

Vigyan Ashram's Introduction to Basic Technology Program for Schools

(PRE VOCATIONAL SUBJECTS - V1)

1) Introduction:

The national policy on education emphasized that the introduction of systematic, well planned and rigorously implemented programs of vocational education are crucial to the proposed educational reorganization. These elements are meant to enhance individual employability, to reduce the mismatch between demand and supply of skilled manpower and to provide an alternative for those pursuing higher education without particular interest or purpose. The policy further states that the vocational courses will ordinarily be provided after the secondary stage but keeping the scheme flexible they may also be made available **after class VIII**

As per the latest Front Line Curriculum declared, more emphasis is given on imparting vocational skills at the Secondary Education level. Introduction to Basic Technology is in consistency with this Front Line Curriculum. It imparts practical training of various vocational skills; the students are trained to solve the daily life problems by using these skills. The community service is the major way to perform the practical.

2) This Pre-vocational subject has the following aims:

1. **Capability to think and act** – General academic education is intended to give the **capability to think**. This subject not only helps the thinking but also gives the capability to act on one's thoughts, by giving action-oriented experiences.
2. **A Work culture** – Industry has a work culture of which the important components are the monitoring of performance indicators to ensure competitiveness, cost control and planning; the client is considered supreme and every effort is made to satisfy the public need. The economics and productivity are key considerations under such circumstances, hard and effective work and invention are encouraged, and dignity of labor is recognized. Such a work culture should be encouraged in the education system.
3. **Delivery Channel for New Technology** – The school technical wing in a remote rural area also acts as a channel for delivery of new technology. Because of the equipment and staff, and their use in services to the community, they are good receptors for introducing new technology developed elsewhere, such as by National Laboratories etc.
4. **Plan Future Career** – Experience is a basic component of learning and this pre-vocational program is intended to widen their experience base and also make it modern. It therefore has 4 modules of different skills. This helps the student to access his own potential and likes and dislikes and thus helps him/her to plan for his/her career. It also introduces him to the modern world of industrial operation and the spirit of enterprise. The usual admission to higher education is not prohibited.

3) Objectives:

The objectives of pre-vocational education at the secondary stage are –

1. To impart training of simple basic skills to students in class VIII, IX and X, useful in every day life.
2. To develop vocational interests, aptitudes and allow self-exploration.
3. To facilitate the students in making choice of vocational courses at the higher secondary level.
4. To prepare students for participation in work as a desired dimension of academic education and
5. To inculcate healthy values related to work culture.

4) Benefits expected from this:

The student will get a wide exposure to the world of work. He will be guided to apply acquired knowledge and skills to socially useful work. This will generate self-confidence in the student. By making services available to the community, education will be brought closer to the community.

The community, the staff and to limited extent the student will also share economic benefits.

The student will be encouraged to develop his own potential and will be helped to make choice of his future career.

5) Instructions:

1. The whole scheme of IBT is explained through three points - Scheme of the examination, Syllabus, Task List.
2. The syllabus is just a guideline for the teachers. A Teacher's Hand Book should be prepared. Additionally, the teachers are expected to refer the Teaching Material and Reference books given and give latest, locally useful information related to the practical skill.
3. Each period comprises of 30 to 35 minutes. It is taken for granted that this subject will be allotted 12 periods from the main timetable of school. In general, during one educational year 35 weeks are available. (365 days of a year - 80 holidays - 52 Sundays - 12 unit test days - 24 Terminal and final exam days - 5 gathering etc. days = 192 days = 32 weeks.) Considering 32 weeks per year x 12 periods per week = 384 periods per year.
4. To plan the yearly work of teaching, a tentative guideline of distribution of periods is given below. However, the prevalence of each of the following sections over daily life is so deep that the periods allotted are not sufficient. The teachers may require extra time to teach the sections more effectively. The School Administration is also expected to provide necessary infrastructure.
5. Most of these sections are expected to be taught practically. Hence, it is advisable that the theory periods may be utilized for the practical or projects or some theory topics can be effectively taught through practical. Hence, the policy to distribute the workload between Teachers and Instructors should be flexible.
6. A vernacular language copy of these syllabi must be provided along with the English version, as most of the topics are related to daily life.

7. If possible, the vernacular version of question papers and model answers should be considered as the original document instead of the English version. At least the state authorities should agree with this policy. This would be helpful for the proper assessment of answer papers and practical exams, because most of the teachers and examiners are more familiar with the vernacular language.
8. Though some tasks or practical from the Lab Hand Book & Practical Hand Book are very useful, due to technical difficulties these are not actually taught. By modifying them slightly or finding some local alternatives for them, these practicals should be taught. e.g. Milk test by Gerber method,
9. While using the presently available study material, all the three theory books, practical handbook, lab handbook, drawing manual etc. are necessary for every standard.

9th STD : The first year is devoted to give an introduction to the techniques and their potential use.

10th STD : The second year is to carry out projects to demonstrate their use and create an asset or wealth in some form, to benefit the community/school.

The Scheme:

Selection of Schools: Criteria and Methodology

In order to ensure community involvement and control, the community will be expected to collect 20% cost of equipment and facilities. The local group which collects the funds will also form a management committee, which will oversee the instructors and the community services. Usually it will be the school management committee, where it exists.

Teacher Coordinator:

As the prevocational course does not have a position as lecturer, there is a provision to reorient selected teachers from the school as coordinators, who will give any small theory input as needed.

Instructors:

This is the key to the success of the whole program. The instructors are expected to be practical skilled workers, who keep their skills alive by giving services to the community, at a fee. They will have a maximum of 24 hours teaching duty per week, leaving the balance for their practice of skill in the service of the community. The instructors will not be employed by the State, but will be on contract with the school management or the local committee, providing the equipment and will be given Rs 10 per hour of instruction duty with a minimum of Rs 1000 p.m. or as negotiated by the management committee. It has been the experience that a constant community service operation encourages the instructor to become an entrepreneur and ultimately to resign to start own enterprises. This is a desirable effect. The system therefore has a provision for continuously training new candidates for the instructor position and hence an integration of the non formal training of out-of-school youth and the formal school program is essential.

The instructors are encouraged and expected to use the school facilities for giving the maximum services to the community and as an incentive they will receive the major share in the surplus from the these. The transactions will always be through the school accounts. On the otherhand, in order to ensure fairness and protect their interests, it will be compulsory for

the management committee to make all payments through the bank. There will be four Instructors for each school with a max of 100 students in class 9 and 10 each. Each instructor will be multiskilled and at least one of them will be a lady.. They will teach, between them, Engineering, Energy Environment- Agriculture, and Home-Health. The management committee is authorised to have more instructors to cover all the syllabus. The instructors will not be required to have any academic qualifications but will have to be certified by the resource group for the skill claimed.

The instructors will get advice and supervision from the resource group. They will be given directions in projects and in introduction of any new technology. Thus all new knowledge will first be given to the resource group, who are having a higher level of expertise and also are smaller in number. After they master the new information, they will impart it to the school staff. The selection of instructors will be done jointly by the school management and the Resource Group.

Desirable Qualities in Candidates for position of Instructors.

The schools will generally be choosing the candidates for training as instructors. The prospective instructors should be resident in the area, have close rapport with the community, should be enterprising and wanting to develop their own enterprises in the area. They should not only be having the basic skills but should be willing to teach others and help. They will generally be no formal students from the same system, but could be ITI or other technical certificate holders.

The intention is to select those who wish to make use of the instructor position as an opportunity for gaining experience before starting their own enterprise.. We do not want persons who look for a secure career in teaching. This is different from liking to teach, which is desirable.

Community Services and Additional Funding.

The community services is an important part of the program, not only for the hands on training of the students, but to sharpen the skills of the instructors, help the villagers to develop and to encourage the growth of enterprises in the area. Apart from community services, the school should undertake projects to build additional facilities for itself through self help. Such design will be made available through a design library..

Non Formal Students:

The school will enroll non formal students from the village youth and give them training in any of the modules available in the school. Such students will bear the cost of materials themselves and will assist instructors in the conduct of classes and community services. At the end of the training, the resource group will give them, a finishing course and examine them and give necessary certificates. The more promising among these will be trained further and made instructors.

PLAN 100 :

Plan 100 is to start DBRT programs in 100 high schools by the year 2007 reaching over 20,000 young boys and girls with life and job skills. It is joint initiative of Lend-a-hand-india , Vigyan Ashram and respective school.

Support from Lend-a-hand-india to the high schools includes training of teachers, capital investments, operational support, monitoring, and financial assistance. As a partnership to ensure sustainability of the program each school is expected to raise at least 20% of the total budget from local resources. This promotes local participation and entrenches a sense of ownership Lend-a-hand-india scheme

1. Village should be min.40 kms away from the municipal corporation area.
2. IBT school must be a Govt. recognized school.
3. School must have 1 acre of land for agriculture and other activities in its proximity. or community must willing to provide such land.
4. School must be involved in extra curricular activities.
5. School must have electricity connection.
6. School must have one or two classrooms for IBT program.
7. Preferably village should be bazaar village.
8. School should have min.40 students appearing in the S.S.C.board exam.

Process of launching IBT program :

1. A committed headmaster , Sarpanch and Chairperson of school should visit Vigyan Ashram / IBT school to understand the concept.
2. School will pay Rs.500/- as registration charges.*
3. IBT co-ordinator will visit the school and conduct meeting of school teachers.
4. School committee will pass the resolution to conduct the program and express the commitment to sustain the program after funding is over.
5. IBT co-ordinator will attend the parents meeting & explain the program. Parents meeting will pass resolution to start the program and charge the fees.
6. School will be selected.

* This will ensure school is really interested.

Starting process of IBT program:

1. School will purchase equipment's and material for IBT program.
2. Vigyan Ashram will give training to the instructors.
3. IBT co-ordinator will visit monthly to the school and submit the report to Vigyan Ashram.

Teaching Scheme
Period per week: 12

Practical	:-	09
Theory [written]	:-	01
Drawing and Costing	:-	02
Total	:-	12

Examination Scheme

	WRITTEN	PRACTICAL	YEARLY WORK
* P – I			
ENGINEERING	12	13	09
ENERGY & ENVIRONMENT	13	12	09
AGRICULTURE & ANIMAL HUSBANDARY	12	13	09
HOME & HEALTH	13	12	09
TOTAL	50	50	36
P – II			
DRAWING & COSTING, GRAPH, FLOW CHART, CONTOURS.	45	----	10
I.T.	05	----	04
TOTAL	50	----	50

*** Paper – I (written) is practical oriented.**

STANDARD IX
Theory
(01 Period per week, Total 32 Periods)

SECTION I – ENGINEERING **(Total 07 Periods)**

- 1) Measurement and Units
- 2) Materials - Iron & Steel
- 3) Materials - Wood, Cement and Brick
- 4) History of Construction
- 5) Strength, tension, compression and Shear
- 6) Various constructions for strength

SECTION II – ENERGY AND ENVIRONMENT **(Total 08 Periods)**

- 1) Energy
- 2) Electricity
- 3) Accidents and risks
- 4) The world is eternal, immortal
- 5) How the Deccan Plateau was formed?
- 6) Maps
- 7) Leveling & contours
- 8) Septic Tank and Biogas Plant

SECTION III – AGRICULTURE & ANIMAL HUSBANDARY **(Total 09 Periods)**

- 1) Land and soil
- 2) Fertilizers
- 3) Water Supply
- 4) Evolution
- 5) Plants and Animals
- 6) Birds and Ruminating animals
- 7) Animal Food
- 8) Remedies for poultry diseases
- 9) Disease Preventive measures for animals

SECTION IV – HOME AND HEALTH **(Total 08 Periods)**

- 1) Water Pollution
- 2) Sanitation
- 3) Mosquitoes and Flies
- 4) Disease Preventive Measures
- 5) How diseases spread.
- 6) Health Practices
- 7) Development and needs of a child
- 8) Vaccination of Children

Standard X
Theory
(01 Period per week, Total 32 Periods)

SECTION I – ENGINEERING

(Total 08 Periods)

- 1) Scalar & Vector
- 2) Friction and Lubrication
- 3) Work, energy, power and force
- 4) Budget and estimation
- 5) Information Technology

SECTION II – ENERGY AND ENVIRONMENT

(Total 10 Periods)

- 1) A.C. single phase and three phase
- 2) Starter and motor
- 3) I.C. Engines
- 4) Ground Water
- 5) Management of water, percolation tank and wells
- 6) Water pumps
- 7) Selection of pump

SECTION III – AGRICULTURE & ANIMAL HUSBANDRY (Total 06
Periods)

- 1) Pest and insect control
- 2) Genes and heredity
- 3) Artificial Insemination and its benefits

SECTION IV – HOME AND HEALTH

(Total 08 Periods)

- 1) Diet & Nutrition
- 2) Methods of preserving food
- 3) Methods of preserving agriculture products
- 4) Packing, costing and market survey

PRACTICAL

(The following list contains the practical skills expected. The detailed TASK list should be referred for planning yearly practical and practical examinations)

Standard IX

(09 Period per week, Total 288 Periods)

SECTION I –ENGINEERING (72 Periods)

- 1) FABRICATION – Cutting, filing, drilling, threading (pipe & rod), tapping, welding, and soldering etc. general workshop operations to prepare a utility article viz. stool, chair, table, RCC frame etc. (30 Periods)
- 2) CONSTRUCTION – Using plum bob, spirit level, ferro cement sheet technique to prepare items viz. storage tank, wash basin etc., brick bonds, mortar work for repairing etc. (24 Periods)
- 3) CARPENTRY – Handling carpentry tools, sharpening plane blade, saw, saw-teeth setting, wooden joints (L, T etc.), fitting various hinges, laminating wooden surface, drilling on wood etc. (18 Periods)

SECTION II – ENERGY & ENVIRONMENT (72 Periods)

- 1) ELECTRICAL – Simple circuits, wiring (staircase, go down, house wiring, light control wiring), fuse fitting, connecting various appliances (iron, fan, heater, tube light, motor with starter etc.), earthing, measuring current consumption. (32 Periods)
- 2) SURVEYING – Plane table method, mark contours by various methods etc., dam construction techniques. (18 Periods)
- 3) ENERGY EQUIPMENT HANDLING – Soak pit, solar cooker, IC engines, pressure & wick stoves, LP gas & biogas stove, efficiency measurement, maintenance of various stoves etc. (22 Periods)

SECTION III – AGRICULTURE & ANIMAL HUSBANDARY (72 Periods)

- 1) AGRICULTURE – Preparing land, seed processing, sowing, using pesticides, hoeing etc., maintenance of Knapsack sprayer, maintain growth chart of a particular crop, grafting, and irrigation methods. (40 Periods)
- 2) ANIMAL HUSBANDARY - Measuring body temperature, guessing age by teeth, weight by size, calculating food amount for a milch animal as per its TDN, milching capacity etc., visit to dairy for dairy technique, visit to AI center, grow broiler chicks. (32 Periods)

SECTION IV – HOME & HEALTH (72 Periods)

- 1) STITCHING – Back stitch, running stitch, button hole stitch, machine stitch, hem stitch for hand sewing and cross stitch, chain stitch of embroidery work, cloth mending Darning & Patching. (09 Periods)
- 2) KNITTING - Garter Stitch, stockinet Stitch, reed Stitch, ribbing Stitch. (09 Periods)
- 3) HYGIENE - Identify the given cereals and pulses, weigh out them in proper quantity so as to get given calories and protein contents, M.P.N. test of water, blood checking (group & Hb), soil testing (pH, N.P.K.). (36 Periods)

- 4) COOKERY – Food preservation by sauces, jams, jellies, chikki, khoa, muramba, pickles etc., use of solar cooker. (18 Periods)

Standard X
(09 Period per week, Total 315 Periods)
PROJECT

In standard the students are supposed to develop 4 projects from each of the four sections. The project work itself is considered as practical. The following skills are expected from the students-

- 1) Planning the project, report writing, drawing conclusions, referring to earlier work
 - 2) Technical skills from all the 4 sections
 - 3) Produce assets for school or community
- Costing & estimation, selling and earning profit.

(A sample list of various Projects is given below. The students are supposed to takeover any one such project either individually or in groups. The reports, graphs, flowcharts, costing should be done with the help of various office packages of computer.)

SECTION I – ENGINEERING

- 1) Prepare a hand device to peel the coconut.
- 2) Prepare a bucket, tumbrel, funnel from sheet metal.
- 3) Undertake a plumbing work for supply and distribution of drinking water.
- 4) Setting up a W.C. Block.
- 5) Construct a Ferro cement tank for water storage.
- 6) Prepare Ferro cement articles for daily usage. (e.g. wash basin, kitchen sink, water tanks of various shapes, W.C. utensil, pots for plants, Ferro cement sheets for walls, shades etc.)
- 7) Construct brickwork for routine usage. (Part of house, room, shade, drainage / sanitary system, toilets, gate poles etc.)
- 8) Prepare articles viz. Paper Weight, Pipe vice, Bench vice, wheelbarrow, cot, rack, shelf, table, chair, pot stand, and School benches, Tree Guard etc.
- 9) Prepare equipment used in agriculture viz. burrow.
- 10) Make an oil extractor for groundnuts.

SECTION II – ENERGY & ENVIRONMENT

- 1) Wiring of households or school premises.
- 2) Installing a water pump.
- 3) Maintenance of a Hand Pump, biogas plant
- 4) Installing a prime mover- electric motor or diesel engine.
- 5) Make a Recording Machine for Electricity Availability.
- 6) Survey of percolation tank.
- 7) Measure the efficiency of a grinding mill for various grains.
- 8) Repair and maintain a domestic electric appliance viz. iron, mixer, and rechargeable battery, fan.
- 9) Motor panel box repairing and connection to the motor.
- 10) Prepare the charcoal from wood.
- 11) Building bunds for small percolation tank.

- 12) Test Karanji / Erandi oil with the help of diesel engine in different situations viz. no load, full load etc.

SECTION III – AGRICULTURE & ANIMAL HUSBANDARY

- 1) Vaccination of poultry, goats etc.
- 2) Develop a nursery for social forestry or fruit plants etc. and sell the plants.
- 3) Making silage of 2000-3000 kg
- 4) Prepare the school garden or personal garden
- 5) Grow & sell 25 broiler birds.
- 6) Pest Control for at least 5 different crops.
- 7) Prepare a wormi compost plant.
- 8) Maintaining a dairy at least for 1 month including milk test, record maintaining, profit calculations etc.
- 9) Sample study of effects of various fertilizers on any one crop.
- 10) Practice the Hydroponics (Farming without soil) Techniques for various plants.
- 11) Practice at the village A.I. center at least for 1 month.

SECTION IV – HOME & HEALTH

- 1) Measure HB proportion of students, pregnant women etc.
- 2) Measure HB, cell count of animal blood.
- 3) Prepare pickles, jams, jelly, chikki, salted groundnuts, salted soybeans etc. sell the items and earn profit.
- 4) Quality analysis of drinking water of village sources.
- 5) Making simple garments
- 6) Developing low cost, high calorie menus.
- 7) Prepare/ practice time & energy saving appliances viz. solar cooker, pressure cooker roaster etc.
- 8) More diagnostic tests blood grouping.
- 9) Soil sample testing for farmers.
- 10) Make sweater, embroidered garments etc. and sell them

Standard IX
Drawing, costing & I.T.
(02 Period per week, Total 64 Periods)

Drawing

- 1) * Concept of Plan, Elevation and side view, Isometric view – 3 sheets (24 Periods)
- 2) Map Sketching – 1 sheets (02 Periods)
- 3) Contours – 2 sheet (04 Periods)
- 4) Electrical circuits – 1 Sheet (02 Periods)
- 5) Flow chart – 1 Sheet (02 Periods)
- 6) Graphs – 3 Sheet (06 Periods)

I.T.

- 1) Paint – electrical Circuits, Free hand drawing of jobs etc. (03 Periods)
- 2) Word Processing – e.g. M.S.Word – Writing recopies, notes etc. (03 Periods)
- 3) Spread Sheet – e.g. M.S.Excel – Water Table, Plant Growth, Costing etc. (03 Periods)
- 4) Presentations – e.g. M.S.Powerpoint – Flow Charts, Electrical Circuits etc. (03 Periods)

Costing

- 1) Costing of poultry, crops, fabrication works, Ferro cement articles, and RCC or brick construction etc. – Note Book. (12 Periods)

Standard X
Drawing, costing & I.T.
(02 Period per week, Total 64 Periods)

Drawing

- 1) * Orthographic Projections of fabricated jobs – 2 sheets (16 Periods)
- 2) * Isometric Drawing of fabricated job – 1 sheet (08 Periods)
- 3) Drawing & Reading graphs – 3 sheet (06 Periods)
- 4) Conversion of contours into profiles – 2 sheet (04 Periods)
- 5) Electric wiring diagrams (DOL starter & 3 phase motor, Tube light, Go down) – 3 sheet (06 Periods)
- 6) Flow chart – 1 sheet (05 Periods)

I.T.

- 1) Word Processing – e.g. M.S.Word – Project Report Writing etc. (03 Periods)
- 2) Spread Sheet – e.g. M.S.Excel – As required by the project work. (03 Periods)
- 3) Presentations preparing – e.g. M.S.Powerpoint – Presentation of entire project, recipes (03 Periods)

Costing

- Costing of all project works – Note Book (10 Periods)

- * Students to make free hand sketches of hand tools and object of daily use, in the drawing sheet under Orthographic and Isometric projection.

TASK LIST

(The tasks with * mark may be given to group of students)

SECTION I –ENGINEERING

- Task 1) Handle & study the tools, hinges and screws used in carpentry.
- Task 2) Sharpen the Mortise Chisel.
- Task 3) Sharpen the blade of Plane.
- Task 4) Set and sharpen the teeth of a Saw.
- Task 5) Prepare an L joint from the given wood.
- Task 6) Prepare a T joint from the given wood.
- Task 7) Fix suitable hinges to the given 2 pieces of wooden batten so that they can open flat and fold on each other.
- Task 8) Cut the given M.S. angle to prepare a frame of given size. (No overlap)
- Task 9) Weld the given pieces of an M.S. angle to prepare a frame.
- Task 10) Fix the hinges to the given wooden article.
- Task 11) Thread the given G.I. pipe according to the given drawing/dimension.
- Task 12) Prepare an article from given G.I. sheet according to the given drawing/dimension.
- Task 13) Prepare an article from given G.I. sheet according to the given drawing/dimension, by soldering
- Task 14) Cut and weld the given M.S. rod according to the given dimensions of a frame for Ferro cement sheet.
- Task 15) Cut the given chicken mesh according to the given dimensions and weld it on the given M.S. rod frame of a Ferro cement sheet.
- Task 16) Prepare an article of Ferro cement according to the given drawing/dimension.
- Task 17) Drill 2 holes at right angles to each other on a given wooden block.
- Task 18) Apply a sun mica sheet to the given wooden/plywood surface.
- Task 19) Weld 2 pipe pieces to form an L joint.
- Task 20) Tap the given job according to the given drawing/dimension.
- Task 21) Thread the given metallic rod according to the given drawing/dimension.
- Task 22) Arrange given bricks in Flemish Bond (Stretcher & Header) up to 1 meter.
- Task 23) Arrange given bricks in English Bond up to 1 meter.
- Task 24) Arrange given bricks in Rat Trap Bond up to 1 meter.
- Task 25) Construct a 0.5-meter high brickwork in Flemish Bond (Stretcher & Header) with mortar.
- Task 26) Construct a 0.5-meter high brickwork in English Bond with mortar.
- Task 27) Construct a 0.5-meter high brickwork in Rat Trap Bond with mortar.
- Task 28) Construct an R.C.C. work as per the given drawing/dimensions.
- Task 29) Prepare a concrete slab according to the given drawing/dimension.
- Task 30) Plaster a given wall area of approx. 1 sq. meter, using proper mortar.

SECTION II -ENERGY & ENVIRONMENT

- Task 1) Sketch a proportionate map of the area surrounding the school/examination center. Show the important places by proper symbols.
- Task 2) Sketch a proportionate map of an imaginary/memorized place for tourists. Show the important places by proper symbols.
- Task 3) Control a lamp by one switch.
- Task 4) Control two lamps by two separate switches.
- Task 5) Connect two or more lamps in series.
- Task 6) Connect two or more lamps in parallel.

- Task 7) Prepare and join a circuit for staircase wiring. *
- Task 8) Prepare and join a circuit for go down wiring. *
- Task 9) Survey a slope area by using a frame or water tube and at least 2 contour lines with 5 points on each line.
- Task 10) Dig a pit measuring 30 X 30 X 30 cm for earthing.
- Task 11) Fill up the given earthing pit by proper layers. Place the earthing plate in it and connect the given circuit to earth. Test the circuit for proper earthing.
- Task 12) Dismantle the given pressure stove, draw a neat sketch to show all parts of it, assemble it.
- Task 13) Remove the burner and nipple of the given pressure stove, clean it if necessary, refit it and kindle the stove.
- Task 14) Dismantle the wicks of the given wick stove, trim the wicks in a level, assemble the stove and kindle it.
- Task 15) Change the over burnt wicks of the given wick stove and kindles it.
- Task 16) Measure the efficiency of the given diesel pump set. Measure the consumed diesel using dipstick fuel gauge and measure the output water using a bucket and watch with seconds markings. (The delivery head will be given) *
- Task 17) Prepare and join a circuit for hospital/light control wiring. *
- Task 18) Assemble a tube light circuit.
- Task 19) Calculate the current used by a 3KW geyser or 3 HP motor and find prepare a fuse of proper capacity from a 36 SWG wire. Test the ampere capacity of the fuse by using autotransformer. Fix the fuse in proper place.
- Task 20) Connect a three-phase motor to an electric supply through a DOL starter and show the reversal of motor direction.
- Task 21) Study the construction and working of Petrol Engine, show maximum possible parts. Run and stop the engine. Draw a figure to show all parts.
- Task 22) Study the construction and working of Diesel Engine, show maximum possible parts. Run and stop the engine. Draw a figure to show all parts.
- Task 23) Fill up petrol & oil in proper proportion in an empty tank of 2 strokes I.C. engine and start it.
- Task 24) Remove the magneto from a 35 cc petrol engine; draw a figure to show the adjustment of breaker point.
- Task 25) Remove the spark plug of a petrol engine by using proper tools. Test it for proper sparking and refit it.
- Task 26) By using proper tools remove the nozzle of the given Diesel engine, check the proper spraying of fuel and refit it.
- Task 27) Measure the efficiency of the given electric pump set. Measure the input electric energy in wattage of the pump and measure the output water using a bucket and watch with seconds markings. (The delivery head will be given)
- Task 28) Measure the electric load of the given electric circuit by using revolutions of the disk of the energy meter connected in that circuit.
- Task 29) Prepare slurry from the given cow-dung and feed the given Biogas tank. (If available)
- Task 30) Measure the biogas consumed in the given time by a kitchen stove connected to the Biogas tank. Use the difference in the height of the gasholder. (If available)
- Task 31) Make a soak pit of the given size. (If possible)

SECTION III – AGRICULTURE & ANIMAL HUSBANDARY

- Task 1) Estimate the expenses of various crops considering the soil, weather, water supply and select a suitable crop for profitable cultivation.
- Task 2) Prepare land measuring 2 sq. meters for cultivation.
- Task 3) Process the given seeds by anti-fungus chemicals.
- Task 4) Process the given monopetalous (cereals) seeds by Azetobactor.
- Task 5) Process the given bipetalous (legumes) seeds by Rizobium.
- Task 6) Process the given seeds by internal pesticides.
- Task 7) Prepare a channel bed and sow the given seed.
- Task 8) Prepare a flat bed and sow the given seed.
- Task 9) Observe the Sprinkle Method of Irrigation and study its advantages and disadvantages.
- Task 10) Collect various pests, classify them, and decide the method of their control.
- Task 11) Study various grafting mathodds. And prepare 5 different types of graft for 5 different trees.
- Task 12) Prepare an air layering graft (Guti) on given 2 trees (Pomogranate/Fig)
- Task 13) Perform a Budding on given 2 trees (Ber/Rose/Orange/Lemon)
- Task 14) Prepare a Wedge Graft on two given mango trees.
- Task 15) Study the growth of a crop from its sowing and manage the further works viz. hoeing, fertilizer usage and water supply.
- Task 16) Disassemble the given Knapsack Pump and assemble.
- Task 17) Collect the ripen crop and manage its sale.
- Task 18) Prepare the balance sheet for the cultivated crop.
- Task 19) Guess the age of an animal (cow/bull) from its teeth.
- Task 20) Measure the temperature and respiration of the given animal.
- Task 21) Estimate the weight of the given animal from its body size.
- Task 22) Manage the feed of a milch animal, considering the weight, milching capacity and TDN.
- Task 23) Measure the body temperature of given 5 chicks.
- Task 24) Visit a dairy study its management viz. milching rate, testing of milk, storage, transport etc.
- Task 25) Take lactometer reading of milk of various qualities.
- Task 26) Visit an AI center, study its work and write the advantages and disadvantages of AI.
- Task 27) Manage and grow the given broiler chicks of 1 day age, till their saleable age.
- Task 28) Weigh any 10 chicks and calculate their market price from their average weight.
- Task 29) Manage the food and water for 10-20 broiler chicks of 2 day age.
- Task 30) Compare the two methods of poultry keeping by drawing graph of age v/z weight.
- Task 31) Vaccinate the given 10 broiler chicks by Lasota.
- Task 32) Feed water to 10 broiler chicks.
- Task 33) Irrigate the given 5 trees by Drip Irrigation Method. Measure the water received by each tree within an hour.
- Task 34) Cultivate any cereal/cash crop on a land admeasuring 10 Guntha.
- Task 35) Prepare silage of 2000-3000 kg.
- Task 36) Control the pests on a particular crop.
- Task 37) Prepare a nursery, school garden etc.
- Task 38) Participate in the management of an AI center at least for a month and prepare a report.
- Task 39) Vaccinate the given Milch animals.

SECTION IV – HOME & HEALTH

- Task 1) Prepare 5 cm long samples of running stitch and buttonhole stitch of hand sewing.
- Task 2) Prepare 5 cm long samples of machine stitch and hem of hand sewing.
- Task 3) Prepare 2 samples measuring 5 cm length by using chain stitch and cross-stitch of embroidery work.
- Task 4) Prepare a sample measuring 10 cm length by using chain stitch and cross-stitch of embroidery work.
- Task 5) Mend the given torn cloth by Darning.
- Task 6) Mend the given torn cloth by
- Task 7) Prepare a pattern measuring 5 X 8 cm by using Garter Stitch.
- Task 8) Prepare a pattern measuring 5 X 8 cm by using Stockinet Stitch.
- Task 9) Prepare a pattern measuring 5 X 8 cm by using Reed Stitch.
- Task 10) Prepare a pattern measuring 5 X 8 cm by using Ribbing Stitch.
- Task 11) Identify the given cereals and pulses. Weigh out them in proper quantity so as to get given calories and protein contents.
- Task 12) Perform the M.P.N. test of the given water sample.
- Task 13) Test the given soil sample for p^H .
- Task 14) Find the proportion of Phosphorous in the given soil sample.
- Task 15) Find the proportion of Potassium in the given soil sample.
- Task 16) Find the proportion of Organic Carbon in the given soil sample.
- Task 17) Find the proportion of Nitrate Nitrogen in the given soil sample.
- Task 18) Find the proportion of Ammoniac Nitrogen in the given soil sample.
- Task 19) Find the proportion of Hemoglobin in the given blood sample.
- Task 20) Find the blood group of the given blood sample.
- Task 21) Prepare a Sauce from the given Tomatoes.
- Task 22) Prepare a Chikki from the given material.
- Task 23) Prepare Khoa from the given quantity of milk.

List of Tools and equipments for the subject Rural Technology VIII to Xth

No.	Equipments	Old Rs.	Req. Qua.	Total	New Rs.	Req. Qua.	Total
1	Screw Driver 12"	18	4	72	25	4	100
2	Hacksaw Frame 12"	30	4	120	40	4	160
3	Spanners 16/ 17- 20/21	20	4	80	16	4	64
4	Spanners 11-14	10	4	40	12	4	48
5	Adjustable Spanners 11-21	80	2	160	175	2	350
6	Combination Pliers	25	4	100	55	4	220
7	Rectangular Files Rough	50	4	200	50	4	200
8	Rectangular Files Fine	25	2	50	25	2	50
9	Ring Spanner Set	150	1	150	185	1	185
10	SS Ruler 12" Scale	25	4	100	25	4	100
11	SS Meter Scale	200	2	400	155	2	310
12	Bench Vices 4"	1100	1	1100	1451	1	1451
13	Tread Guage	80	3	240	100	3	300
14	Wire Gauge 55	100	1	100	150	1	150
15	Welding Transformer 8 Kva,1/3 hp	6500	1	6500	7500	1	7500
16	Screen , Cable , Holder	400	2	800	460	2	920
17	Tounge and Gloves	50	2	100	50	2	100
18	Oil Can	30	2	60	60	2	120
19	Grease Gun	150	1	150	140	1	140
20	Round Files 8"	30	1	30	111	1	111
21	Triangular Files	25	4	100	50	4	200
22	Shearing Machine 10"	2000	1	2000	2500	1	2500
23	Bench Drill 13mm Single Phase	3500	1	3500	3500	1	3500
24	Bench Grinder	2000	1	2000	2500	1	2500
25	RSS Drill Bit Set 4mm - 12mm	350	1	350	550	1	550

26	Hammer 1/2 Kg	20	2	40	30	2	60
27	Hammer 1Kg	30	2	60	50	2	100
28	Hammer 5 Kg	100	1	100	200	1	200
29	Tin Shears	20	5	100	40	5	200
30	Tap and Dies BSW - 3/4 "	830	1	830	1000	1	1000
32	Drill Bites for above	250	1	250	250	1	250
33	Pipe Treading dies 1/2",3/4",1",1 1/4",2",2 1/2",3"	800	1	800	1000	1	1000
34	Pipe Wrenches 2and 3	200	2	400	180	2	360
35	Calipers , Inside and Outside	100	1	100	120	1	120
			Total	21182		Total	25119

Measurement

1	Max - Min Thermometer	100	1	100	125	1	125
2	Wet - Dry Thermometer	100	1	100	125	1	125
3	Rain Gauge	10	1	10	51	1	51
4	Oil Measure 50ml and 0.5 Litre	25	2	50	30	2	60
5	Milk Measure 250 ml , 500ml and 1Litre	50	3	150	80	3	240
6	Measuring Cylinder 100ml	18	2	36	20	2	40
7	Measuring Cylinder 500ml	100	1	100	120	1	120
8	Grad.Pipettes 0.02 - 1ml	15	2	30	20	2	40
9	Student Vernier	75	2	150	80	2	160
10	Vernier Caliper Model	10	1	10	30	1	30
11	Spring Balance 10 Kg	35	2	70	100	2	200
12	Post Office Balane	75	1	75	80	1	80
			Total	881		Total	1271

Soldering

1	Soldering Iron	35	4	140	80	4	320
---	----------------	----	---	-----	----	---	-----

Syllabi for VI - Introduction to Basic Technology - Standard IX and X

2	Blow Lamp	200	2	400	200	2	400
3	Electric Soldering Iron 65w	75	2	150	75	2	150
			Total	690		Total	870
Carpentry							
1	Panel saws 12"	60	4	240	70	4	280
2	Chisels 1/4"	5	5	25	20	5	100
3	Chisels 1/2"	10	5	50	95	5	475
4	Chisels 1/5"	10	5	50	125	5	625
5	Rasp Files	75	2	150	176	2	352
6	Claw Hammer	30	1	30	80	1	80
7	Jack Plane	35	4	140	535	4	2170
8	Spirit Level	80	2	160	45	2	90
9	Mallets	15	4	60	80	4	320
10	Portable Hand Drill Machine	120	2	240	1600	2	3200
11	Auger 1/2',3/4'	50	2	100	65	2	130
12	Cross Axe	25	1	25	100	1	100
13	Carborendum Stone	125	1	125	125	1	125
			Total	1395		Total	8047
Construction							
1	Ghamelas	30	4	120	50	4	200
2	Trowels	25	4	100	40	4	160
3	Masonry Chisel	50	1	50	60	1	60
4	Masonry Drill Bit 8mm	75	1	75	100	1	100
5	Plumb Line	25	2	50	30	2	60
			Total	395		Total	580
Energy and Environment							
1	Tester	10	4	40	15	4	60

Syllabi for VI - Introduction to Basic Technology - Standard IX and X

2	Screw Driver 6"	15	4	60	18	4	72
3	Measuring Tape 3m	36	4	144	45	4	180
4	Pliers	25	4	100	55	4	220
5	Switches	9	20	180	10	20	200
6	Lamp Holders	9	20	180	8	20	160
7	3 Pin Plugs	12	10	120	15	10	150
8	3 Pin Sockets	15	4	60	15	4	60
9	Transformer 230/155 , 100W	250	1	250	1000	1	1000
10	Digital Multimeter	150	1	150	165	1	165
11	Wiring Folding Boards	15	10	150	35	10	350
12	Cutting Pliers	30	2	60	25	2	50
13	Nose Plier	25	2	50	48	2	96
14	Tube Light	120	2	240	160	2	320
15	Voltmeter ,0 - 500V	30	1	30	60	1	60
16	Ammeter , 0-200Amp	30	1	30	60	1	60
17	Solar Cooker	350	1	350	500	1	500
18	Pressure Stove	120	1	120	250	1	250
19	Wick Stove	90	1	90	150	1	150
20	Biogas Stove	100	1	100	1000	1	1000
21	Smokeless Chullah	100	1	100	200	1	200
22	Topo Sheets 1: 25000	30	4	120	50	4	200
23	Plane Table Survey Kit	325	2	650	400	2	800
24	Compass Prismatic	500	1	500	700	1	700
25	Cloth Measure Tape 30m	150	1	150	180	1	180
26	Pantograph	60	1	60	80	1	80
27	Dumpy Level	2500	1	2500	2500	1	2500
28	Hand Pump Repair Kit	3500	1	3500	4000	1	4000

29	Pipe Treading dies 1" - 1/4 "	250	1	250	670	1	670
30	Rod Treading Dies 13mm	100	1	100	219	1	219
31	Rod Treading Dies 1/2"	150	1	150	206	1	206
			Total	10584		Total	14858

Agriculture and Animal

Hus.

1	Ghamelas	30	4	120	40	4	160
2	Khurpi	12	4	48	15	4	60
3	Khore	40	2	80	60	2	120
4	Tikav	50	2	100	60	2	120
5	Vila	20	4	80	30	4	120
6	kurhad	50	2	100	60	2	120
7	Showels	25	4	100	40	4	160
8	Buckets	100	2	200	100	2	200
9	10 Kg Balance	300	1	300	300	1	300
10	Knapsack Spayer	1000	1	1000	1500	1	1500
11	Aspi Bolo Srayer	3000	1	3000	3500	1	3500
12	Hand Rotary Duster	400	1	400	500	1	500
13	Budding Knife	20	2	40	30	2	60
14	Measuring Cylinders 100ml	25	2	50	40	2	80
15	Milk Measure 250 ml ,500ml and 1Litre	50	3	150	80	3	240
16	Thermos	100	1	100	125	1	125
17	Lactometer	25	1	25	30	1	30
			Total	5893		Total	7395

Home and Health

1	Heamoglobinometer	1000	1	1000	790	1	790
2	Calorimeter	1000	1	1000	2500	1	2500
3	Pocket Refractometer	1200	1	1200	1500	1	1500

Syllabi for VI - Introduction to Basic Technology - Standard IX and X

4	Clinical Thermometer	10	1	10	55	1	55
5	First Aid Kit	50	1	50	70	1	70
6	Sewing Machine (Pedal operated)	2500	1	2500	3000	1	3000
7	Pressure Cooker and						
8	Slicer , Knives , Utensils etc.	700	1	700	1000	1	1000
9	Blood Group Detection Kit	500	1	500	725	1	725
10	Kniting Needles 2.5	3	20	60	5	20	100
			Total	7020		Total	9740
			Total	48040		Total	67880

** Prices are tentative.

Check List for Schools :

1. School management approval : Yes / No : Expected Dt. Of compliance: _____
2. MOU signed and send to VA : Yes / No : Expected Dt. Of compliance: _____
3. Parents meeting : Yes / No : Expected Dt. Of compliance: _____
3. Selection of instructors : Yes / No : Expected Dt. Of compliance: _____
4. Tools purchase as per list : Yes / No : Expected Dt. Of compliance: _____
5. Training of instructors: Yes / No : Expected Dt. Of compliance: _____
6. Time Table Adjustment : Yes / No : Expected Dt. Of compliance: _____
7. Letter to Director of Vocational Education : Expected Dt. Of compliance: _____
8. Launch of Program : Expected Dt. Of compliance: _____