager, I joined in school sports:
   a) Occasionally
   b) fairly often
   c) A great deal

48. I keep my room well organized, with things in known places almost all the time.
   a) Yes    b) In between    c) No

49. I sometimes get in a state of tension and turmoil as I think of the day’s happenings.
   a) Yes    b) In between    c) No

50. I sometimes doubt whether people I am talking to are really interested in what I am saying.
   a) Yes    b) In between    c) No

51. I had to choose, I would rather be:
   a) A forester
   b) Uncertain
   c) A high school teacher
52. For special holidays and birthdays, I:
   a) Like to give personal presents
   b) Uncertain
   c) Feel that buying presents is a bit of a nuisance

53. “Tired” is to “Work” as “Proud” is to:
   a) Smile
   b) Success
   c) Happy

54. Which of the following items is different in kind from the others?
   a) Candle
   b) Moon
   c) Electric light

55. I have been let down by my friends.
   a) Hardly ever
   b) Occasionally
   c) Quite a lot

56. I have some characteristics in which feel definitely superior to most people.
   a) Yes
   b) Uncertain
   c) No

57. When I get upset, I try hard to hide my feeling from others.
   a) True
   b) In between
   c) False

58. I like to go out to a show or entertainment.
   a) More than once a week (More than average)
   b) About once a week (average)
   c) Less than once a week (less than average)

59. I think that plenty of freedom is more important than good manners and respect for the law.
   a) True
   b) Uncertain
   c) False

60. I tend to keep quiet in the presence of senior persons (people of greater experience, age, or rank).
   a) Yes
   b) In between
   c) No

61. I find it hard to address or recite to a large group.
   a) Yes
   b) In between
   c) No

62. I have a good sense of direction (find it easy to tell which is North, South, East or West) when in a strange place.
   a) Yes
   b) In between
   c) No

63. If someone got mad at me, I would:
   a) Try to calm him down
   b) Uncertain
   c) Get irritated

64. When I read an unfair magazine article, I am more inclined to forget it than to feel like “hitting back”.
   a) True
   b) Uncertain
   c) False

65. My memory tends to drop a lot of unimportant, trivial things, for example, names of streets of stores in town.
   a) Yes
   b) In between
   c) No

66. I could enjoy the life of an animal doctor, handling diseases and surgery of animals.
   a) Yes
   b) In between
   c) No

67. I eat my food with gusto, not always so some people.
   a) True
   b) In between
   c) False

68. There are times when I don’t feel in the right mood to see anyone.
   a) Very rarely
   b) In between
   c) Quite often

69. People sometimes warn me that I show my excitement in voice and manner too obviously.
   a) Yes
   b) In between
   c) No

70. As a teenager, if I differed in opinion from my parents, I usually:
   a) Kept my own opinion
   b) In between
   c) Accepted their authority

71. I would prefer to have an office of my own, not sharing it with another person.
   a) Yes
   b) Uncertain
   c) No

72. I would rather enjoy life quietly in my own way than be admired for my achievements.
   a) True
   b) Uncertain
   c) False

73. I feel mature in most things.
   a) True
   b) Uncertain
   c) False

74. I find myself upset rather than helped by the kind of criticism that many people offer me.
   a) Often
   b) Occasionally
   c) Never
75. I am always able to keep the expression of my feelings under exact control.
a) True b) In between c) False

76. In starting a useful invention, I would prefer
a) Working on it in the Laboratory
b) Uncertain c) Selling it to people

77. “Surprise” is to “Strange” as “fear” is to
a) Brave b) Anxious c) Terrible

78. Which of the following fractions is not in the same class as the other?
a) 3/4 b) 3/9 c) 3/11

79. Some people seem to ignore or avoid me, although I don’t know why.
a) True b) Uncertain c) False

80. People treat me less reasonable than my good intentions deserve.
a) Often b) Occasionally c) Never

81. The used of foul language, even when it is not in a mixed group of men and women, still disgusts me.
a) Yes b) In between c) No

82. I have decided fewer friends than most people.
a) Yes b) In between c) No

83. I would hate to be where there wouldn’t be a lot of people to talk to.
a) True b) Uncertain c) False

84. People sometimes call me careless, even though they think I’m a likable person.
a) Yes b) In between c) No

85. “Stage-fright” in various social situations in something I have experienced.
a) Quite often b) Occasionally c) Hardly ever

86. When I am in a small group, I am content to sit back and let others do most of the talking.
a) Yes b) In between c) No

87. I prefer reading
a) A realistic account of military or political battles b) Uncertain c) A sensitive: imaginative novel

88. When bossy people try to “push me around”, I do just the opposite of what they wish.
a) Yes b) In between c) No

89. Business superiors of members of my family, as a rule, find fault with me only when there is real cause.
a) True b) In between c) False

90. In streets or stores, I dislike the way some persons stare at people.
a) Yes b) In between c) No

91. On a long journey, I would prefer to
a) read something profound but interesting b) Uncertain c) Pass the time talking casually with a fellow passenger.

92. In a situation which may become dangerous, I believe in making a fuss and speaking up even in calmness and politeness are lost.
a) Yes b) In between c) No

93. If acquaintances treat me badly and show they dislike me.
a) It doesn’t upset me a bit b) In between c) I tend to get down heated

94. I find it embarrassing to have praise or compliments be stowed on me.
a) Yes b) In between c) No

95. I would rather have a job with
a) Fixed, certain salary b) In between c) A larger salary, which depended on my constantly persuading people I am worth it

96. To keep informed, I like
a) To discuss issues with people b) In between c) To rely on the actual news reports

97. I like to take an active part in social affairs committee work, etc.
98. In carrying out a task, I am not satisfied unless even the minor details are given close attention.
a) True b) In between c) False

99. Quite small setbacks occasionally irritate me too much
a) Yes b) In between c) No

100. I am always a sound sleeper, never walking or talking in my sleep.
a) Yes b) In between c) No

101. It would be more interesting to work in a business.
a) Talking to customers b) In between c) Keeping office accounts and records

102. “Size” is to “length” as “dishonest” is to
a) Prison b) Sin c) Stealing

103. AB is to dc as SR is to
a) up b) pq c) tu

104. When people are unreason able, I just
a) Keep quiet b) Uncertain c) Despise them

105. If people talk loudly while I am listening to music, I
a) Can keep my kind on the music and not be bothered b) In between c) Find it spoils my enjoyment and annoys

106. I thing I am described as
a) Polite and quite b) In between c) Forceful

107. I attend social functions only when I have to, and stay away any other time.
a) Yes b) Uncertain c) No

108. To be cautious and except little is better than to be happy at heart, always expecting success.
a) True b) Uncertain c) No

109. In thinking of difficulties in my work, I
a) Try to plan ahead, before I meet them b) In between c) Assume I can handle them when they come

110. I find it easy to mingle among people at a social gathering.
A) True b) Uncertain c) False

111. When a bit of diplomacy and persuasion are needed to get people moving, I am generally the one asked to do it.
a) Yes b) In between c) No

112. It would be more interesting to be
a) A guidance workers helping young people finding b) Uncertain c) A manager in efficiency engineering

113. If I am quite that a person is unjust or behaving selfishly, I show him up even if it takes some trouble.
a) Yes b) In between c) No

114. I sometimes make foolish remarks in fun, just to supervise people and see what they will say.
a) Yes b) In between c) No

115. I would enjoy being a newspaper writer on drama, concerts opera, etc.
a) Yes b) Uncertain c) No

116. I never feel the urge to doodle and fidget when kept sitting still at a meeting.
a) True b) Uncertain c) False

117. If some one tells me some thing which I know is wrong, I am more likely to say to myself.
a) He is a liar b) In between c) “Apparently he is minis formed”.

118. I feel some punishment is coming to me even when I have done nothing wrong.
a) Often b) Occasionally c) Never

119. The idea that sickness comes as much from mental at physical causes is much exaggerated.
a) Yes b) In between c) No
120. The pomp and splendor of any big state ceremony are things which should be preserved.
   a) Yes b) Uncertain c) No

121. It bothers me if people think I am being too unconventional or odd.
   a) A lot  b) Somewhat  c) Not at all

122. In constructing something I would rather work.
   a) with a committee  b) Uncertain  c) On my own

123. I have periods when it’s hard to stop a mood of self-pity.
   a) Often b) Occasionally c) Never

124. Often I get angry with people too quickly.
   a) Yes b) In between c) No

125. I can always change old habits without difficulty and without slipping back.
   a) Yes b) In between c) No

126. If the earnings were the same, I would rather be:
   a) A lawyer b) Uncertain c) A navigator or pilot

127. “Better” is to “Worst” as “Slower” is to:
   a) Fast  b) Best  c) Quicker

128. Which of the following should come next at the end of this row of letters: x0000xx000xxx
   a) oxxx  b) ooxx  c) xooo

129. When the time comes for something I have planned and looked forward to I occasionally do not feel up to going.
   a) True b) In between c) False

130. I can work carefully on most things without being both erred by people making a lot of noise around me.
   a) Yes b) In between c) No

131. I occasionally tell strangers things that seems to me important, regardless of whether they ask about them.
   a) Yes b) In between c) No

132. I spend much of my spare time talking with friends about social events enjoyed in the past.
   a) Yes b) In between c) No

133. I enjoy doing, “daring” foolhardily things “just for fun”.
   a) Yes b) In between c) No

134. I find the sight of an untidy room very annoying.
   a) Yes b) In between c) No

135. I consider myself a very sociable, outgoing person.
   a) Yes b) In between c) No

136. In social contacts I:
   a) Show my emotions as wish b) In between c) Keep my emotions to myself

137. I enjoy music that is
   a) Light, dry and brisk b) In between c) Emotional and sentimental

138. I admire the beauty of a poem more that hat of a well-made gun.
   a) Yes b) In uncertain c) No

139. If a good remark of mine is passed by, I:
   a) Let it go b) In between c) Give people a chance to hear it again

140. I would like to work as a probation officer with criminals on parole.
   a) Yes b) In between c) No

141. One should be careful about mixing with all kinds of strangers, since there are dangers of infection and so on.
   a) True  b) Uncertain c) No

142. In traveling abroad, I would rather go on an expertly conducted tour than plan by myself the places I wish to visit.
   a) Yes b) Uncertain c) No
143. I am properly regarded as only uploading, half-successful person.
   a) Yes  b) Uncertain  c) No

144. If people take advantage of my friendliness I do not resent it and I soon forget.
   a) True  b) Uncertain  c) False

145. If a heated argument developed other members taking part in a group discussion, I would
   a) Like to see a “Winner”  b) In between  c) Wish that it would be smoothed over

146. I like to do my planning alone, without interruptions and suggestions from others.
   a) Yes  b) Uncertain  c) No

147. I sometimes let my actions get swayed by feelings of jealousy.
   a) Yes  b) In certain  c) No

148. I believe firmly “the boss may not always be right, but he always has the right to be boss”.
   a) Yes  b) uncertain  c) No

149. I get tense as I think of all the things lying ahead of me.
   a) Yes  b) Sometimes  c) No

150. If people shout suggestions when I’m playing a game, it does not upset me.
   a) True  b) Uncertain  c) False

151. It would be more interesting to be
   a) An artist  b) Uncertain  c) A secretary running a club

152. Which of the following words does not properly belong with the others?
   a) Any  b) Some  c) Most

153. “Flame” is to “rose” is to
   a) Thorn  b) Red petals  c) Scent

154. I have vivid dreams, disturbing my sleep.
   a) Often  b) Occasionally  c) Practically never

155. If the odds are really against something’s being a success, I still believe in talking the risk.
   a) Yes  b) In between  c) No

156. I like it when I know so well what the group has to do that I naturally become the one in command
   a) Yes  b) In between  c) No

157. I would rather dress with quiet correctness than eye-catching personal style.
   a) True  b) Uncertain  c) False

158. An evening with a quiet hobby appeals me more than a lively party.
   a) True  b) Uncertain  c) False

159. I close my mind to well-meant suggestions of others, even though I know I shouldn’t.
   a) Occasionally  b) Hardly ever  c) Never

160. I always make it a point, in deciding thing, to refer to basic rules of right and wrong.
   a) Yes  b) In between  c) No

161. I somewhat dislike having a group watch me at work.
   a) Yes  b) In between  c) No

162. Because it is not always possible to get things done methods it is sometimes necessary to use force.
   a) True  b) In between  c) False

163. In school I preferred (or prefer)
   a) English  b) Uncertain  c) Mathematics or arithmetic

164. I have sometimes been troubled by people’s saying bad things about me as hind my back with no grounds at all.
   a) Yes  b) Uncertain  c) No

165. Talking with ordinary, habit-bound, conventional people.
   a) Is often quite interesting and has a lot to it  b) In between  c) Annoys me because it deals, with trifles and lacks depth
166. Some things make me so angry that I find it best not to speak.
   a) Yes b) Uncertain c) No

167. In education, it is more important to:
   a) Give the child enough affection
   b) In between
   c) Have the child learn desirable habits and attitudes

168. People regard me as a solid, undisturbed person, unmoved by ups and downs in circumstances.
   a) Yes b) In between c) No

169. I think society should let reason lead it to new customs and throw aside old habits or mere traditions.
   a) Yes b) In between c) No

170. I think it is more world to solve.
   a) The question of moral purpose
   b) Uncertain c) The political difficulty

171. I learn better by
   a) Reading a well-written book
   b) In between
   c) Joining a group discussion

172. I like to go own way in stead of acting on approved rules.
   a) True b) Uncertain c) False

173. I like to wait till I am sure that what I am saying is correct, before I put forth an argument.
   a) Always b) Generally c) Only if it's practicable

174. Small things sometimes, “get on my nerves unbearably, though I realize they are trivial,
   a) Yes b) In between c) No

175. I don’t often say things on the spur of the moment that I greatly regret.
   a) True b) Uncertain c) False

176. If asked to working with a charity drive, I would
   a) Accept b) Uncertain

177. Which of the following words does not belong with the others?
   a) Wide b) Zigzag c) Straight

178. “Soon” is to “never” as “near” is to
   a) Nowhere b) In between c) Away

179. If I make an awkward social mistake, I can soon for get it.
   a) Yes b) In between c) No

180. I am known as an “Idea man” who almost always puts for ward some ideas
   a) Yes b) In certain c) No

181. I think I am better at showing.
   a) Yes b) In between c) No

182. I am considered a very en theistic person.
   a) Yes b) In between c) No

183. I like a job that offers change, variety, and travel, even if it involves some danger.
   a) Yes b) In between c) No

184. I am a fairly strict person, insisting on always doing things as correctly as possible.
   a) True b) In between c) False

185. I enjoy work that requires conscientious exacting skill
   a) Yes b) Uncertain c) No

186. I'm the energetic type who keeps busy.
   a) Yes b) Uncertain c) No

187. I am sure there are no questions that I have skipped or failed to answer properly.
   a) Yes b) Uncertain c) No
## Answer sheet

16. P.F. TEST.

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APPENDIX XI

TAMIL NADU MAP

Sample area