APPENDICES
Dear Teacher,

I am a research fellow in the Department of Education, University of Kerala involved in a research programme concerning the identification of resources in physics Education at the secondary school level. A questionnaire has been prepared towards collecting the basic data essential for this study. I request you to help me in this venture by answering these questions, incorporating all the details asked for. I also assure you that the data collected from you will be kept confidential and used only for research purpose.

Thanking you,

yours sincerely,

Achamma P. Mathew

Instructions

Please respond to the following questions by putting tick marks (✓) in the appropriate columns or boxes. For some questions different possible answers in the form of statements are given. Please mark 1, 2, 3 ......... etc. according to your preference. For others, please follow the instructions given along with the questions.

I. GENERAL INFORMATION.

1 Name of the respondent :

2 Sex : Male ✓ / Female

3 Name of the School :

4 Whether : (a) Urban ✓ / Rural

(b) Government ✓ / Aided ✓ / Recognised

(c) Boys ✓ / Girls ✓ / Mixed

5 Educational qualifications :

<table>
<thead>
<tr>
<th></th>
<th>B. Sc (phy)</th>
<th>(e)</th>
<th>B. Sc (chem)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>B. Sc (phy)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>B. Sc (phy) ; B. Ed</td>
<td>✓</td>
<td>B. Sc (chem) ; B. Ed</td>
</tr>
<tr>
<td>(c)</td>
<td>M. Sc. (phy) ; B. Ed</td>
<td>✓</td>
<td>M. Sc (chem) ; B. Ed</td>
</tr>
<tr>
<td>(d)</td>
<td>M. Sc. (phy) ; M. Ed</td>
<td>✓</td>
<td>M. Sc (chem) ; M. Ed</td>
</tr>
</tbody>
</table>
II DETAILS REGARDING LIBRARY

1 The library is situated in
   a) the room specially meant for the purpose
   b) teacher’s room
   c) in any one room.

2 A separate reading room is
   a) available
   b) not available

3 The person in charge of the library is
   a) Headmaster | Headmistress
   b) a full time librarian
   c) one of the teachers

4 The books in the library are
   a) purchased using library fee
   b) purchased using government grant
   c) supplied by State Institute of Education
   d) supplied by N C E R T
   e) supplied by organisations such as UNESCO, UNICEF etc.
   f) supplied by any other voluntary organisations
   g) Any other (specify) ...

5 The constraints in the purchase of library books are
   a) lack of finance
   b) non availability of required books
   c) lack of space for keeping books
   d) difficulty in observing formalities
   e) delay in getting the list of books from teachers
   f) Any other (specify)
6 A The reference books for students in Physics are

B The reference books for teachers in Physics are

7 Details of reference materials in the School library.

Given below are a few categories of reference materials essential for the teaching of Physics. Please indicate the number in the first column and also the extent of availability and utilization by putting tick marks (✓) in the appropriate columns.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Number</th>
<th>Extent of availability</th>
<th>Extent of utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>more than enough</td>
<td>enough</td>
</tr>
<tr>
<td>1 Encyclopaedia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Standard text books in physics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Applied science books</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Advanced science books</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Text books for practicals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Books on preparation of Aids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Science Journals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Malayalam</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) English</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Periodicals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(weeklies containing science articles)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Newspapers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(containing science articles)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Any other (specify):</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8 A The interest of students in reading Physics books, science journals, periodicals etc are

(a) satisfactory
(b) not satisfactory.

B. If not satisfactory, the reasons are
(a) the number of books are not sufficient
(b) there is no library period
(c) the students are not interested
(d) the students are not encouraged
(e) there is no person in charge of the library
(f) Any other (specify) [ ]

9 Given below are a few suggestions for the better functioning of your school library. Please indicate your preference by marking 1, 2, 3...... etc

a) Appoint a trained librarian
b) Collect new books every year
c) Allot library periods in the time table
d) Give additional benefit to those who are in charge of the library.
e) Provide facilities for students to sit and read in the library
f) Any other (specify) [ ]

III DETAILS REGARDING LABORATORY

1 Please put a tick mark (✓) against the statement which is true in the case of your school.

a) There is a separate laboratory for Physics in the School. [ ]
b) The laboratory is common for Physics and Chemistry. [ ]
c) The laboratory is common for all science subjects [ ]
d) There is no laboratory in the School [ ]

2 A The experiments are

a) demonstrated [ ]
b) not demonstrated [ ]

B The experiments are demonstrated in

a) the laboratory [ ]
b) the class room [ ]
c) the library [ ]
d) the laboratory as well as in the classroom according to situations [ ]
e) Any other room (specify) [ ]
Given below are a few of the equipments required for the teaching of Physics. Please indicate their number in the first column and also indicate the extent of availability and utilization by putting tick marks in the appropriate columns.

<table>
<thead>
<tr>
<th>Number</th>
<th>Extent of availability</th>
<th>Extent of utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>more than enough</td>
<td>enough</td>
</tr>
<tr>
<td></td>
<td></td>
<td>always</td>
</tr>
<tr>
<td></td>
<td></td>
<td>never</td>
</tr>
</tbody>
</table>

1. Ammeter
2. Balance with weight box
3. Balance (spring)
4. Barometer
5. Calorimeter
6. Camera
7. Capillary tube
8. Cell-Storag e
9. Cell-Leclanche
10. Cell-voltaic
11. Cell-Dry
12. Centrifuge
13. Condenser
14. Commutator
15. Davey's safety Lamp
16. Prisms
17. Electroscope
18. Electric Bell
19. Galvanometer
20. Glass slab
21. Hand lens
22. Heater (immersion)
23. Hydrometer
24. Inclined plane
25. Induction coil
26. Key-tap
27. Key-Plug
28. Lens-concave
29. Lens-convex
30. Lens holder
31. Magnet-bar
32. Magnetic needle pivoted
33. Compass needle
34. Manometer
35. Metre scale
36. Mirror-concave
37. Mirror-convex
38. Microscope-simple
39. Microscope-compound
40. Microscope-binocular
41. Micrometer
<table>
<thead>
<tr>
<th>Number</th>
<th>Extent of availability</th>
<th>Extent of utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>more than enough</td>
<td>enough</td>
</tr>
</tbody>
</table>

42 Pendulum bobs
43 Periscope
44 Prism-equilateral
45 Prism-right angled
46 Pulleys.
47 Resistance box
48 Regulator of electric fans
49 Resonance tube
50 Rheostat
51 Screw-jack
52 Screw-gauge
53 Specific gravity bottle.
54 Spectrometer
55 Soldering iron
56 Stethoscope
57 Steam chamber
58 Stove-electric
59 Stove-kerosene
60 Stop-watch
61 Telephone model
62 Thermometer-Centigrade
63 Thermometer-Sensitive
64 Thermopile
65 Thermocouple
66 Transformer
67 Turning fork
68 Vernier Calipers
69 Voltmeter
70 Waterbath
71 .................. ...........
72 .........................

List of Models
1 Dynamo
2 Flywheel
3 Screw jack
4 Wedge

List of tools
1 Hammer
2 Cork Screw
3 Chisel with handle
4 Hand saw
5 Hand drill
6 Spanner
7 Soldering iron
4. If the equipment is not sufficient, the reasons are

a) lack of adequate funds
b) lack of space in storing the equipment
c) delay in repairing defective equipment
d) formalities in purchasing them
e) Any other (specify)

5. A. Regarding the required equipment in the laboratory for the teaching of Physics.

a) most of them are in working condition
b) a few of them are in working condition
c) most of them are not in working condition
d) not a single one is in working condition

B. If most of them are not in working condition, the reasons are

a) lack of adequate funds
b) inferior quality of goods
c) careless handling by students
d) careless handling by staff members
e) lack of proper maintenance
f) Any other (specify)

6. A. Students use the laboratory for practical work

a) quite often
b) rarely
c) not at all

B. If not using often, the reasons are

a) lack of equipments
b) lack of space in laboratory for conducting experiments
c) lack of individual experimentation facility.
d) the students are not encouraged to use the laboratory.
e) the authorities do not permit to use the laboratory for fear of mishandling
f) teacher only demonstrates the experiments
g) Any other (specify)

7. The time allotted to Physics practicals in a week is

a) One or more periods
b) Without affecting the normal classroom work
c) Nil
d) Any other alternate arrangement (specify)
IV DETAILS REGARDING TEACHING AIDS

Given below are a few teaching aids required for the teaching of Physics. Please indicate the numbers of available and required aids in the first and second columns respectively and also indicate the extent of availability and utilization by putting tick marks (✓) in the appropriate columns.

<table>
<thead>
<tr>
<th>Types</th>
<th>Number available in School</th>
<th>Number required</th>
<th>Extent of availability</th>
<th>Extent of utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>more than enough</td>
<td>not enough</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>always using</td>
<td>sometimes using</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>not at all using</td>
<td></td>
</tr>
</tbody>
</table>

I Non-projected aids

1. Graphs  
2. Posters  
3. Maps  
4. Charts  
5. Models  
6. Display boards  
7.  
8.  
9.  

II Projected aids

1. Slides  
2. Slide projectors  
3. Film Strip  
4. Film Strip Projector  
5. Sound films  
6. Film projector  
7. Microscope Slides  
8. Microscope  
9. Motion picture Sound film  
10. Motion picture projector  
11. Overhead projector  
12. Epidia Scope  
13.  
14.  

Aural aids

1. Radio  
2. Tape recorder  
3. Television  
4. C. C. T. V.  
5. V. C. R.  
6.  
7.  

Computer
8. The experiments in Physics are conducted
   (a) individually by pupils
   (b) in groups by pupils
   (c) by pupils with the help of teachers
   (d) by teachers themselves

9. To assist the teachers and students in the laboratory, an attendant is
   (a) available
   (b) not available

10. Given below are a few suggestions for the better functioning of your school laboratory. Please
    indicate your preference by marking 1, 2, 3 .... etc.
    (a) Allocate more funds for laboratory
    (b) Repair equipment every year
    (c) Provide sufficient space in laboratory
    (d) Provide more opportunity for practical work
    (e) Encourage students to use the laboratory
    (f) Appoint a full time attendant to assist the students and
        teachers in laboratory
    (g) Any other (specify)

V. CO-CURRICULAR ACTIVITIES

1. A. Project works in Physics are
   (a) taken up
   (b) not taken up

   B. If 'not' the reasons are
   (a) lack of necessary facilities for project work
   (b) lack of theoretical and technical knowledge about the
       project work on the part of teachers.
   (c) lack of financial assistance
   (d) lack of co-operation from students
   (e) lack of encouragement from parents
   (f) Any other (specify)

2. A. Science Club in your school is
   (a) functioning
   (b) not functioning

   B. If 'not functioning', the reasons are
   (a) lack of initiative on the part of teachers
   (b) lack of enthusiasm on the part of students
   (c) lack of interest of parents
   (d) lack of encouragement from administrators
   (e) Any Other (specify)

3. Please put tick mark (✔) against the activities conducted/taken part by your school Science Club.
   (a) Field trips
   (b) Exhibition
   (c) Project works
   (d) Visits
   (e) Improvisation of equipments
   (f) Drawing charts, models, maps etc.
   (g) Any other (Specify)
VI DETAILS REGARDING ENVIRONMENTAL RESOURCES

Given below is a list of some of the environmental resources and their uses. Please indicate their availability and extent of utilization by putting tick marks (√) in the appropriate columns.

<table>
<thead>
<tr>
<th>Engineering factories</th>
<th>Small scale industrial units</th>
<th>Chemical factories</th>
<th>Workshops</th>
<th>Colleges</th>
<th>Power stations</th>
<th>Printing press</th>
<th>Science Fair and Exhibitions</th>
<th>Human resource (experts)</th>
<th>Hospitals</th>
<th>Cotton mills</th>
<th>Laboratories</th>
<th>Buildings under construction</th>
<th>Any other (Specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observes methods and techniques of fabrication</td>
<td>Observes and understands the mode of transmission of electricity</td>
<td>Learn the skills in carpentry</td>
<td>Observes the functioning of medical equipment</td>
<td>Learns to improve different apparatus</td>
<td>Observes various Production Processes</td>
<td>Observes and understands working models</td>
<td>Learns the different skills required for different types of work</td>
<td>Learns the assembling of different electronic gadgets</td>
<td>Gets familiarised with modern development in science &amp; technology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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| Observes the mode of transmission of electricity | Observes the functioning of medical equipment | Learns to improve different apparatus | Observes various Production Processes | Observes and understands working models | Learns the different skills required for different types of work | Learns the assembling of different electronic gadgets | Gets familiarised with modern development in science & technology |

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<p>| Observes the mode of transmission of electricity | Observes the functioning of medical equipment | Learns to improve different apparatus | Observes various Production Processes | Observes and understands working models | Learns the different skills required for different types of work | Learns the assembling of different electronic gadgets | Gets familiarised with modern development in science &amp; technology |</p>
<table>
<thead>
<tr>
<th>Helps to develop simple working models.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receives direct information</td>
</tr>
<tr>
<td>Gets first hand information</td>
</tr>
<tr>
<td>Can be used in co-ordinating intellectual and manual labour</td>
</tr>
<tr>
<td>Observes and understands the different types of electric connection</td>
</tr>
<tr>
<td>Provides practical experience</td>
</tr>
<tr>
<td>Learns to repair certain equipments</td>
</tr>
<tr>
<td>Helps/can be used in bridging the gap between theory and practice</td>
</tr>
<tr>
<td>Caters to the development of creativity, self expression etc.</td>
</tr>
<tr>
<td>Any other (Specify)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent of utilization</td>
</tr>
<tr>
<td>always</td>
</tr>
<tr>
<td>some times</td>
</tr>
<tr>
<td>never</td>
</tr>
</tbody>
</table>
VII WORK LOAD.

<table>
<thead>
<tr>
<th>Class</th>
<th>No. of Periods of work per week</th>
<th>Additional periods required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Std VIII</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Std IX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Std X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. If extra hours are spent, how many periods a week? 

VIII DETAILS REGARDING THE IN-SERVICE PROGRAMME.

1. Please give the following information regarding the inservice programmes attended by you.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Duration</th>
<th>Type</th>
<th>Details in brief</th>
</tr>
</thead>
<tbody>
<tr>
<td>U G C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCERT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Institute of Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training College</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arts and Science College</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sastra Sahitya Parishad</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers’ Associations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any Other.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Given below are some of the benefits of the in-service programmes. Please indicate the benefits you have received by ticking the items.

1. Received up to date information
2. Received experience in practical work
3. Exchanged ideas with other teachers
4. Revised portions once studied but forgotten
5. Obtained contacts with specialists in the field
7. Got opportunity to get familiarised with new methods and techniques of teaching
8. Got training in the use of a. v. aids
9. Got training to utilise the environmental resources.
10. Any Other (specify)

3 Given below are some of the possible defects of the in-service programmes. Indicate your agreement by ticking the items.

1. The course was too short.
2. The course was too long.
3. Much of the time was spent to teach what we know already
4. Difficult experiments were not demonstrated
5. Due importance was not given to practical work
6. Resource persons were not available
7. The course was monotonous
8. Difficult concepts were not given due emphasis
9. Training to utilize the resources was not given
10. Training in the modern methods and techniques of teaching was not given
11. The goals aimed at were not realised
12. Any other: (specify)
Draft form of Theory Awareness and Practical Application

Awareness Test items for Std.IX

1. A. A convex lens (with focal length \( F \)) can be used as a magnifier when the object lies
   a. between \( F \) and \( 2F \)
   b. at \( F \)
   c. close to the lens and inside the focal point \( F \).
   d. at \( 2F \)

   If the student is thorough with the image formation by a convex lens, he can apply it in the construction of some simple equipments where convex lens is used for e.g., magnifying glass.

   B. If the object is kept between the optic centre and principal focus of a convex lens, an erect, virtual and magnified image is obtained this principle is made use of in:
      (a) telescope
      (b) magnifying glass
      (c) camera
      (d) compound microscope.

2. A. Which of the following is preferably used in a photographic camera?
   a) Concave lens
   b) Convex lens
   c) Double concave lens
   d) Double convex lens

   If the student knows the working of a camera, he may be able to explain why the inside of it is blackened.

   B. The inside of a photographic camera is blackened to
      a) avoid refraction
      b) avoid dispersion
      c) avoid both reflection and refraction
      d) avoid reflection from walls.

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A - Theory Awareness Test items.
B - Practical Application Awareness Test items.
3. A. Which of the following statements is true regarding long-sightedness?
   i) Long-sightedness is caused when the eyeball becomes smaller.
   ii) Long-sightedness is caused when the focal length of eyelens is large.
   a. only because of (i)
   b. only because of (ii)
   c. because of either (i) or (ii)
   d. not because of (i) or (ii)

   B. A person sees distant objects comfortably but wears spectacles while reading a book. What type of lenses are used in his spectacles?
   a. Concave  b) Convex  
c. Planoconvex  d) Planoconcave

   When the student is aware of the cause of long-sightedness, he may be able to suggest how it can be remedied.

4. A. The image formed by a convex mirror compared to the object is usually,
   a. inverted and imaginary
   b. erect and smaller
   c. real and inverted
   d. larger and virtual

   B. The kind of mirror that a driver uses to get a maximum vision of his backside should be
   a. Convex mirror b. Concave mirror. c. plane mirror
d. spherical mirror.

   A thorough knowledge about the image formation in the case of a concave mirror will help the student to utilise this knowledge in explaining why this is preferred in rear glass in automobiles.
5. A. Spherical aberration can be corrected by using
   a. a combination of lenses
   b. cylindrical lenses
   c. a small lens opening
   d. a thin lens

B. Parabolic reflectors are used in automobile headlights principally to minimise
   a. dispersion  b. diffraction
   c. spherical aberration
   d. absorption

6. A. When the object is placed at the focus of a concave mirror, the image is formed
   a. between F and mirror
   b. between F and 2F
   c. beyond 2F
   d. at infinity

B. In a torch, the light source is placed at the
   a. focus of concave mirror
   b. pole of concave mirror
   c. radius of curvature of concave mirror
   d. none of the above

7. A. For shortsightedness rays from distant objects are brought to focus at a point
   a. on the retina
   b. inbetween eyepens and retina
   c. behind the retina
   d. in front of the retina

B. Shortsightedness can be remedied using
   a. Converging lens (b) diverging lens
   c. double convex lens
   d. planoconvex lens

An understanding of the spherical aberration and how it can be remedied will equip the student in explaining why reflectors in automobiles are parabolic.

A proper understanding about the image formation using concave mirror will help the student in improvising some common and simple equipments for e.g., a torch light.

When the student is aware of the reason for shortsightedness, he can suggest a remedy for this, that is by using a diverging lens of suitable focal length.
8. A. Which of the following law supplies the definition of force
   a) Newton's Ist Law
   b) Newton's IInd Law
   c) Newton's IIIrd Law
   d) Law of gravitation

   B. A dirty carpet can be cleaned by beating. This is in accordance with
   a) Newton's Ist Law
   b) Newton's IInd Law
   c) Newton's IIIrd Law
   d) Law of gravitation

9. A. Small insects float on water in ponds and in open tanks. This is possible due to
   a. viscosity (b) surface tension (c) adhesion
   d. cohesion

   B. Soaps and detergents help in cleaning the clothes because they
   a. increase the surface tension
   b. reduce the surface tension
   c. absorb the impurities, dust etc.
   d. change the chemical composition of the solution.

10. A. If the diameter of a capillary tube is doubled, the rise of water in the capillary tube
    a. will be decreased
    b. will be increased
    c. will not change
    d. cannot be anticipated

   An understanding of the action of capillarity will help the student to apply
B. During summer, farmers usually keep the top soil layer loose. This is

a. to increase the soil fertility
b. to increase the capillary rise of water to the surface of soil
c. to retain soil water in the top layers.
d. to reduce the capillary rise of water to the surface of soil.

11. A. The force of attraction between unlike molecules is referred to as

a. surface tension  
b. viscosity  
c. cohesion  
d. adhesion

B. When we perspire, our clothes cling to the body because of

a. evaporation  
b. friction  
c. adhesion  
d. cohesion

12. A. A liquid will not wet the surface of a solid if the angle of contact is

a. acute  
b. zero  
c. obtuse  
d. 45°

B. Coatings used on raincoats are waterproof because

a. water is absorbed by the coating.
b. adhesive forces become greater.
c. water is scattered away by the coating.
d. angle of contact increases.

A knowledge about adhesion will help the student to explain the reason why clothes cling to the body when we perspire.

When a student is thorough with the different angles of contact, he can apply it in explaining some of the techniques of water proofing.
13. A. The rise of water in plants is due to
   a. osmosis  
   b. capillarity  
   c. atmospheric pressure  
   d. diffusion  

   B. Clay is not dry when compared to sandy soil because of
   a. the nature of the particles  
   b. osmosis  
   c. the environment  
   d. capillarity action

14. A. Surface tension exists
   a. only in the bulk of liquid  
   b. only on the surface of the liquid  
   c. both on the surface and bulk of liquid  
   d. only along the lines of contact with the container.

   B. When oil is spread on stagnant water, mosquitoes cannot breed because
   a. surface tension increases and oxygen supply is cut off  
   b. surface tension decreases and oxygen supply is cut off  
   c. viscosity increases  
   d. viscosity decreases

15. A. Surface tension
   a. increases uniformly with temperature  
   b. does not change with temperature  
   c. decreases with temperature  
   d. increases at random with temperature

   B. Hot water is preferred for cleaning purpose than cold water because
   a. cohesion is decreased  
   b. cohesion is increased  
   c. surface tension is increased  
   d. surface tension is decreased

A proper understanding of the capillary action will help the student to explain why clay is preferred in certain purposes to keep the things wet.

If the student has an understanding how surface tension takes place, he can utilise this in explaining some daily life situations.

If the student has a proper understanding of the effect of temperature on surface tension, he can utilise this in many life situations for e.g. the use of hot water for cleaning.
16. A. Friction
   a. can be completely avoided
   b. can be minimised
   c. cannot be minimised
   d. remains the same.

B. Tennis shoes should have rubber soles rather than leather soles because
   a. rubber sole is lighter than that of leather
   b. rubber can be easily washed and cleaned
   c. rubber gives a better appearance
   d. rubber provides more friction than leather.

17. A. It is easier to roll a body than to slide it along because
   a. more than limiting friction
   b. more than sliding friction
   c. less than sliding friction
   d. same as sliding friction

B. A cyclist has to apply more force when the tube of the cycle is not fully inflated because of
   a. increase in limiting friction
   b. increase in rolling friction
   c. decrease in rolling friction
   d. decrease in limiting friction

18. A. The suitable method to minimise friction is the use of
   a. ball and roller bearings
   b. lubrication
   c. polishing
   d. all the above

When a student understands about frictional forces, it would help him to think logically why rubber soles are used in the manufacturing of tennis shoes.

A clear idea about the rolling friction will equip the student in explaining some common experiences in daily life for e.g., why one has to exert more force if the tube of the cycle is not fully inflated.

An understanding about the ways of
B. Which of the following statement/s are true regarding friction

1. It causes wastage of energy
2. It causes unnecessary wear and tear
3. It helps in the smooth running of machine

a. 1 and 2 are correct
b. 2 and 3 are correct
c. 1 and 3 are correct
d. 1, 2, 3 are correct

19. A. Weightlessness experienced in space ships while orbiting the earth is a result of

a. inertia b. acceleration c. zero gravity d. centre of gravity

If a student is aware of the reason of weightlessness experienced in spaceship, he can use this knowledge in explaining many situations - it will help him to think logically and creatively and predict certain situations.

B. A body weighs 5 Newtons on the earth. An astronaut in a spaceship tries to weigh it with the help of a spring balance. He will observe that

a. the spring stretches in accordance with Hook's law
b. the body weighs more than 5 N
c. the body weighs less than 5 N
d. the spring does not stretch at all.

20. A. Centrifugal force is directed

a. away from the centre
b. towards the centre
c. along the tangent drawn to the circle
d. along the circumference of the circle.

A proper understanding of the centrifugal force will help the
B. Fat can be separated from the milk in a cream separator because of
   a. centrifugal force
   b. centripetal force
   c. cohesive force
   d. gravitational force

21.A. A body moving in a circular path, tends to move along the tangent to the circular path in the absence of
   a. centrifugal force
   b. gravitational force
   c. frictional force
   d. centripetal force

   The principle and techniques of a dryer will be clear to a student, if he is thorough with circular motion.

B. The devices like dryer which is used to dry clothes employ the principle of
   a. circular motion
   b. rotational motion
   c. translational motion
   d. frictional force

22. A. Which of the following is the best non conductor?
   a. Air (b) paper
   c. vacuum (d) glass

   If the student can identify and categorise non conductors, he can utilise this knowledge in the explaining, why handles are attached to certain household articles.

B. Wood, plastics, ebonite etc. are used for making the handles of pressure cookers, electric ion etc. because they
   a. conduct heat (b) conduct electricity (c) conduct heat and electricity (d) do not conduct heat and electricity.

   student to understand and explain the principles involved in the manufacture of cream separators and many other similar equipments.
23. A. The size of a solid increases when
   a. heat energy is given
   b. electric energy is given
   c. mechanical energy is given
   d. sound energy is given

   B. When a metallic pendulum expands
   a. it gains time
   b. it loses time
   c. it neither gains nor loses
   d. it stops

   If a student knows the effect of heat on solid, he can apply it in certain daily situation why a clock goes faster in summer.

24. A. Lubricants are introduced between two solid surfaces for reducing
   a. elastic force (b) electrostatic force (c) magnetic force (d) frictional force

   B. Oil is sprayed on moving parts of sewing machine, clock etc. for
   a) preventing damage
   b) reducing friction
   c) increasing friction
   d) completely eliminating friction

   Knowledge of minimising friction can be used in explaining many common situations.

25. A. A liquid of large surface tension
   a) can wet a surface easily
   b) can wet a surface slowly
   c) cannot wet a surface easily
   d) can be used for washing purpose

   B. Soap water can wet a surface more easily than pure water because it has
   a) high surface tension (b) low surface tension (c) no surface tension (d) moderate surface tension.

   An understanding of surface tension helps the student to utilise it in daily life activities.
26. A. When liquid ammonia evaporates temperature
   a. increases
   b. decreases
   c. remains constant
   d. changes irregularly.

   B. Liquid ammonia is used as a refrigerent because
   a. it is a good solvent
   b. it is very cheap
   c. it evaporates by increasing the temperature.
   d. it evaporates by decreasing the temperature.

   If the student is equipped with the fact that liquid CO₂ on evaporation produces cooling, he can utilise this knowledge in understanding the working of a refrigerator.

27. A. One of the following statements which is correct concerning insulators is
   a) they are good conductors
   b) they are bad conductors
   c) they absorb heat
   d) they radiate heat

   The fact that wool is a bad conductor will enable the student in explaining why we use sweaters in winter.

   B. Woollen dresses are used in winter season because
   a) they conduct heat easily
   b) they conduct heat slowly
   c) they absorb heat
   d) they do not conduct heat

28. A. Which of the following energy is absorbed easily by black rough surfaces.
   a) light energy
   b) chemical energy
   c) heat energy
   d) radiant energy

   If the student is aware of the fact that black
B. It is uncomfortable to wear a black shirt or blouse during hot season because it absorbs
a) radiant energy
b) heat energy
c) light energy
d) chemical energy

Surfaces absorb heat energy, he will be able to explain why a black dress is uncomfortable during hot season.

29.A. When pressure on the surface of a liquid increases
a) its volume increases
b) its volume decreases
c) its boiling point decreases
d) its boiling point increases

If the student knows about the effect of pressure on boiling point he can utilise this knowledge in explaining the principles of a pressure cooker.

B. In a pressure cooker food is cooked faster because
a) boiling point of water is lowered
b) boiling point of water is raised
c) it absorbs heat energy quickly
d) it retains heat for a long time.

30.A. A virtual image larger than the object may be produced by
a) convex mirror (b) concave mirror (c) plane mirror
d) convex lens

If the student is aware of the formation of images by concave mirrors, he can utilise this in discriminating the types mirrors for various purposes.

B. For shaving and make up mirrors, we prefer concave mirrors because
a) they produce real image
b) they produce virtual magnified image when the object is placed between f and 2f.
c) they produce virtual magnified image when the object is placed between pole and focus.
d) None of the above.
31. A. The capacity for doing work is known as
   a. heat capacity of the body
   b. energy of the body
   c. sp. heat of the body
   d. power of the body

B. If in your city electricity costs 50 paise per kilowatt hr. you pay for
   a. electric charge b. power
   c. electric energy d. electric current.

When a student is able to define energy, he will understand the applications of this concept.

32. A. In oil lamps, the oil rises up in the wicks due to
   a) the pressure differences
   b) the property of viscosity
   c) the property of capillarity
   d) the temperature difference

B. Soldering of two metals is possible on account of the
   a. property of viscosity
   b. property of elasticity
   c. property of surface tension
   d. property of osmosis

If the capillary action is clear to a student, he can apply it in techniques of soldering of metals.

33. A. Machines are used to
   a. create energy (b) do work
      with less expenditure of energy
   c. multiply force (d) multiply force and speed at the same time

B. Mechanism of a typewriter is a combination of levers of
   a. first and second order
   b. third and first order
   c. second and third order
   d. none

If a student is aware why exactly a machine is used, he can apply this and explain the lever mechanism in some common machines.
34. A. Mechanical energy can be converted into
   a) sound energy  (b) electrical energy  (c) heat energy
   (d) all of the above

B. Light energy can be converted to electrical energy using a
   a) dynamo  (b) electric bulb  (c) electric motor  (d) solar cell.

35. A. If the object lies at the principal focus, then the image is formed at infinity. This is true in the case of
   a) convex lens  (b) convex mirror  
   c) concave mirror  
   d) concave lens

B. Rays from the head light of a car is made parallel by
   a) convex mirror behind it  
   b) concave mirror behind it  
   c) concave mirror in front of it  
   d) concave lens in front of it

36. A. In a telescope the focal length of the eyepiece lens
   a) will be smaller than that of the objective lens  
   b) will be larger than that of the objective lens  
   c) will be same as that of the objective lens  
   d) will be almost same as that of the objective lens.

B. In a terrestrial telescope the final image will be formed at
   a) 100 cm.  (b) infinity  
   c) least distance of distinct vision  (d) none of the above

If the principle of conversion of energy is clear, the students can apply it and explain what type of energy change take place in a solar cell.

If the student is thorough with the formation of images using a mirror, he can understand and explain where a particular mirror must be placed so as to receive a desired image.

If the student is clear how the lens are arranged in a telescope, where will be able to use this knowledge in explained where and how the image is formed.
37. A. Centrifuge machines depend for their working on
a. centripetal force
b. centrifugal force
c. gravitational force
d. electrostatic force

B. A centrifuge is used to
a. dry clothes
b. separate cream from milk
c. to pump water
d. to separate particles from suspension

If the student knows the principle of working a centrifuge machine, he can point out the use value of that particular machine.

38. A. It takes more time to cook vegetables, meat etc. at the top of mountains because
a) the atmospheric pressure is decreased
b) the atmospheric pressure is increased.
c) temperature is lower on the mountain
d) the quantity of oxygen is reduced.

B. Water is boiling in a flask over a burner - to reduce its boiling temperature one must
a) reduce the surrounding temperature
b) supply heat from a less intense source
c) connect the mouth of the flask to an evacuating system.
d) connect the mouth of the flask to a compressor.

When the student is aware of the effect on atmospheric pressure on boiling point, he can utilise this knowledge in situations where boiling point has to be reduced.
39. A. When cells are connected in series
   a. the current is increased
   b. the potential difference is decreased
   c. the potential difference is increased
   d. the resistance is unchanged.

   If a student has a proper understanding about the series connection of cells, he can utilise this knowledge effectively in improvising electrical equipments and also to understand the working of some electrical equipments where series connections are made use of.

   B. The battery used in automobile are made up of cells connected in
   a) parallel (b) series
   c) combination of parallel and series (d) alternatively parallel and series.

40. A. Decreasing the thickness of a wire
   a) makes the resistance zero
   b) causes no change in resistance
   c) decreases its resistance
   d) increases its resistance

   A proper idea regarding the effect of reducing the thickness of wire on its resistance will help the student to understand the reason why thin long wire is used in ordinary electric bulbs.

   B. Ordinary electric bulbs make use of thin and long tungsten wire because it has
   a) low resistance (b) high resistance (c) zero resistance (d) low melting point.

41. A. The melting point of an impure substance will be
   a. greater than that of the pure substance
   b. same as that of the pure substance
   c. less than that of the pure substance
   d. greater or less than that of the pure substance

   When the student is aware of the fact that melting point of impure substance is less than pure
B. In cold countries salt is sprinkled on the roads for removing snow because

a. when salt is dissolved the melting point of ice increases
b. when salt is dissolved the temperature of surroundings increases
c. when salt is dissolved the melting point of ice decreases
d. the increase in pressure causes the increase in melting point of ice.

42. A. Which of the following are semi-conductors?
   a. Boron and phosphorous
   b. copper and aluminium
   c. cadmium and nickel
   d. silicon and germanium

B. Most of the diodes and transistors are made up of silicon and germanium because they are
   a. good conductors
   b. good insulators
   c. semi conductors
   d. super conductors

A thorough knowledge about the semi-conductors will equip the students to understand why silicon and germanium are preferred in the manufacture of diodes and transistors.

43. A. A sound heard by reflection and clearly distinguished from the original sound is
   a) echo (b) resonance
   c) reverberation (d) beats

B. The property of sound which helps in using sound waves for measuring the depth of the sea is
   a) wave motion (b) vibration
   c) reflection (d) reverberation

An understanding about how echo is produced will enable the student to utilise this knowledge in situations where the melting point of pure substance is to be reduced.
44. A. Bats produce which of the following waves to detect obstacles on their way?
   a) Electromagnetic (parasonic)
   b) Infrasonic
   c) Supersonic
   d) Ultrasonic
   B. What kind of waves are used in sonar to detect objects under water.
   a) Electromagnetic
   b) Ultrasonic
   c) Supersonic
   d) Infrasonic
   
   If the student is aware of the fact bats detect obstacles on their way using ultrasonic waves, this can be utilized in other practical uses of ultrasonic.

45. A. When a loud sound is produced in a closed room, a continuous rolling of sound persists for sometime. This phenomenon is known as
   a) Resonance
   b) Echo
   c) Forced vibration
   d) Reverberation.
   B. The walls of cinema halls are generally covered with sound absorbing materials. This is done so to reduce
   a) Resonance
   b) Reverberation
   c) Forced vibration
   d) Echo
   
   If the student has a proper understanding of reverberation, he will be able to suggest what measures can be taken to reduce reverberation in big halls.

46. A. When the frequency of the forcing body is equal to the natural frequency of the forced body, there occurs the phenomenon of
   a) Resonance
   b) Echo
   c) Reverberation
   d) Beats
   B. Why do some bronze vessels vibrate when there is a loud noise?
   a. Because of the intensity of sound
   b. The frequency of the vessel
   c. The noise contains many frequencies of which one is equal to the natural frequency of the vessel.
   d. The vessel can vibrate with all the frequencies in the noise.
   
   A proper understanding of the phenomenon of resonance, will help the student to explain some daily life experiences for example, the vibration of bronze vessels when there is a loud noise.
47. A. Certain metals when cooled to very low temperature near absolute zero, they lose their resistance completely. These are called
   a. Semiconductors
   b. conductors
   c. insulators
   d. superconductors

B. Electricity can be transmitted distant places without loss of electrical energy with the use of
   a. semiconductors
   b. conductors
   c. insulators
   d. superconductors.

A thorough understanding of the superconductivity will help the student to realise the use of superconductors in different situations.
APPENDIX - III

Draft form of Theory Awareness and Practical Application

Awareness Test items for Standard X

1. A. Which of the following has larger wave length?
   a. Red light  (b) Violet light
   c. Ultra violet  (d) Infra red
   
   If a student is aware of the wave length of different colours in the spectrum, he will be able to apply it in techniques related to photography.

   B. Very distant objects can be photographed effectively by making use of
   (a) ultra violet (b) infra red
   (c) x-rays (d) gamma rays

2. A. Sun-burn is caused by the
   (a) ultra violet rays
   (b) infra red rays
   (c) x-rays (d) gamma rays
   
   If the student knows about the properties of ultra-violet rays, he will be able to understand about the production of vitamin D in our body.

   B. Which of the following radiation present in sunlight helps our skin to produce vitamin D in our body?
   (a) Infra red (b) Cosmic rays
   (c) X-rays (d) Ultra violet

3. A. Which of the following light has less scattering?
   (a) Violet (b) Blue
   (c) Yellow (d) Red
   
   If the student knows about the principles of scattering, he can apply it in explaining why red lights are used in signal lamps.

   B. Red lights are often used in signal lamps because
   (a) red colour is easily noticeable (b) red light is scattered more and so it is visible at a great distance. (c) red light is scattered very little and so it is visible at a great distance. (d) red light has a shorter wave length and so it is visible at a great distance.

A - Theory Awareness Test items
B - Practical Application Awareness Test items.
4. A. Which of the following radiation has greater frequency?
   a. Radio waves  (b) micro waves
   c. Infra red  (d) X-rays

   B. The frequency of long wave radio when compared to the frequency of short wave radio is
   a. more  (b) same  (c) less
   d. cannot be anticipated

5. A. The deviation taking place at the surface of separation of the media known as
   a. refraction  (b) reflection
   c. dispersion  (d) scattering

   B. Rainbow is formed because of
   a. diffraction of light at the edges of raindrops.
   b. reflection of light from sky.
   c. refraction of light through rain drops.
   d. interference of light in thin films of water in air.

6. A. Which of the following is correct in the order of decreasing wave length.
   a. infra red waves, radio waves, micro waves, x-rays, visible light.
   b. x-rays, visible light, infra red, microwaves, radio waves.
   c. x-rays, infra red, visible light, radio waves, x-rays
   d. radio waves, micro waves, infra red, visible light, x-rays.

   B. Microwave relay tower is made use of in the care of
   a. radio broadcasting  b. Television (c) X-rays
   d. Gamma rays

   A thorough knowledge about the frequency of different radiations will help the student in differentiating a long wave radio and short wave radio.

   If the principles of reflection is clear to a student, he can apply it in various situations to explain some common physical phenomena like the formation of rainbow etc.

   If a student has a good understanding of the different wave length associated with a spectrum, he will be able to identify which tower is made use of in Television relays.
7. A. The most suitable alloy for making high resistance wires is
   a. Alnico (b) Invar
   c. Canthal (d) Nichrome

   B. The heating coils in household appliances like electric iron, heater, etc., are made up of
   a. Alnico (b) Nichrome
   c. Copper (d) phospher bronze

8. A. Which of the following has highest sp. heat?
   a. sand (b) copper (c) aluminium
   d. water

   B. Water is used in automobile radiators because of its
   a. high heat capacity
   b. low heat capacity
   c. high cooling effect
   d. availability in plenty

9. A. In the transformers at the distributing stations the number of turns in the primary are
   a. less than the number of turns in secondary
   b. equal to the number of turns in secondary
   c. greater than the number of turns in secondary
   d. none

   B. The device used to convert A.C. from high voltage to low voltage
   A. AC dynamo (b) motor
   c. step up transformer
   d. step down transformer

If the student has a proper idea about the type of alloy having high resistance, he can utilise this knowledge in identifying the alloys used in many household heating appliances.

If a student is aware of the fact that water has the highest sp. heat when compared to many others, like sand, copper, etc., he can apply this in explaining why water is preferred in some apparatus like automobile radiators.

If the student understands the working of an instrument, he will be able to identify its various uses.
10. A. Which of the statement is true regarding a step-up transformer
   a. The number of turns in the primary are greater than that in the secondary.
   b. The number of turns in the secondary are greater than that in the primary.
   c. The input A.C. is more than the output A.C.
   d. The input A.C. is same as the output A.C.
   
   B. In a transformer, the voltage can be stepped up or down to a desired level by
   a. Varying the thickness of insulated Cu wires
   b. Keeping the number of turns of Cu wires constant
   c. adjusting the input A.C.
   d. suitably varying the number of turns in the two coils.

11. A. A transformer is a device for
   a. increasing an alternating voltage
   b. decreasing an alternating voltage
   c. increasing or decreasing an alternating voltage
   d. increasing or decreasing the resistance.
   
   B. A transformer can be used with
   a. a.c. only (b) d.c. only
   c. both a.c. and d.c. (d) none

12. A. The safety fuse wire is made up of a material of
   a. low resistance and very high melting point
   b. low resistance and very low melting point
   c. high resistance and very high melting point
   d. high resistance and very low melting point

   If the student is aware of the fact that the number of coils decide the output voltage in a transformer, this can be applied in the construction of transformers.

   When the student is thorough with the purpose of a transformer, it will help him to realise that it can be used only with a.c.

   If the student has a proper understanding about the material used for fuse wire,
B. An alloy of tin and lead is often used as a material for fuse wire. The reason is that

a. it is a very good conductor of electricity
b. it has high melting point
c. it melts easily if very high current is passed
d. it has low resistance

13. A. Which of the following is a safety device by which maximum limit of the current to be passed through an electric circuit can be controlled?

a. Choke (b) Fuse (c) Switch
d. Voltage stabiliser

B. A 15 amp. plug fuse is provided in an electrical circuit in an industry. It acts as a

a. load on the lines (b) step up transformer (c) step down transformer (d) safety device

14. A. The 'heating element' in electrical appliances is made up

a. high resistance and high melting point
b. high resistance and low melting point
c. low resistance and high melting point
d. low resistance and low melting point

B. Nichrome wires or tapes are used in household electric heating appliances because they have/are

a. high resistance and low melting point
b. high resistance and high melting point
c. the best conductors of electricity
d. low resistance and becomes hot very fast.
15. A. Three-pin plugs are used in household electric circuits
   a. to control the current
   b. to control the voltage
   c. to ensure better safety
   d. to attach the plug more tightly.

   B. An electric iron should be used with a three-pin plug because
   a. it ensures a longer life of the iron
   b. it provides a better insulation to the iron
   c. it ensures better safety by earthing
   d. it is more convenient to use a three-pin plug.

16. A. The device used to convert mechanical energy into electrical energy is
   a. transformer (b) motor
   c. induction coil (d) dynamo

   B. In the Hydroelectric power stations the device which is used to generate electricity is
   a. transformer (b) motor
   c. dynamo (d) induction coil

17. A. Decreasing the thickness of a wire
   a. increases its resistance
   b. decreases its resistance
   c. causes no change in resistance
   d. makes the resistance zero

An understanding of the use of three-pin plugs in electric circuit, will equip the student to explain the use of earthing.

If the student has a proper understanding about the function of dynamo, it will enable him to identify situations where dynamo can be made use of.

If the student is thorough with the effect of decreasing the thickness of wire on resis-
B. Ordinary electric bulbs make use of thin and long tungsten wire because it has:
   a. low resistance (b) high resistance (c) zero resistance (d) low melting point

18. A. The phenomenon associated with the change of magnetic flux linked with a circuit is:
   a. electricity (b) magnetism (c) electromagnetic induction (d) induced magnetism

B. The generator works on the principle of:
   a. electromagnetic induction (b) induced magnetism (c) induced electricity (d) Coulomb's law of electrostatics.

19. A. Which of the following are semiconductor?
   a. Boron and phosphorous (b) Copper and aluminium (c) Cadmium and strontium (d) Silicon and germanium

B. Most of the diodes and transistors are made of silicon and germanium because they are:
   a. good conductors (b) good insulators (c) semi conductors (d) super conductors

20. A. Certain metals when cooled to very low temperature near absolute zero, they lose their resistance completely. These are called:
   a. conductors (b) super conductors (c) semi-conductors (d) none of the above.

   When the student is aware of the fact that electromagnetic induction is associated with the change of magnetic flux in a circuit, he can utilize this knowledge in explaining the working of a generator.

   If the student has a knowledge of different semiconductors, he can utilise this in explaining why Si and Ge are preferred in diodes and transistors.

   A thorough understanding of the superconductors will help the child
B. Electricity can be transmitted to distant places without loss of electrical energy with the use of
(a) semiconductors (b) conductors (c) super conductors (d) very thick copperwires.

21. A. The rays that can pass through the body are
   a. X-rays (b) alpha rays (c) beta rays (d) gamma rays

B. X-rays can be used for taking photos of inner organs and bones because
   a. they destruct the germs (b) they can pass through the body (c) they can be handled easily (d) they can be produced easily.

22. A. Energy stored in a dry cell is
   a. mechanical (b) electrical (c) chemical (d) heat

B. The cell in which carbon rod is used as the positive electrode and zinc container as negative electrode is
   a. dry cell (b) voltaic cell (c) acid accumulator (d) alkali accumulator

23. A. The conduction of electricity through an electrolyte, together with the resulting chemical changes is known as
   a. photoelectric effect (b) heating effect (c) electrolysis (d) refrigeration

When the student is thorough with the properties of X-rays, it will enable him to utilise the knowledge in daily life situation namely of use of x-rays for medical purposes.

When the student is thorough with the process of electrolysis, he can explain
B. Alternating current cannot be used in processes where A.C. cannot be made use of.

a. heating (b) electrolysis
c. air conditioning
d. refrigeration

24. A. When current is passed through copper sulphate solution during electrolysis, the copper ions are deposited

a. on the cathode (b) on the anode (c) remains in the electrolyte (d) on the copper rod

B. If an aluminium chain has to be electroplated with gold, it should be used

a. as the cathode
b. as the anode
c. be kept in the electrolyte
d. connected between anode and cathode

25. A. The capacity for doing work is known as

a. heat capacity of the body
b. sp. heat of the body
c. power of the body
d. energy of the body

B. If in your town electricity costs 50 paise per kilowatt hr. you pay for

a. electric energy (b) electric charge (c) power (d) electric current

26. A. Which of the following material is used to make temporary magnets?

a. Hard steel (b) Alnico
c. Steel (d) soft-iron

If the student understands the use of
B. The most suitable material for the core of a powerful electromagnet is:
   a. Alnico (b) soft iron
   c. Steel (d) tungsten

27. A. The split rings are incorporated in the construction of:
   a. a.c. dynamo (b) d.c. dynamo
   c. electric motors
   d. transformer

B. Which of the following can be made use of in electroplating:
   a. a.c. dynamo (b) a.c. dynamo
   c. step up transformer
d. step down transformers

28. A. Which of the following retains a major part of the magnetism?
   a. Electromagnet
   b. Temporary magnets
   c. Permanent magnets
   d. The core of a transformer

B. A telephone receiver makes use of:
   a. electromagnet
   b. temporary magnet
   c. permanent magnet
d. natural magnet

29. A. The process by which a composite light is split into its component colours is known as:
   a) refraction b) dispersion
c) diffraction d) polarisation (scattering)

B. Soap film exhibits brilliant colours in sunlight due to:
   a. dispersion of light
   b. scattering of light
c. diffraction of light
d. interference of light
30. A. What will be the colour obtained by mixing blue and yellow.
   a) yellow  b) white  
   c) bluish yellow  d) green

B. A painter wants some bright green colour for the grass in his painting. Which of the two colours should be mixed?
   a. Blue and red  (b) Blue and yellow  (c) Yellow and red  (d) Blue and white

31. A. For which of the following colour scattering is least
   a. violet  b. blue  
   c. yellow  d. red

B. A boy uses coloured light to give some signal to a person standing at a great distance. Which of the following colour is best suited.
   a. Red  (b) Yellow  (c) Orange  
   d. Green

32. A. Which of the following reflects all the lights falling on it?
   a. white wall  (b) black paper  
   c. green leaf  (d) blue sari

B. A diary note is written on white paper in red ink. We cannot read it in the red light because
   a. white paper absorbs red light  
   b. white paper reflects red light  
   c. red colour is scattered more  
   d. red colour is scattered less
33. A. Which of the following alloy has the highest permeability?
   a. Nichrome (b) Invar
   c. Alnico (d) Magnalium

B. Which of the following is most suitable for making permanent magnets in loud speakers.
   a. Soft iron b. Nickel
c. Tungsten d. Alnico

34. A. An instrument in which electrical energy in one circuit is transferred into another without any electrical contact is
   a. transformer (b) induction coil (c) AC dynamo (d) motor

B. If we have to use a household appliance which work only on 110 V in our home, which of the following instrument should be made use of?
   a. Step-up transformer
   b. Step-down transformer
c. Electric motor
d. High resistance wire

35. A. The supply of electricity for domestic purpose is obtained from
   a. step-up transformer
   b. step-down transformer
c. induction coil
d. dynamo

B. To light a 6 volt bulb from a 230v supply, the device required is
   a. electric motor (b) dynamo
c. step-up transformer
d. step-down transformer
36. A. Which of the following is to be connected with the phase wire?
   a. Fuse  (b) Main switch  
c. Switch  d. Plug
   
   B. Which of the following breaks connection with phase and neutral lines.
   a. Fuse  (b) Switch  
c. Plug  (d) Main Switch

37. A. In lightening conductor, the principle made use of is that charge gets accumulated at
   a. everywhere  (b) nowhere  
c. flat ends  (d) pointed ends.
   
   B. The lightening conductor protects the building from lightening by
   a. not permitting the lightening to fall at the building at all.  
b. driving away the charged particles  
c. forcing lightening to fall on other buildings in the neighbourhood.  
d. conducting the electric charge to the ground when lightening strikes the building.

38. A. A charged object will attract a neutral object because of
   a. electrostatic induction  
b. electromagnetic induction  
c. mutual induction  
d. magnetic induction
   
   B. A device to detect electric charge in a body is
   a. Electroscope  b. Voltmeter  
c. Ammeter  d. Galvanometer

   If the student is clear about the connections of a switch, he will be able to differentiate between a switch and main switch.

   The fact that charge gets accumulated at the points will help the student to understand the function and working of a lightening conductor.

   When a student is thorough with the principles of electrostatic induction he can suggest instruments to detect electric charge.
39. A. The purpose of providing petrol trucks with metal chains hanging from the rear and dragging on the ground is to
   a. give extra strength for the truck
   b. help to reduce the spark formed due to friction
   c. serve the purpose of a safety device
   d. use when need arises

   B. The occupants of modern steel frame buildings are not harmed when the buildings are struck by lightning because
   a. these buildings are stronger
   b. these drive away the charged particles
   c. lightning does not fall on steel frame the buildings
   d. steel frames being good conductors they allow the charge to flow to the earth.

40. A. When the resistance of a conductor is decreased, the heat developed will
   a. decrease (b) increase
   c. become zero (d) not change

   B. What change occurs in the heating effect of a certain electric circuit in which the total resistance is made half?
   a. The heating effect is doubled
   b. The heating effect is reduced to half
   c. No effect
   d. The heating effect is increased four times.

If the purpose of using metal chains in petrol trucks is known to the student, he will apply it in other similar situations.

If the relation between the resistance of the conductor and heat generated is clear to the student, he will be able to understand about the heating effect in case the resistance is made half.
41. A. If the length of a conductor is made half, its resistance
   a. increases  (b) does not change  
   c. decrease to half  
   d. decreases to one-fourth 

   B. A portion of a heater coil is broken off and if the rest is joined to form the coil, then the resistance of the coil 
   a. will decrease and power consumption will increase. 
   b. will decrease and power consumption will decrease. 
   c. will increase and power consumption will increase 
   d. will increase and power consumption will decrease. 

42. A. When the thickness of a wire increases, its resistance 
   a. increases  (b) decreases 
   c. does not change  
   d. becomes zero 

   B. There are 4 nichrome wires of diameters 2 mm, 3 mm, 4 mm, and 5 mm and all four have the same length. Which one will give more heat if connected to the same source? 
   a. 2 mm diameter wire 
   b. 3 mm diameter wire 
   c. 4 mm diameter wire 
   d. 5 mm diameter 

43. A. Fuse wire is included in an electric circuit to 
   a. increase the current 
   b. to decrease the current 
   c. to check the excessive flow of current 
   d. to check the excessive flow of voltage. 

   If the student is thorough with the effect of decreasing length on resistance, he will be able to apply it in daily life situations.

   When the fact that as the thickness of a wire increases, the resistance decreases is clear to a student he will be able to select proper material for giving more heat. 

   If the student is clear about the purpose of fuse in
B. What should be done if in a domestic electric circuit the rated fuse wire burns frequently?
   a. Use a thicker fuse wire than the rated one
   b. Use a thinner fuse wire than the rated one
   c. Connect directly without using fuse wire
   d. Get the circuit checked for short circuiting.

44. A. Which of the following instrument is used to develop very high potential from a direct current source?
   a. Transformer
   b. Dynamo
   c. Motor
   d. Induction coil

   B. Which of the following instrument finds its application in the self-ignition system of motor car?
   a. Induction coil
   b. Dynamo
   c. Motor
   d. Transformer

45. A. In which of the following controlled fission takes place?
   a. Nuclear bomb
   b. Atomic bomb
   c. Nuclear reactor
   d. Hydrogen bomb

   B. Which of the following is used in a nuclear reactor to slow down neutrons?
   a. Plutonium-239
   b. Heavy water
   c. Enriched uranium
   d. Cadmium
46. A. Of the different colours of white light, which colour has the greatest wavelength?
   a. Red
   b. Violet
   c. Yellow
   d. Green

   B. Which colour is most suitable to give signal to a person positioned at a great distance?
   a. Red
   b. Yellow
   c. Orange
   d. Green

   A thorough understanding about the wavelength of different colours will help the student in identifying the use of colour lights.
List of Experts

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2. Prof. Madhava Kurup, 
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3. Prof. Kesavan Nair, 
   Government Training College, 
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   Ernakulam District.

5. Dr. Sreekantan Nair, 
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6. Dr. K. Anandan Nair, 
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UNIVERSITY OF KERALA
DEPARTMENT OF EDUCATION
THEORY AWARENESS TEST IN
PHYSICS FOR STANDARD IX

APPENDIX - V (A)

1. Which of the following is true about the concept of "mass"? (A) Mass is a scalar quantity. (B) Mass is a vector quantity.
2. Which of the following is the formula for calculating viscosity? (A) \( \eta = \frac{F}{v} \) (B) \( \eta = \frac{F}{A} \)
3. What is the formula for calculating the force of a fluid on a surface? (A) \( F = \rho g A h \) (B) \( F = \rho g A v \)
4. Which of the following is true about the concept of "velocity"? (A) Velocity is a scalar quantity. (B) Velocity is a vector quantity.
5. Which of the following is true about the concept of "momentum"? (A) Momentum is a scalar quantity. (B) Momentum is a vector quantity.
6. Which of the following is true about the concept of "work"? (A) Work is a scalar quantity. (B) Work is a vector quantity.

1. Which of the following is true about the concept of "mass"?
   (A) Mass is a scalar quantity.
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2. Which of the following is the formula for calculating viscosity?
   (A) \( \eta = \frac{F}{v} \)
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   (B) \( F = \rho g A v \)

4. Which of the following is true about the concept of "velocity"?
   (A) Velocity is a scalar quantity.
   (B) Velocity is a vector quantity.

5. Which of the following is true about the concept of "momentum"?
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   (B) Momentum is a vector quantity.

6. Which of the following is true about the concept of "work"?
   (A) Work is a scalar quantity.
   (B) Work is a vector quantity.
5 സ്വഭാവം" എന്ന് ലഭ്യമാക്കം നൽകുന്ന മേഖലയിലിന്റെ പകുതി നൽകാൻ ഏതെങ്കിലും സ്വഭാവം
   (a) സ്വഭാവം
   (b) സ്വഭാവം
   (c) സ്വഭാവം
   (d) സ്വഭാവം

6 അഏതു അഗ്രഭവനം സ്വഭാവം ലഭ്യമാക്കം നൽകുന്ന മേഖലയിലിന്റെ പകുതി നൽകാൻ
   (a) ശ്രമം
   (b) ശ്രമം
   (c) ശ്രമം
   (d) ശ്രമം

7 സ്വഭാവം" എന്ന് ലഭ്യമാക്കം നൽകുന്ന മേഖലയിലിന്റെ പകുതി
   (a) ലഭ്യമാക്കം (osmosis) ശ്രമം
   (b) ലഭ്യമാക്കം
   (c) ലഭ്യമാക്കം
   (d) ലഭ്യമാക്കം (diffusion) ശ്രമം

8 സ്വഭാവം ലഭ്യമാക്കം
   (a) ലഭ്യമാക്കം
   (b) ലഭ്യമാക്കം
   (c) ലഭ്യമാക്കം
   (d) ലഭ്യമാക്കം

9 സ്വഭാവം ലഭ്യമാക്കം
   (a) ലഭ്യമാക്കം
   (b) ലഭ്യമാക്കം
   (c) ലഭ്യമാക്കം
   (d) ലഭ്യമാക്കം

10 ലഭ്യമാക്കം
   (a) ലഭ്യമാക്കം
   (b) ലഭ്യമാക്കം
   (c) ലഭ്യമാക്കം
   (d) ലഭ്യമാക്കം

11 ലഭ്യമാക്കം
   (a) ലഭ്യമാക്കം
   (b) ലഭ്യമാക്കം
   (c) ലഭ്യമാക്കം
   (d) ലഭ്യമാക്കം

12 ലഭ്യമാക്കം
   (a) ലഭ്യമാക്കം
   (b) ലഭ്യമാക്കം
   (c) ലഭ്യമാക്കം
   (d) ലഭ്യമാക്കം
11.3

(a) ഹിജനം (Boiling point) നിയന്ത്രണം
(b) അക്ഷാംസിയാസം പ്രകൃതിസ്വഭാവത്തിന്റെ നിയന്ത്രണം
(c) പദാർത്ഥം പ്രകൃതിസ്വഭാവത്തിന്റെ (Boiling point) നിയന്ത്രണം
(d) പദാർത്ഥം പ്രകൃതിസ്വഭാവത്തിന്റെ (Soldering) നിയന്ത്രണം

14 പ്രായപ്രകാരം പ്രദാനം നിയന്ത്രണത്തിന്റെ
(a) പ്രായപ്രകാരം നിയന്ത്രണം
(b) പ്രായപ്രകാരം നിയന്ത്രണം
(c) പ്രായപ്രകാരം നിയന്ത്രണം
(d) പ്രായപ്രകാരം നിയന്ത്രണം

15 പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ് മരുന്നുകൾ ഉപയോഗിക്കുന്ന പ്രായപ്രകാരം
(a) പ്രായപ്രകാരം നിയന്ത്രണം
(b) പ്രായപ്രകാരം നിയന്ത്രണം
(c) പ്രായപ്രകാരം നിയന്ത്രണം
(d) പ്രായപ്രകാരം നിയന്ത്രണം

16 ദൃഢതക്കുറിക്കുന്ന പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ് ഉപയോഗത്തിലെ നിയന്ത്രണം
(a) പ്രായപ്രകാരം നിയന്ത്രണം
(b) പ്രായപ്രകാരം നിയന്ത്രണം
(c) പ്രായപ്രകാരം നിയന്ത്രണം
(d) പ്രായപ്രകാരം നിയന്ത്രണം

17 ദൃഢതക്കുറിക്കുന്ന ദൃഢതക്കുറിക്കുന്ന പ്രായപ്രകാരം നിയന്ത്രണം
(a) പ്രായപ്രകാരം നിയന്ത്രണം
(b) പ്രായപ്രകാരം നിയന്ത്രണം
(c) പ്രായപ്രകാരം നിയന്ത്രണം
(d) പ്രായപ്രകാരം നിയന്ത്രണം

18 പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ് (Boiling point) ഉപയോഗം
(a) പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ് (Boiling point) ഉപയോഗം
(b) പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ് (Boiling point) ഉപയോഗം
(c) പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ് (Boiling point) ഉപയോഗം
(d) പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ് (Boiling point) ഉപയോഗം

19 പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ് (Soldering) ഉപയോഗം
(a) പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ് (Soldering) ഉപയോഗം
(b) പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ് (Soldering) ഉപയോഗം
(c) പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ് (Soldering) ഉപയോഗം
(d) പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ് (Soldering) ഉപയോഗം

20 പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ് (Soldering) ഉപയോഗം
(a) പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ് 
(b) പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ് 
(c) പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ് 
(d) പ്രായപ്രകാരം പാടു ബാഹ്യാംഗസ്
21  
(a) 100 cm ते  
(b) अंतरास्तिरी (at infinity)  
(c) "अस्तिरीकरण" अवधि के अंतर्गत अंतरास्तिरी अंतरास्तिरी (least distance of distinct vision)  
(d) अंतरास्तिरी अवधि के अंतर्गत अंतरास्तिरी अंतरास्तिरी  

22  
(a) "अस्तिरीकरण" अवधि  
(b) अंतरास्तिरी "अस्तिरी" (least distance of distinct vision)  
(c) अंतरास्तिरी "अस्तिरी"  
(d) अंतरास्तिरी "अस्तिरी"  

23  
(a) "अस्तिरीकरण" अवधि  
(b) अंतरास्तिरी "अस्तिरी"  
(c) "अस्तिरीकरण" अवधि के अंतर्गत अंतरास्तिरी "अस्तिरी"  
(d) अंतरास्तिरी "अस्तिरी"  

24  
(a) "अस्तिरीकरण" अवधि  
(b) अंतरास्तिरी "अस्तिरी"  
(c) अंतरास्तिरी "अस्तिरी"  
(d) अंतरास्तिरी "अस्तिरी"  

25  
(a) "अस्तिरीकरण" अवधि  
(b) अंतरास्तिरी "अस्तिरी"  
(c) "अस्तिरीकरण" अवधि  
(d) अंतरास्तिरी "अस्तिरी"  

26  
(a) 1-0 ग्राम  
(b) 2-0 ग्राम  
(c) 3-0 ग्राम  
(d) 10-0 ग्राम  

27  
(a) "अस्तिरीकरण" अवधि  
(b) "अस्तिरीकरण" अवधि  
(c) "अस्तिरीकरण" अवधि  
(d) "अस्तिरीकरण" अवधि  

28  
(a) अंतरास्तिरी "अस्तिरी"  
(b) "अस्तिरीकरण" अवधि  
(c) "अस्तिरीकरण" अवधि  
(d) "अस्तिरीकरण" अवधि
29. സമാന്തര വ്യതിയാനമെന്ന പ്രത്യേകതയിലെ നേരിൽ നിന്നും നാം സമാന്തരവിവരിക്കാൻ പരിഹാര നൽകുന്നു:

(a) ആളിവാ പിന്നെ തെള്ളാം കുട്ടിക്കുന്നു
(b) തെള്ളാം പിന്നെ തെള്ളാം കുട്ടിക്കുന്നു
(c) തെള്ളാം പിന്നെ തെള്ളാം കുട്ടിക്കുന്നു
(d) തെള്ളാം പിന്നെ തെള്ളാം കുട്ടിക്കുന്നു

30. നേരിൽ ഇണക്കിയെന്ന സമാന്തരമായ വ്യതിയാനത്തിന്റെ പരിഹാരം പിന്നീട് പുനരാധാരിച്ച് നൽകുന്നു:

(a) തെള്ളാം വലിപ്പം കുറയ്ക്കുന്നു
(b) തെള്ളാം വലിപ്പം കുറയ്ക്കുന്നു
(c) തെള്ളാം വലിപ്പം കുറയ്ക്കുന്നു
(d) തെള്ളാം വലിപ്പം കുറയ്ക്കുന്നു
APPENDIX - V (B)

UNIVERSITY OF KERALA
DEPARTMENT OF EDUCATION

PRACTICAL APPLICATION AWARENESS TEST IN PHYSICS FOR STANDARD IX

1) The radius of curvature of a concave mirror is 30 cm. The formula to calculate the focal length of the mirror is:
   a) $\frac{1}{f} = \frac{1}{r_1} + \frac{1}{r_2}
   b) $\frac{1}{f} = \frac{1}{r_2} - \frac{1}{r_1}
   c) $\frac{1}{f} = \frac{1}{r_1} - \frac{1}{r_2}$
   d) $\frac{1}{f} = \frac{1}{r_1} + \frac{1}{r_2}$

2) A light ray enters a glass block at an angle of incidence of 30°. The formula to calculate the angle of refraction is:
   a) $\sin \theta_1 = \sin \theta_2$
   b) $\sin \theta_2 = \sin \theta_1$
   c) $\sin \theta_1 \sin \theta_2 = \sin \phi$
   d) $\sin \theta_1 \cos \theta_2 = \sin \phi$

3) A container with water has a depth of 20 cm. The formula to calculate the pressure at the bottom of the container is:
   a) $P = \rho g h$
   b) $P = \frac{\rho g h}{2}$
   c) $P = \rho g^2 h$
   d) $P = \rho g h^2$

4) An object is placed 20 cm in front of a concave mirror. The formula to calculate the image distance is:
   a) $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$
   b) $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$
   c) $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$
   d) $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$

(radius of curvature)
5. നാം ഓരോന്നിന്റെ നാമധാരികൾക്ക് സമാധാനം നൽകണം.
   (a) ഓരോന്നും ഓരോ നാമധാരിക്ക് സമാധാനം
   (b) ഓരോന്നും ഓരോ നാമധാരിക്ക് സമാധാനം
   (c) ഓരോന്നും ഓരോന്നും സമാധാനം
   (d) ഓരോന്നും ഓരോന്നും സമാധാനം

6. ക്രമീകരണം നിലനിൽക്കുന്നത് സമാധാനം നൽകണം.
   (a) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്
   (b) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്
   (c) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്
   (d) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്

7. നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്. നിലനിൽക്കുന്നത്.
   (a) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്
   (b) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്
   (c) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്
   (d) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്

8. നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്. നിലനിൽക്കുന്നത്.
   (a) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്
   (b) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്
   (c) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്
   (d) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്

9. നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്. നിലനിൽക്കുന്നത്.
   (a) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്
   (b) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്
   (c) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്
   (d) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്

10. നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്.
    (a) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്
    (b) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്
    (c) നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്
    (d) നിലനിൽക്കുന്നത്

11. എന്താണ് നിലനിൽക്കുന്നത് എന്താണ് നിലനിൽക്കുന്നത്? എന്താണ് നിലനിൽക്കുന്നത്?
    A. നിലനിൽക്കുന്നത് നിലനിൽക്കുന്നത്
    B. നിലനിൽക്കുന്നത്
    C. നിലനിൽക്കുന്നത്
    (a) A അല്പം B അൽപം
    (b) B അൽപം C അൽപം
    (c) A അൽപം C അൽപം
    (d) A അൽപം B അൽപം C അൽപം

12. എന്തു നിലനിൽക്കുന്നത് എന്തു നിലനിൽക്കുന്നത് എന്തു നിലനിൽക്കുന്നത് എന്തു നിലനിൽക്കുന്നത്?
    (a) നിലനിൽക്കുന്നത്
    (b) നിലനിൽക്കുന്നത്
    (c) നിലനിൽക്കുന്നത്
    (d) നിലനിൽക്കുന്നത്
13. (a) റമു എന്ന ഉപകരണം വിപണിയിൽ വിൽക്കുന്നതായി കാണപ്പെടുന്നു. 
(b) സാമ്പത്തികമായി കാണപ്പെടുന്നു.
(c) നിരാതൃത്വം എന്നാണ് നിശ്ചയിക്കുക?
(d) എല്ലാം

14. എന്തു പ്രക്രമം വിജ്ഞാനമായി കിട്ടുന്നതിന് ഉപകരണമായി കിട്ടുന്ന ഉപകരണത്തിന്റെ മാനവസ്വഭാവം എന്ന കാര്യത്തിൽ സമീപം അടക്കം ചെയ്യാം;
(a) സാമ്പത്തികമായി സംസ്കാരം
(b) വിത്താനത്തെ പ്രകാരം
(c) സാമ്പത്തികമായി മാത്രமായി
(d) മാത്രം

15. എന്തു പ്രക്രമം വിജ്ഞാനമായി കിട്ടുന്ന ഉപകരണത്തിന് ഉപകരണത്തിന്റെ മാനവസ്വഭാവം എന്നു കാണാം?
(a) ഡിജിറ്റൽ സംസ്കാരം
(b) വിത്താനത്തെ പ്രകാരം
(c) സാമ്പത്തികമായി
(d) മാത്രം

16. പ്രവാചകം വിജ്ഞാനമായി ഉപകരണത്തിന് വിജ്ഞാനമായി ഉപകരണത്തിന്റെ മാനവസ്വഭാവം എന്നാണു കണക്കാക്കാവുന്നത്?
(a) സാമ്പത്തികമായി സംസ്കാരം
(b) വിത്താനത്തെ പ്രകാരം
(c) സാമ്പത്തികമായി
(d) മാത്രം

17. എന്തു പ്രക്രമം വിജ്ഞാനമായി ഉപകരണത്തിന് ഉപകരണത്തിന്റെ മാനവസ്വഭാവം എന്നു കാണാം?
(a) സാമ്പത്തികമായി സംസ്കാരം
(b) വിത്താനത്തെ പ്രകാരം
(c) സാമ്പത്തികമായി
(d) മാത്രം

18. എന്തു പ്രക്രമം വിജ്ഞാനമായി ഉപകരണത്തിന് ഉപകരണത്തിന്റെ മാനവസ്വഭാവം എന്നു കാണാം?
(a) സാമ്പത്തികമായി സംസ്കാരം
(b) വിത്താനത്തെ പ്രകാരം
(c) സാമ്പത്തികമായി
(d) മാത്രം

19. എന്തു പ്രക്രമം വിജ്ഞാനമായി ഉപകരണത്തിന് ഉപകരണത്തിന്റെ മാനവസ്വഭാവം എന്നു കാണാം?
(a) സാമ്പത്തികമായി
(b) വിത്താനത്തെ പ്രകാരം
(c) സാമ്പത്തികമായി
(d) മാത്രം

20. എന്തു പ്രക്രമം വിജ്ഞാനമായി ഉപകരണത്തിന് ഉപകരണത്തിന്റെ മാനവസ്വഭാവം എന്നു കാണാം?
(a) സാമ്പത്തികമായി
(b) വിത്താനത്തെ പ്രകാരം
(c) സാമ്പത്തികമായി
(d) മാത്രം
21 (a) ഗുരുന്മിതിയിലെ പുരുഷന്മാരൊട്ടടിക്കാൻ ജനാധിപത്യ നടത്തി എന്നു നിരൂപിക്കുന്ന ലോകത്തിലെ പ്രധാന പ്രവൃത്തികൾ എന്നു സൂചിപ്പിക്കുന്ന 
(b) പ്രതിനിധികളുടെ സമ്പ്രദായത്തിലെ സാമൂഹ്യസേവനം 
(c) ജനാധിപത്യ നടത്തി എന്നു നിരൂപിക്കുന്ന 
(d) പ്രതിനിധികളുടെ സമ്പ്രദായത്തിലെ സാമൂഹ്യസേവനം 

22 (a) അധികാരം നൽകാൻ അതിനർത്ഥം അപകടം അംഗ്യാതിയിലെ അറിയൽ അസാധാരണമായി ഇതിന്റെ അടയാളം ഇതിന്റെ അടയാളം 
(b) അധികാരം നൽകാൻ അതിനർത്ഥം 
(c) സാമൂഹ്യസേവനം മൂല്യപ്പെട്ടതാണ് 
(d) എണ്ണാണുണ്ടാകുകയെന്നു 

23 സമ്പൂർണ്ണ മുൻകോട്ടിലിലെ കരാറുകൾ 
(a) കരാറ് സൂചിപ്പിക്കുന്ന 
(b) സമൂഹാത്മക സാമൂഹ്യാത്മക സാമൂഹ്യാത്മക 
(c) സമൂഹാത്മക സാമൂഹ്യാത്മക സാമൂഹ്യാത്മക 
(d) പ്രതിനിധികൾ സാമൂഹ്യാത്മക 

24 അധികാരം നൽകാൻ അതിനർത്ഥം ഇതിന്റെ അടയാളം 
(a) സമൂഹാത്മക സാമൂഹ്യാത്മക 
(b) സമൂഹാത്മക സാമൂഹ്യാത്മക 
(c) സമൂഹാത്മക സാമൂഹ്യാത്മക 
(d) സമൂഹാത്മക സാമൂഹ്യാത്മക 

25 അധികാരം നൽകാൻ അതിനർത്ഥം ഇതിന്റെ അടയാളം 
(a) പ്രത്യേകിച്ചു 
(b) സമൂഹാത്മക 
(c) സേവനം 
(d) ആഴദാം 

26 സമൂഹാത്മക സാമൂഹ്യാത്മക സാമൂഹ്യാത്മക സാമൂഹ്യാത്മക സാമൂഹ്യാത്മക 
(a) സ്റ്റുഡിയോ സ്റ്റുഡിയോ 
(b) സ്റ്റുഡിയോ 
(c) സ്റ്റുഡിയോ 
(d) സ്റ്റുഡിയോ 

27 സാമൂഹ്യചരിത്ര അവയുടെയും അതിനർത്ഥം ഇതിന്റെ അടയാളം 
(a) സമൂഹാത്മക 
(b) സമൂഹാത്മക 
(c) സമൂഹാത്മക 
(d) സമൂഹാത്മക 

28 അധികാരം നൽകാൻ അതിനർത്ഥം 
(a) സമൂഹാത്മക 
(b) സമൂഹാത്മക 
(c) സമൂഹാത്മക 
(d) സമൂഹാത്മക 

29. നിരീക്ഷണോടെ ചുറ്റുമെല്ലാം‌നിലകൾ അടുത്ത് രണ്ട്‌ അനുസ്മരണിക്കുന്ന പ്രത്യേകഭാഗത്തിലേക്ക് അധികം ചെറുകാണാൻ, വിശദീകരണങ്ങൾ ഉപയോഗിച്ച്

(a) നിർദ്ദേശ ഉപയോഗിച്ച്
(b) വിശദീകരണം
(c) അനുമാനം
(d) മാത്രം ഉപയോഗിച്ച്

30. പ്രദർശണത്തിൽ പഠിക്കുന്നതു വിശദീകരണങ്ങൾ. പ്രദർശണത്തിന്റെ കാലാവധി നിരീക്ഷണോടെ അനുസ്മരണിക്കുന്ന സന്യാസി നിശ്ചയിച്ച വിശദീകരണങ്ങൾ ഉപയോഗിച്ച് ചരിത്രാവശ്യമായി

(a) ചരിത്രസ്ഥാപനങ്ങൾ ഉപയോഗിച്ച്
(b) വിശദീകരണം
(c) നിർദ്ദേശങ്ങളെത്തിക്കുന്ന അനുമാനം
(d) സകലത്തിന്റെ അനുമാനം
APPENDIX - VI (A)

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THEORY AWARENESS TEST IN PHYSICS
STANDARD X

1. പുതിയ ആളുകളെയുള്ള ഉള്ളി എന്നീയൊറ്റെങ്ങനെ എന്താണ് അത് പറഞ്ഞുകൊള്ളും?
   (a) ഉള്ളി
   (b) അയാളും
   (c) അതിപുതിയ
   (d) ശീഷ്യൻ

2. വിദ്യാഭ്യാസം ആരംഭിക്കാൻ എന്തു പൂച്ച ചെയ്യണം?
   (a) എന്തു പൂച്ച
   (b) കാൽ
   (c) കാഴ്ച
   (d) ശ്മശാന

3. ആന്റ്‌റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്റെക്റ്ത
5. ടെയ്ലറ് സ്കോട്ട് സമയം കാണുന്നതു വാനക്കു തുടരുന്നതാണെങ്കിൽ എങ്ങനെ സൂചിപ്പിക്കുന്നു?
   (a) മിനുകൾകളുടെ വാനക്കണം
   (b) മിനുകൾകളുടെ വാനക്കണം
   (c) മിനുകൾകളുടെ വാനക്കണം
   (d) മിനുകൾകളുടെ വാനക്കണം

6. യാന്ത്രിക ഉപയോഗത്തിലെ തുടരുന്നതാണെല്ലാം അതിനു നിരക്ക് സൂചിപ്പിക്കുന്നു?
   (a) മുകളിലെ വാനക്കണം
   (b) മുകളിലെ വാനക്കണം
   (c) മുകളിലെ വാനക്കണം
   (d) മുകളിലെ വാനക്കണം

7. ദൂരീകരണ പ്രക്രിയകൾ ഏതെങ്കിലും വാനക്കണം വാനക്കണം ആവശ്യമായ സൂചിപ്പിക്കുന്ന പ്രക്രിയയാണെങ്കിൽ എങ്ങനെ സൂചിപ്പിക്കുന്നു?
   (a) മിനുകൾ
   (b) മിനുകൾ
   (c) മിനുകൾ
   (d) മിനുകൾ

8. എകദേശം കാക്കനായിരിക്കുക എങ്ങിനെ വാനക്കണം വാനക്കണം വാനക്കണം വാനക്കണം വാനക്കണം 
   (a) മുകളിലെ വാനക്കണം
   (b) മുകളിലെ വാനക്കണം
   (c) മുകളിലെ വാനക്കണം
   (d) മുകളിലെ വാനക്കണം

9. ആവശ്യമായിരിക്കുക എങ്ങിനെ കാക്കനായിരിക്കുക, കാക്കനായിരിക്കുക
   (a) മിനുകൾ
   (b) മിനുകൾ
   (c) മിനുകൾ
   (d) മിനുകൾ

10. എകദേശം കാക്കനായിരിക്കുക, കാക്കനായിരിക്കുക, കാക്കനായിരിക്കുക
    (a) മിനുകൾ
    (b) മിനുകൾ
    (c) മിനുകൾ
    (d) മിനുകൾ

11. എകദേശം കാക്കനായിരിക്കുക, വാനക്കണം വാനക്കണം വാനക്കണം വാനക്കണം
    (a) മിനുകൾ
    (b) മിനുകൾ
    (c) മിനുകൾ
    (d) മിനുകൾ

12. എകദേശം കാക്കനായിരിക്കുക എന്ന് എന്നാണെങ്കിൽ എന്നാണെങ്കിൽ
    (a) മിനുകൾ
    (b) മിനുകൾ
    (c) മിനുകൾ
    (d) മിനുകൾ
13 നല്ലൊരു പ്രശ്നം പ്രതിരീതിയാണ്‌ കണക്കുകൾ അടയാളപ്പെടുത്തുന്നതിനുള്ള സേവനം നല്‍കുന്നതെങ്കിലും ക്രമീകരിക്കാനും, എന്നാണ്‌ ക്രമീകരിക്കാനും എന്ന്‌ വിവരിച്ചു
   (a) ഉയരതലംഏക
   (b) കെട്ടിപ്പെട്ടുള്ള
   (c) പെട്ടുവിശേഷം
   (d) കായികപ്രത്യേകി

14 എന്ന സാമ്പത്തിക സൂച്യുക്കളായി എന്ന പരിശീലനം ചെയ്യാനുള്ള പ്രയാസമെങ്കിലും എന്ന പ്രായം എങ്കിലും
   (a) പ്രകടനം
   (b) കെട്ടിപ്പെട്ടുള്ള
   (c) പെട്ടുവിശേഷം
   (d) കായികപ്രത്യേകി

15 വാസ്തുശില്പാഭ്യാസത്തിനു് എന്ന പരിശീലനം എന്ന പരിശീലനം എന്ന സാമ്യമീന്തുമായി എന്ന സാമ്യമീന്തുമായി
   (a) ഉയരതലംഏക
   (b) കെട്ടിപ്പെട്ടുള്ള
   (c) പെട്ടുവിശേഷം
   (d) കായികപ്രത്യേകി

16 വംശവും എന്ന സാമ്യമീന്തുമായി എന്ന പ്രായം എന്ന സാമ്യമീന്തുമായി
   (a) ഉയരതലംഏക
   (b) കെട്ടിപ്പെട്ടുള്ള
   (c) പെട്ടുവിശേഷം
   (d) കായികപ്രത്യേകി

17 കോംപ്യുട്ടർ സൈറ്റുകൾ പ്രതിഷേധ പ്രതിഷേധ എന്ന പ്രായം എന്ന സാമ്യമീന്തുമായി
   (a) ഉയരതലംഏക
   (b) കെട്ടിപ്പെട്ടുള്ള
   (c) പെട്ടുവിശേഷം
   (d) കായികപ്രത്യേകി

18 കൊടക്കുലക്കാരുടെ പ്രായം എന്ന പ്രായം എന്ന സാമ്യമീന്തുമായി
   (a) ഉയരതലംഏക
   (b) കെട്ടിപ്പെട്ടുള്ള
   (c) പെട്ടുവിശേഷം
   (d) കായികപ്രത്യേകി

19 കൊടക്കുലക്കാരുടെ പ്രായം എന്ന പ്രായം എന്ന സാമ്യമീന്തുമായി
   (a) ഉയരതലംഏക
   (b) കെട്ടിപ്പെട്ടുള്ള
   (c) പെട്ടുവിശേഷം
   (d) കായികപ്രത്യേകി
20. 다음의 각각의 단어는 어떤 단어가 아닌가요?
(a) 오순봉
(b) 나의
(c) 당신
(d) 우리가

21. 다음의 문제들의 올바른 답은?
(a) 성의
(b) 고통
(c) 나의
(d) 우리의

22. 다음의 문제들의 올바른 선택은?
(a) 이
(b) 저
(c) 그
(d) 우리

23. 다음의 문제들의 올바른 선택은?
(a) 이
(b) 저
(c) 그
(d) 우리

24. 다음의 문제들의 올바른 선택은?
(a) 이
(b) 저
(c) 그
(d) 우리

25. 다음의 문제들의 올바른 선택은?
(a) 이
(b) 저
(c) 그
(d) 우리

26. 다음의 문제들의 올바른 선택은?
(a) 이
(b) 저
(c) 그
(d) 우리

27. 다음의 문제들의 올바른 선택은?
(a) 이
(b) 저
(c) 그
(d) 우리
28 എന്റെ D.C. എഞ്ചിനീയർ പോയിന്റ് തുലയിലെ മാത്രമേ പൊതുന്തെ തുടക്കമായി രേഖാചിത്രീകൃതം അനവധി സമയമായി നടയ്ക്കാനുള്ള.
(a) രേഖാചിത്രീകരണം
(b) പ്രായാന്തകരം
(c) അനുസരണം
(d) മുസിരിലോ സവിശേഷ

29 കുഴിയാമുക്കാർത്തിയിൽ സ്റ്റം സ്വഭാവാദയാണിന്റെ പ്രതിപാദം, ഇന്ത്യയുടെ ആന്തരിക മേഖലായി?
(a) ഗണിതശാസ്ത്രം
(b) ഭൌതികവിജ്ഞാനം
(c) സാമൂഹികവിജ്ഞാനം
(d) മാതൃതദന

30 വിദേശരാത്രിക്കുടിപ്പിച്ചെയ്യുന്ന രാത്രിമാണിക്യത്തിൽ എന്തു പ്രതിപാദം?
(a) പൂര്ണമായും സവിശേഷം രേഖാചിത്രീകരണം
(b) എഞ്ചിനീയർ പ്രായാന്തകരം (രേഖാചിത്രീകരണം)
(c) ചെറിയ സൂപ്പർ ജീനിസ്റ്റാവിൻ
(d) പ്രായാന്തകരം
UNIVERSITY OF KERALA
DEPARTMENT OF EDUCATION
PRACTICAL APPLICATION AWARENESS TEST IN
PHYSICS FOR STANDARD X

APPENDIX - VI (B)

1. Which of the following statements is true about the practical application awareness test in physics for Standard X?
   (a) [Statement A]
   (b) [Statement B]
   (c) [Statement C]
   (d) [Statement D]

2. Among the following options, which one is correct regarding the practical application awareness test in physics for Standard X?
   (a) [Option A]
   (b) [Option B]
   (c) [Option C]
   (d) [Option D]

3. What is the correct answer for the following question regarding the practical application awareness test in physics for Standard X?
   (a) [Answer A]
   (b) [Answer B]
   (c) [Answer C]
   (d) [Answer D]
4. (a) (b) (c) (d) 

5. (a) (b) (c) (d) 

6. (a) (b) (c) (d) 

7. (a) (b) (c) (d) 

8. (a) (b) (c) (d) 

9. (a) (b) (c) (d)
10  a) 2 mm, b) 3 mm, c) 4 mm, d) 5 mm. Which of these are the sizes of the insulators? (i.e., 2 mm, 3 mm, 4 mm, 5 mm)

11 (a) 2 mm, (b) 3 mm, (c) 4 mm, (d) 5 mm.

12 (a) 11 mm, (b) 12 mm, (c) 13 mm, (d) 14 mm.

13 (a) 15 mm, (b) 16 mm, (c) 17 mm, (d) 18 mm.

14 (a) 19 mm, (b) 20 mm, (c) 21 mm, (d) 22 mm.

15 (a) 23 mm, (b) 24 mm, (c) 25 mm, (d) 26 mm.

16 (a) 27 mm, (b) 28 mm, (c) 29 mm, (d) 30 mm.

17 (a) 31 mm, (b) 32 mm, (c) 33 mm, (d) 34 mm.
18  സാംഭവിച്ച നായാമാരുടെ സമരാപ്പിതക്കൊണ്ട് വാദമായി പ്രസ്താവിച്ചതിന്റെ കാരണം,

(a) അതിന്റെ നിർദ്ദേശം "സമീപ കുഞ്ചമാവുക"
(b) അതിന്റെ നിർദ്ദേശം "സമീപ കുഞ്ചമാവുക"
(c) അതിന്റെ നിർദ്ദേശം "ഒരു സമീപ കുഞ്ചമാവുക"
(d) അതിന്റെ നിർദ്ദേശം "പിന്നീട് കുഞ്ചമാവുക"

19  ഇവിടെ (രേഖയിൽ സ്പീഡ് കൊണ്ട്) സമരാപ്പിതക്കൊണ്ട് "സമീപക്ക് പ്രസ്താവിച്ച കാരണം

(a) അതിന്റെ നിർദ്ദേശം "പ്രസ്താവിക്കം പിന്നീട് കുഞ്ചമാവുക"
(b) അതിന്റെ നിർദ്ദേശം "പിന്നീട് കുഞ്ചമാവുക"
(c) അതിന്റെ നിർദ്ദേശം "പിന്നീട് കുഞ്ചമാവുക"
(d) അതിന്റെ നിർദ്ദേശം "പിന്നീട് കുഞ്ചമാവുക"

20  ഹെൽഡ്(ഒൾ) സ്പീഡ് കൊണ്ട് (രേഖയിൽ) "സമരാപ്പിതക്കൊണ്ട് ഉല്പാദനം നടത്താനെ അധിനായനം

(a) ഹെൽഡ് ചെയ്തിരിക്കുന്ന പിന്നീട് കുഞ്ചമാത്രമായി പ്രസ്താവിച്ചതിന്റെ കാരണം
(b) ഹെൽഡ് ചെയ്തിരിക്കുന്ന പിന്നീട് കുഞ്ചമാത്രം
(c) ഹെൽഡ് ചെയ്തിരിക്കുന്ന പിന്നീട് കുഞ്ചമാത്രം
(d) ഹെൽഡ് ചെയ്തിരിക്കുന്ന പിന്നീട് കുഞ്ചമാത്രം

21  അപേക്ഷാപ്പെടുത്തി(രേഖയിൽ) "സമരാപ്പിതക്കൊണ്ട് ഉല്പാദനം നടത്താനെ അധിനായനം

(a) അപേക്ഷാപ്പെടുത്തി പിന്നീട് കുഞ്ചമാത്രം
(b) അപേക്ഷാപ്പെടുത്തി പിന്നീട് കുഞ്ചമാത്രം
(c) അപേക്ഷാപ്പെടുത്തി പിന്നീട് കുഞ്ചമാത്രം
(d) അപേക്ഷാപ്പെടുത്തി പിന്നീട് കുഞ്ചമാത്രം

22  സമരാമയം അനുസരിച്ച് (രേഖയിൽ) "സമരാപ്പിതക്കൊണ്ട് ഉല്പാദനം നടത്താനെ അധിനായനം

(a) സമരാമയം പിന്നീട് കുഞ്ചമാത്രം
(b) സമരാമയം പിന്നീട് കുഞ്ചമാത്രം
(c) സമരാമയം പിന്നീട് കുഞ്ചമാത്രം
(d) സമരാമയം പിന്നീട് കുഞ്ചമാത്രം

23  എന്നിങ്ങനെ (രേഖയിൽ) "സമരാപ്പിതക്കൊണ്ട് ഉല്പാദനം നടത്താനെ അധിനായനം

(a) എണ്ണാകെട്ട് 239
(b) എണ്ണാകെട്ട്
(c) എണ്ണാകെട്ട്
(d) എണ്ണാകെട്ട്
24. (a) "long wave radio"  
    (b) "short wave radio"  
    (c) "AM radio"  
    (d) "FM radio"

25. 110 V  
    (a) "electricity"  
    (b) "gas"  
    (c) "water"  
    (d) "oil"

26. (a) "water"  
    (b) "gas"  
    (c) "electricity"  
    (d) "oil"

27. (a) "electricity"  
    (b) "gas"  
    (c) "water"  
    (d) "oil"

28. (a) "electricity"  
    (b) "gas"  
    (c) "water"  
    (d) "oil"

29. (a) "electricity"  
    (b) "gas"  
    (c) "water"  
    (d) "oil"

30. 230 V  
    (a) "electricity"  
    (b) "gas"  
    (c) "water"  
    (d) "oil"
INSTRUCTIONS

1. This is a test to measure the physics theory awareness in physics.

2. This test contains 30 questions which are to be answered within 45 minutes.

3. Each item has four answers indicated by a, b, c and d, out of which you have to choose the most appropriate answer.

4. Be careful not to write anything on the test booklet.

5. Write your name and name of the school on the sheet provided before you start answering the questions.

6. After answering the questions, return the answer sheet and the test booklet.

1. Which of the following statements is true regarding long-sightedness?
   A. Longsightedness is caused when the eyeball becomes smaller.
   B. Longsightedness is caused when the focal length of eye lens is large.
   (a) A is the correct.
   (b) B is the correct.
   (c) Both A and B are not correct
   (d) Both A and B are correct.

2. The image formed by a convex mirror compared to the object is usually,
   (a) inverted and imaginary
   (b) rect and smaller
   (c) real and inverted
   (d) larger and virtual
3. When the object is placed at the focus of a concave mirror, the image is formed
   (a) between F and mirror
   (b) between F and 2F
   (c) beyond 2F
   (d) at infinity

4. Small insects float on water in ponds and in open tanks. This is possible due to
   (a) viscosity
   (b) surface tension
   (c) adhesion
   (d) cohesion

5. For shortsightedness rays from distant objects are brought to focus at a point
   (a) on the retina
   (b) in between eyelens and retina
   (c) behind the retina
   (d) in front of the retina

6. If the diameter of a capillary tube is doubled, the rise of water in the capillary tube.
   (a) will be increased
   (b) will be decreased
   (c) will not change
   (d) cannot be anticipated

7. The rise of water in plants is due to
   (a) osmosis
   (b) capillarity
   (c) atmospheric pressure
   (d) diffusion

8. Surface tension exists
   (a) in the bulk of the liquid
   (b) only on the top surface of the liquid
   (c) both on the surface and bulk of the liquid
   (d) only along the lines of contact with the container.
9. Surface tension
(a) increases uniformly with temperature
(b) does not change with temperature
(c) decrease with temperature
(d) increases at random with temperature

10. Frictional force
(a) can be completely avoided
(b) can be minimised
(c) cannot be minimised
(d) remains same

11. Friction can be minimised by
(a) using ball and roller bearings
(b) lubricating
(c) polishing
(d) all the above

12. Centrifugal force is directed
(a) away from the centre
(b) towards the centre
(c) along the tangent drawn to the circle
(d) along the circumference of the circle

13. Which of the following is the best non-conductor?
(a) air
(b) paper
(c) vaccum
(d) glass

14. The size of a solid increases when
(a) heat energy is given
(b) electric energy is given
(c) mechanical energy is given
(d) sound energy is given

15. Lubricants are introduced between two solid surfaces for reducing
(a) elastic force
(b) electrostatic force
(c) magnetic force
(d) frictional force
16. When liquid ammonia evaporates, temperature
(a) increases  
(b) decreases  
(c) remains constant  
(d) increases and then decreases

17. Which of the following statement is correct concerning an insulator?
(a) It is a good conductor  
(b) It is a bad conductor  
(c) It absorbs heat  
(d) It radiates heat

18. When pressure on the surface of a liquid increases
(a) its volume increases  
(b) its volume decreases  
(c) its boiling point decreases  
(d) its boiling point increases

19. In oil lamps, the oil rises up in the weeks due to the
(a) pressure difference  
(b) property of viscosity  
(c) property of capillarity  
(d) temperature difference

20. Mechanical energy can be converted into
(a) sound energy  
(b) electrical energy  
(c) heat energy  
(d) all of the above

21. In a telescope the focal length of the eyepiece lens will be
(a) smaller than that of the objective lens  
(b) larger than that of the objective lens  
(c) same as that of the objective lens  
(d) almost same as that of the objective lens.
22. The working of a centrifuge machine is based on
(a) centripetal force
(b) centrifugal force
(c) gravitational force
(d) electrostatic force

23. When cells are connected in series
(a) the current is increased
(b) the potential difference is increased
(c) the potential difference is decreased.
(d) the resistance is unchanged.

24. The melting point of an impure substance will be
(a) greater than that of the pure substance
(b) less than that of the pure substance
(c) same as that of the pure substance
(d) greater or less than that of the pure substance.

25. A sound heard by reflection and clearly distinguished from the original sound is
(a) echo
(b) resonance
(c) reverberation
(d) beats

26. Which of the following law supplies the definition of force?
(a) Newton's 1st Law
(b) Newton's 2nd Law
(c) Newton's 3rd Law
(d) Law of gravitation

27. Certain metals when cooled to very low temperature near absolute zero, they lose their resistance completing. These are called conductors.
(a) conductors
(b) semiconductors
(c) insulators
(d) super conductors
28. When a loud sound is produced in a closed room, a continuous rolling of sound persists for sometime. This phenomenon is known as

(a) reverberation
(b) resonance
(c) natural vibration
(d) forced vibration

29. A body moving in a circular path, tends to move along the tangent to the circular path in the absence of

(a) frictional force
(b) Centrifugal force
(c) Centripetal force
(d) Surface tension

30. Bats produce which of the following waves to detect obstacles in their way?

(a) Electromagnetic
(b) Infrasonic
(c) Ultrasonic
(d) Supersonic
APPENDIX - VII (B)

UNIVERSITY OF KERALA

DEPARTMENT OF EDUCATION

PRACTICAL APPLICATION AWARENESS
TEST IN PHYSICS FOR STANDARD IX

INSTRUCTIONS

1. This is a test to measure the practical application awareness in physics.
2. This test contains 30 questions which are to be answered within 45 minutes.
3. Each item has four answers indicated by a, b, c and d, out of which you have to choose the most appropriate answer.
4. Be careful not to write anything on the test booklet.
5. Write your name and name of the school on the sheet provided before you start answering the questions.
6. After answering the questions, return the answer sheet and the test booklet.

1. A person sees distant objects comfortably but wears spectacles while reading a book what type of lenses are used in his spectacles?
   (a) Concave lens
   (b) Convex lens
   (c) Planoconvex lens
   (d) Planoconcave lens.

2. The kind of mirror that a driver uses to get a maximum vision of his backside should be
   (a) Convex mirror
   (b) Concave mirror
   (c) Plane mirror
   (d) Spherical mirror
3. In a torch, the light source is placed at the
   (a) focus of concave mirror
   (b) pole of concave mirror
   (c) radius of curvature of concave mirror
   (d) none of the above.

4. Soaps and detergents help in cleaning the clothes because they
   (a) increase the surface tension of water
   (b) reduce the surface tension of water
   (c) absorb the impurities, duct etc.
   (d) change the chemical composition of the solution.

5. Shortsightedness can be remedied using
   (a) convex lens
   (b) concave lens
   (c) double convex lens
   (d) double concave lens

6. During summer, farmers usually keep the top soil layer loose. This is
   (a) to increase the soil fertility
   (b) to increase the capillary rise
   (c) to retain soil water in the top layers
   (d) to reduce the capillary rise of water to the surface of soil.

7. Clay is not dry compared to sandy soil because of
   (a) the nature of the particles
   (b) osmosis
   (c) the environment
   (d) capillarity action

8. When oil is spread on stagnant water, mosquitoes cannot breed because
   (a) surface tension increases and oxygen supply is cut off
   (b) surface tension decreases and oxygen supply is cur off
   (c) viscosity increases
   (d) viscosity decreases
9. Hot water is preferred for cleaning purpose than cold water because
   (a) cohesion is decreased
   (b) cohesion is increased
   (c) surface tension is increased
   (d) surface tension is decreased

10. Tennis shoes should have rubber soles rather than leather soles because
    (a) rubber sole is lighter than that of leather
    (b) rubber can be easily washed and cleaned
    (c) rubber gives a better appearance
    (d) rubber provides more friction than leather.

11. Which of the following statement/statements is/are true regarding friction?
    A. It causes wastage of energy
    B. It causes unnecessary wear and tear
    C. It helps in the smooth running of the machine

    (a) A and B correct
    (b) B and C correct
    (c) A and C correct
    (d) A, B and C correct

12. Fat can be separated from milk, in a cream separator because of
    (a) centrifugal force
    (b) centripetal force
    (c) cohesive force
    (d) gravitational force

13. Wood, plastics, ebonites, etc., are used for making the handles of pressure cookers, electric ion, etc. because they
    (a) conduct heat
    (b) conduct electricity
    (c) conduct heat and electricity
    (d) do not conduct heat and electricity.
14. When a metallic pendulum expands
   (a) it gains time
   (b) it loses time
   (c) it neither gains or loses
   (d) it stops

15. Oil is sprayed on moving parts of sewing machine, clock, etc., for
   (a) preventing damage
   (b) reducing friction
   (c) increasing friction
   (d) completely eliminating friction

16. Liquid ammonia can be used as a refrigerent because
   (a) it is a good solvent
   (b) it is easily available and cheap
   (c) it evaporates by increasing the temperature around
   (d) it evaporates by decreasing the temperature around

17. Woollen dresses are used in winter season because
   (a) they conduct heat easily
   (b) they conduct heat slowly
   (c) they absorb heat
   (d) they do not conduct heat

18. In a pressure cooker food is cooked faster because
   (a) boiling point of liquid is lowered
   (b) boiling point of liquid is raised
   (c) it absorbs heat energy quickly
   (d) it retains heat for a long time.

19. Soldering of two metals is possible on account of the property of
   (a) viscosity
   (b) elasticity
   (c) surface tension
   (d) adhesion
20. Light energy can be converted into electrical energy using a
   (a) dynamo
   (b) electric bulb
   (c) electric motor
   (d) solar cell

21. In a terrestrial telescope, the final image will be formed at
   (a) 100 cm.
   (b) infinity
   (c) least distance of distinct vision
   (d) none of the above

22. A centrifuge is used to
   (a) dry clothes
   (b) separate cream from milk
   (c) pump water
   (d) to separate particles from suspension

23. The batteries used in automobiles are made up of cells connected in
   (a) parallel
   (b) series
   (c) combination of parallel and series
   (d) alternatively parallel and series

24. In cold countries salt is sprinkled on the roads for removing snow because
   (a) when salt is dissolved the melting point of water increases
   (b) when salt is dissolved the melting point of water decreases
   (c) when salt is dissolved the temperature of surroundings increases
   (d) the increase in pressure causes the decrease in melting point of ice.
25. The property of sound which helps in using sound waves for measuring the depth of the sea is
   (a) wave motion
   (b) vibration
   (c) reflection
   (d) reverberation

26. A dirty carpet can be cleaned by beating it. This is in accordance with
   (a) Newton's 1st law
   (b) Newton's 2nd law
   (c) Newton's 3rd law
   (d) Law of gravitation

27. Electricity can be transmitted to distant places without loss of electrical energy with the use of
   (a) semi conductor
   (b) conductors
   (c) insulators
   (d) super conductors

28. The walls of cinema halls are generally covered with sound absorbing materials. This is done to reduce
   (a) frequency of sound
   (b) reverberation
   (c) resonance
   (d) forced vibration

29. The devices like dryer which is used to dry clothes employ the principle of
   (a) circular motion
   (b) rotational motion
   (c) vibration
   (d) translational motion

30. The kind of sound waves used to measure the depths of oceans and to locate other vessels or schools of fish at sea are
   (a) electromagnetic
   (b) Infrasonic
   (c) ultrasonic
   (d) supersonic
UNIVERSITY OF KERALA
DEPARTMENT OF EDUCATION

THEORY AWARENESS TEST IN PHYSICS FOR STD. X

DIRECTIONS

1. This is a test to measure the theory awareness in physics.
2. This test contains 30 questions which are to be answered in 45 minutes.
3. Each question has four answers indicated by a, b, c and d, out of which you have to choose the most appropriate answer.
4. Be careful not to write anything in the test booklet.
5. Write your name and name of school on the sheet provided before you start answering the questions.
6. After answering the questions, return the answer sheet and test booklet.

1. Which of the following has the greater wave length?
   (a) Red light
   (b) Violet light
   (c) Ultra violet
   (d) Infra red

2. Which of the following has less scattering?
   (a) Violet
   (b) Blue
   (c) Yellow
   (d) Red

3. Sun-burn is caused by the
   (a) ultra violet radiation
   (b) infra red radiation
   (c) X-rays
   (d) gamma rays
4. Of the different colours of the white light, which colour has the greatest wave length?
   (a) Red
   (b) Violet
   (c) Yellow
   (d) Green

5. The most suitable alloy for making high resistance wires is
   (a) alnico
   (b) inwar
   (c) canthol
   (d) nichrome

6. Safety fuse wire is made up of a material of
   (a) low resistance and high melting point
   (b) low resistance and low melting point
   (c) high resistance and high melting point
   (d) high resistance and low melting point

7. Which of the following is a safety device by which maximum limit of the current to be passed through an electric circuit can be controlled?
   (a) Choke
   (b) Fuse
   (c) Switch
   (d) Voltage stabiliser

8. The 'heating element' in household electric heating appliances is made up of a material of
   (a) high resistance and high melting point
   (b) high resistance and low melting point
   (c) low resistance and high melting point
   (d) low resistance and low melting point

9. If the length of a conductor is made half, its resistance.
   (a) increases
   (b) does not change
   (c) decreases to half
   (d) decreases to one-fourth
10. When the thickness of a wire increases, its resistance
   (a) increases
   (b) decreases
   (c) does not change
   (d) becomes zero

11. Fuse wire is included in an electric circuit to
   (a) increase the current
   (b) decrease the current
   (c) to check the excessive flow of current
   (d) to check the excessive flow of voltage

12. The capacity for doing work is known as
   (a) heat capacity of the body
   (b) sp. heat of the body
   (c) power of the body
   (d) energy of the body

13. When current is passed through copper sulphate solution during electrolysis, the copper ions are deposited.
   (a) on the cathode
   (b) on the anode
   (c) remains on the electrolyte
   (d) on the copper rod

14. Which of the following material is used to make temporary magnets?
   (a) Hard steel
   (b) Alnico
   (c) Steel
   (d) Soft iron

15. Which of the following retains a major part of the magnetism?
   (a) Electromagnet
   (b) Temporary magnet
   (c) Permanent magnet
   (d) The core of a transformer
16. In lightning conductor, the principle made use of is that charge gets accumulated at
(a) everywhere
(b) nowhere
(c) the flat ends
(d) the pointed ends

17. The purpose of providing petrol trucks with metal chains hanging from rear and dragging on the ground is to
(a) give extra strength for the truck
(b) help to reduce the spark due to friction
(c) serve the purpose of a safety device
(d) use when need arises

18. Which of the following has highest sp. heat?
(a) sand
(b) copper
(c) aluminium
(d) water

19. Which of the statement is true regarding a step-up transformer?
(a) the number of turns in the primary coil are greater than that in the secondary.
(b) The number of turns in the secondary are greater than that in the primary.
(c) The input A.C. is more than output A.C.
(d) The input A.C. is same as the output A.C.

20. Three-pin plugs are used in household electric circuits
(a) to control the current
(b) to control the voltage
(c) to ensure better safety
(d) to attach the plug more tightly

21. Which of the following are semi conductors?
(a) Boron and phospherous
(b) Copper and aluminium
(c) Silicon and germanium
(d) Cadmium and strontium
22. The rays that can pass through the body without causing too much damage are
   (a) X-rays
   (b) alpha rays
   (c) beta rays
   (d) gamma rays

23. In which of the following controlled nuclear fission takes place
   (a) nuclear bomb
   (b) atom bomb
   (c) hydrogen bomb
   (d) nuclear reactor

24. Which of the following has greater frequency?
   (a) Radio waves
   (b) Micro waves
   (c) Infra red radiation
   (d) Ultra violet radiation

25. An instrument in which electrical energy in one circuit is transferred into another without any electrical contact is
   (a) transformer
   (b) induction coil
   (c) A.C. dynamo
   (d) motor

26. What will be the colour obtained by mixing blue and yellow.
   (a) yellow
   (b) white
   (c) bluish yellow
   (d) green

27. Which of the following is connected commonly with the phase wire?
   (a) Fuse
   (b) Switch
   (c) Plug
   (d) Main Switch
28. Which of the following instrument is used to develop very high potential from a direct current (D.C.) source?

(a) Transformer
(b) Dynamo
(c) Motor
(d) Induction coil

29. Which of the following alloy has the highest permeability?

(a) Nichrome
(b) Invar
(c) Alnico
(d) Magnalium

30. The supply of electricity for domestic purposes is obtained from

(a) step-up transformer
(b) step-down transformer
(c) Induction coil
(d) Dynamo

......
DIRECTIONS

1. This is a test to measure the practical application awareness in physics.
2. This test contains 30 questions which are to be answered in 45 minutes.
3. Each question has four answers indicated by a, b, c, and d, out of which you have to choose the most appropriate answer.
4. Be careful not to write anything in the test booklet.
5. Write your name and name of school on the sheet provided before you start answering the questions.
6. After answering the questions, return the answersheet and test booklet.

1. Very distant objects can be photographed effectively by making use of
   a. ultra violet rays
   b. infra red rays
   c. x-rays
   d. gama rays

2. Red lights are often used in signal lamps because
   a. red colour is easily noticeable
   b. red light is scattered more and so it is visible from a great distance
   c. red light is scattered very little and so it is visible from a great distance
   d. red light has a shorter wave length and so it is visible from a great distance.
3. Which of the following radiation present in sunlight helps owe skin to produce vitamin D in our body?
   (a) Ultra violet
   (b) Infra red
   (c) X-rays
   (d) Cosmic rays

4. Which colour light is most suitable to give signal to a person positioned at a great distance?
   (a) Red
   (b) Yellow
   (c) Orange
   (d) Green

5. The heating coils in household appliances like electric iron, heater, etc., are made up of
   (a) alnico
   (b) nichrome
   (c) copper
   (d) invar

6. An alloy of tin and lead is often used for making fuse wire. The reason is that
   (a) it is a very good conductor of electricity
   (b) it has very high melting point
   (c) it melts easily if very high current is passed
   (d) it has low resistance

7. A 15 ampere plug fuse is provided in an electrical circuit in an industry. It acts as a
   (a) load on the lines
   (b) step-up transformer
   (c) step-down transformer
   (d) safety device

8. Nichrome wires or tapes are used in household electric heating appliances because they have/are
   (a) high resistance and low melting point.
   (b) high resistance and high melting point.
   (c) good conductors of electricity.
   (d) low resistance and becomes hot very fast.
9. A portion of a heater coil is broken off and if the rest is joined to form the coil, then the resistance of the coil
   (a) will decrease and power consumption will increase
   (b) will decrease and power consumption will decrease
   (c) will increase and power consumption will increase
   (d) will increase and power consumption will decrease

10. There are 4 nichrome wires of diameters 2 mm, 3 mm, 4 mm and 5 mm, and all four have the same length. Which one will give more heat if connected to the same source?
   (a) 2 mm. diameter wire
   (b) 3 mm. diameter wire
   (c) 4 mm. diameter wire
   (d) 5 mm. diameter wire

11. What should be done if in a domestic electric circuit the rated fuse wire burns frequently?
   (a) Use a thicker fuse wire than the rated one.
   (b) Use a thinner fuse wire than the rated one.
   (c) Get the circuit checked for short circuiting.
   (d) Connect directly without using fuse wire.

12. If in your town electricity costs 50 paise per kilo watt hour, you pay for
   (a) electric energy consumed
   (b) electric charge
   (c) power
   (d) electric current

13. If an aluminium chain has to be electroplated with gold, it should be used
   (a) as the cathode
   (b) as the anode
   (c) kept in the electrolyte
   (d) connected between cathode and anode

14. The most suitable material for the core of a powerful electromagnet is
   (a) alnico
   (b) soft iron
   (c) steel
   (d) tungsten
15. The telephone receiver makes use of a
   (a) electromagnet
   (b) temporary magnet
   (c) permanent magnet
   (d) natural magnet

16. The lightening conductor protects the building from lightening by
   (a) not permitting the lightening to fall at the building at all
   (b) driving away the charged particles
   (c) forcing lightening to fall on other buildings in the neighbourhood
   (d) conducting the electric charge to the ground when lightening strikes the building.

17. The occupants of modern steel frame buildings are not harmed when the buildings are struck by lightening because
   (a) these buildings are stronger
   (b) these drive away the charged particles
   (c) lightening does not fall on steel frame buildings
   (d) steel frames being good conductors, they allow the charge to flow to the earth.

18. Water is used in automobile radiators because of its
   (a) high heat capacity
   (b) low heat capacity
   (c) high cooling effect
   (d) availability in plenty

19. In a transformer, the voltage can be stepped up or down to a desired level by
   (a) varying the thickness of insulated copper wires
   (b) keeping the number of turns of copper wires constant
   (c) adjusting the input A.C.
   (d) suitably varying the number of turns in primary and secondary.
20. An electric iron should be used with a three-pin plug because
   (a) it ensures a longer life of the iron
   (b) it provides a better insulation to the iron
   (c) it ensures better safety by earthing
   (d) it is more convenient to use a three-pin plug.

21. Most of the diodes and transistors are made of silicon and germanium because they are
   (a) good conductors
   (b) good insulators
   (c) semi conductors
   (d) super conductors

22. X-rays can be used for taking photos of inner organs and bones because they
   (a) destruct the germs
   (b) can pass through the body
   (c) can be handled easily
   (d) can be produced easily

23. The material used to slow down the neutrons in a chain reaction is
   (a) Plutonium-239
   (b) heavy water
   (c) enriched uranium
   (d) cadmium

24. The frequency of long wave radio when compared to that of short wave radio.
   (a) is more
   (b) is less
   (c) is same
   (d) cannot be anticipated

25. If we have to use a household appliance which work only on 110V in our home; which of the following instrument should be made use of?
   (a) step-up transformer
   (b) step-down transformer
   (c) Electric motor
   (d) High resistance wire
26. A painter wants some bright green colour for his painting. Which of the two colours should be mixed?
   (a) Blue and red
   (b) Blue and Yellow
   (c) Yellow and red
   (d) Blue and white

27. Which of the following breaks connection with phase and neutral lines?
   (a) Fuse
   (b) Switch
   (c) Plug
   (d) Main switch

28. Which of the following instrument finds its application in the self-ignition system of Motor cars?
   (a) Induction coil
   (b) Dynamo
   (c) Motor
   (d) Transformer

29. Which of the following is most suitable for making permanent magnets in loud speakers?
   (a) Soft iron
   (b) Nickel
   (c) Tungsten
   (d) Alnico

30. To light a 6 volt bulb from 230 volt supply, the device required is
   (a) electric motor
   (b) dynamo
   (c) step-up transformer
   (d) step-down transformer
### SOCIO—ECONOMIC SCALE DATA SHEET

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**Notes:**
- **(1)**: Social and economic status
- **(2)**: Educational level
- **(3)**: Occupation
- **(4)**: Income
- **(5)**: Housing conditions
- **(6)**: Transportation
- **(7)**: Employment status
- **(8)**: Family size
- **(9)**: Health

**Legend:**
- Std. I to IV
- Std. V to VII
- Std. VIII to X
- Pre-University, T.T.C. Intermediate
- B.A., B.Sc., B.Com., Engg., Diploma
- M.Tech., Ph.D., etc.
APPENDIX X

OBSERVATION SCHEDULE

I DETAILS OF THE SCHOOL

1. Name of the School : 
2. Location of the School : Urban/Rural 
3. Management of the School : Government/Private 
4. Type of the School : Boys/Girls/Mixed . 
5. Date of visit : 

II DETAILS REGARDING THE CLASSROOM

6. Standard : 
7. Strength : 
8. Physical facilities in the Classroom:-

                        Good  Satisfactory  Poor

   a. Furniture
   b. Seating arrangement
   c. Electricity
   d. Water supply
III METHODS USED AND OBJECTIVES REALISED

9. The broad methods/techniques adopted by the teacher at the time of visit are:-

Good Satisfactory Poor

a. Lecture method
b. Lecture cum demonstration method
c. Discussion method
d. Problem solving method
e. Project method
f. Any other (Specify)

10. Instructional objectives realised:-

a. Imparting knowledge
b. Developing scientific skills
c. Developing abilities involved in problem solving, improvisation, etc.
d. Inculcating scientific attitudes
e. Developing interest in Scientific activities, literature, etc.
f. Imparting training in Scientific method
g. Providing awareness of the applications of Scientific principles
h. Developing power of observation
IV UTILIZATION OF RESOURCES

11. Utilization of resources at the time of visit:

   Good  Satisfactory  Poor

   a. Laboratory
   b. Audio-visual aids
   c. Improvised aids
   d. Reference books

V ABOUT THE TEACHER

12. Qualification: Physics/Chemistry
    B.Sc./M.Sc.
    B.Ed./M.Ed.

13. The teacher has the ability in:-
    a. Presenting the content with mastery
    b. Maintaining classroom communication
    c. Using proper aids
    d. Linking theory to practice
    e. Using environmental resources
    f. Creating Scientific interest
    g. Questioning
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<td>Answering</td>
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<td>c.</td>
<td>Remaining active</td>
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<td>d.</td>
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<td>e.</td>
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<td>f.</td>
<td>Showing interest</td>
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15. General comment on classroom instruction

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List of Schools

3. Holy Angels Convent H.S., General Hospital Junction, Trivandrum-1.
5. Thiruvallam B.N.V. Boys High School, Thiruvallam, Trivandrum-17.
7. Mithirmala Boys H.S., Mithirmala (P.O.), Trivandrum District.
8. Kannyakulangara Girls H.S., Vembayam (via), Nedumangad, Trivandrum District.
13. South Ezhippuram Girls H.S., Ezhippuram (P.O), Ernakulam District.
15. Karukutty S.J. H.S. for Boys, Karukutty, Ernakulam District.
20. Wadakkancherry Girls H.S., Wadakkancherry, Trichur District.


22. Poomala H.S., Poomala, Trichur District.

23. Pazhanji H.S., Pazhanji, (via) Kunnamkulam, Trichur District.

24. Thozhiyur St. George H.S., Thozhiyur, Trichur District.


29. Parayamcheri Boys H.S., Puthiya, Calicut District.

30. Maranchatty Mary Girls H.S., Koombara, Calicut District.

31. Kunnamangalam H.S., Kunnamangalam, Calicut District.

32. Peringalam H.S., Peringalum, Calicut District.
APPENDIX XII

KERALA NONVERBAL GROUP TEST OF INTELLIGENCE

RESPONSE SHEET

Name...........................................(boy/girl) Age......

Standard..................(School).................................

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