

# Manorama Industrial Training Institute



**Address: - Rani Talab, Sabour road, Bhagalpur, 813210**

## A unit of Manorma Group of Education

**Head Office:- Rani Talab, Sabour road, Bhagalpur, 813210**

**It runs under the Disha Education & Social welfare Trust**

**Registration No: - 537/4/7/81-93/CD-34/107**

**We prefer all type of Education to Children**

**Available Trade: - 1.Electrician**

**2. Fitter**

- 1. Placement (Campus Selection)**
- 2. Apprenticeship**
- 3. Hostel**
- 4. Library**
- 5. Scholarship**

**Website:- <http://manormagroup.com>**

**Contacts No:- 8051864903  
9931722151  
9430202666**

# Syllabus of Fitter



## **SYLLABUS FOR TRADE THEORY(SEMESTER- 4)**

<b>Week No.</b>	<b>Trade Theory</b>
1	Case hardening and carburising and its methods, process of carburising ( solid, liquid and gas ).
2	Solder and soldering: Introduction- types of solder and flux. Method of soldering, Hard solder- Introduction, types and method of brazing. Production of gauges, templates and jigs. The objective of importance for preparing interchangeable components.
3	Drilling jig- constructional features, types and uses. Fixtures- Constructional features, types and uses.
4	Pipes and pipe fitting - commonly used pipes. Pipe schedule and standard size. Pipe bending methods. Use of bending fixture, pipe threads- Std. Pipe threads Die and Tap, pipe vices.
5	Standard pipefitting- Methods of fitting or replacing the above fitting, repairs and erection on rainwater drainage pipe and house hold taps and pipe work. Use of tools such as pipe cutters, pipe wrenches, pipe dies, and tap, pipe bending machine etc.
6	Fire precautions-causes and types of fires, precautions against outbreak of fire. Fire Extinguishers-types and use.
7	Working material material with finished surface as aluminium, duralumin, stainless steel, the importance of keeping the work free from rust and corrosion. The various coat by heat and electrical deposit treatments. Treatments and provide pleasing finish as chromium silver plating and nickel plating, and galvanising.
8	Aluminium and its alloys. Uses, advantages and disadvantages, weight and strength as compared with steel.
9	Tapers on keys and cotters permissible by various standards. Discuss non-ferrous metals as brass, phosphor bronze, gunmetal, copper, aluminium etc. Their composition and purpose where and why used, advantages for specific purposes, surface wearing properties of bronze and brass.
10	Power transmission elements. The object of belts, their size and specifications, materials of which the belts are made, selection of the type of belts with the consideration of weather, load and tension methods of joining leather belts. Vee belts and their advantages and disadvantages, Use of commercial belts, dressing and resin creep and slipping, calculation.
11	Power transmission, coupling types- flange coupling, Hooks coupling - universal coupling and their different uses.
12	Pulleys-types- solid, split and 'V' belts pulleys, standard calculation for determining size crowing of face- loose and fast pulleys- jockey pulley. Types of drives- open and cross belt drives. The geometrical explanation of the belt drivers at an angle.

13	Power transmission- by gear, most common form spur gear, set names of some essential parts of the set- The pitch circles, Diametral pitch, velocity ratio of a gear set, Helical gear, Herring bone gear, Bevel gearing, spiral bevel gearing, hypoid gearing, pinion and rack, worm gearing, velocity ratio of worm gearing. Repair to gear teeth by building up and dovetail method.
14	Method of fixing geared wheels for various purpose drives. General cause of the wear and tear of the toothed wheels and their remedies, method of fitting spiral gear, helical gears, bevel gears, worm and worm wheels in relation to required drive. Care and maintenance of gears.
15 & 16	Lubrication and lubricants- Method of lubrication. A good lubricant, viscosity of the lubricant, Main property of lubricant. How a film of oil is formed in journal, Bearings, method of lubrication- gravity feed, force (pressure) feed, splash lubrication. Cutting lubricants and coolants: Soluble off soaps, sudsparaffin, soda water, common lubricating oils and their commercial names, selection of lubricants. Chains, wire ropes and clutches for power transmission. Their types and brief description. Discuss the various rivets shape and form of heads, riveting tools for drawing up the importance of correct head size. The spacing of rivets. Flash riveting, use of correct tools, compare hot and cold riveting.
17	Importance of Technical English terms used in industry - (in simple definition only) Technical form, process charts, activity logs, in required formats of industry, estimation, cycle time, productivity reports, job cards.
18 & 19	Installation, maintenance and overhaul of machinery and engineering equipment and Hydraulics & pneumatic symbols & exercise. Hydraulics pneumatic circuits. Clutch: Type, positive clutch (straight tooth type, angular tooth type).
20	Washers- Types and calculation of washer sizes. The making of joints and fitting packing. The use of lifting appliances, extractor presses and their use. Practical method of obtaining mechanical advantage. The slings and handling of heavy machinery, special precautions in the removal and replacement of heavy parts.
21	Foundation bolt: types ( rag, Lewis cotter bolt description of each erection tools, pulley block, crow bar, spirit level, Plumb bob, pipe 2 x 4', wire rope, manila rope, wooden block.
22 & 23	<b>Implant Training/ Project work (Work in a team )</b>
24 & 25	<b>Revision</b>
26	<b>Examination</b>

## **SYLLABUS FOR TRDE PRACTICAL (SEMESTER-4)**

<b>Week No.</b>	<b>Trade Practical</b>
<b>1</b>	H- fitting practice
<b>2</b>	Hand lapping practice
<b>3</b>	Hand Reamaining practice
<b>4</b>	T- Joint for pipe fitting practice
<b>5</b>	Thread cutting on pipe
<b>6</b>	Tapping and Drilling practice
<b>7</b>	Pipe fitting practice
<b>8</b>	Practice in Handling Fire- Extinguisher of any type
<b>9</b>	Check the gap for fillar gaiges
<b>10</b>	Male and Female fitting
<b>11</b>	Marking on the round work piece
<b>12</b>	Dovetail fitting practice
<b>13</b>	Study of power transmission system
<b>14</b>	Repairing and replacing of belt
<b>15</b>	Mounting and dis-mounting of pulleys
<b>16</b>	Repairing and replacing key and quarter
<b>17</b>	Making details of fitting parts
<b>18</b>	Marking cutting and drilling practice
<b>19</b>	Documentation for different industrial need
<b>20</b>	Testing of different parts of machine
<b>21</b>	Testing of different parts of machine
<b>22 &amp; 23</b>	<b>Implant Training/ Project work (Work in a team )</b>
<b>24 &amp; 25</b>	<b>Revision</b>
<b>26</b>	<b>Examination</b>

## **SYLLABUS FOR ENGINEERING DRAWING (SEMESTER- 4)**

<b>Week No.</b>	<b>Engineering Drawing</b>
<b>1 &amp; 2</b>	Details and assembly of simple hand - vice
<b>3 &amp; 4</b>	Blue print Reading. Simple exercises related to missing lines.
<b>5 &amp; 6</b>	Simple exerciss relating missing symbols.
<b>7 to 10</b>	Simple exercises related to missing section.
<b>11 &amp; 12</b>	Sketching of different types of bearing and its conventional representation.
<b>13</b>	Solution of NCVT test. Basic electrical and electronic symbols.
<b>14</b>	Study of drawing & Estimation of meterials.
<b>15 &amp; 16</b>	Solution of NCVT test papers.
<b>17</b>	Solution of NCVT test papers.
<b>18 to 21</b>	Revision
<b>22 &amp; 23</b>	<b>Implant Training/ Project work (Work in a team )</b>
<b>24 &amp; 25</b>	<b>Revision</b>
<b>26</b>	<b>Examination</b>

**SYLLABUS FOR WORKSHOP SCIENCE AND CALCULATION (SEMESTER- 4)**

<b>Week No.</b>	<b>Workshop Science and Calculation</b>
<b>1 &amp; 2</b>	Centre of gravity, simple experimental determination, stable, unstable & neutral equilibrium, simple explanation
<b>3</b>	Friction - co-efficient of friction. Simple problem related to friction.
<b>4</b>	Magnetic substances- natural and artificial magnets.
<b>5</b>	Method of magnetisation. Use of magnets.
<b>6</b>	Electricity & its uses. Electric current- positive & negative terminals.
<b>7</b>	Use of fuses and switches, conductors and insulators.
<b>8</b>	Simple electric circuits, simple calculations.
<b>9</b>	Simple calculation based on Ohm's law. Electrical insulating materials.
<b>10 &amp; 11</b>	Transmission of power by belt, pulleys & gear drive. Calculation of Transmission of power by belt pulley and gear drive.
<b>12 &amp; 13</b>	Read images, graphs, diagrams - bar chart, pie chart. Graphs: abscissa and ordinates, graphs of straight line, related to two sets of varying quantities.
<b>14</b>	Stress, strain, Hooke's law, ultimate strength, factor of safety definitions and problems on them.
<b>15 &amp; 16</b>	Mechanical properties of metals. Heat treatment and advantages.
<b>17</b>	Basic Electronic: Introduction to wiring symbols, units, resistor, capacitor and inductor.
<b>18 to 21</b>	Solution of test papers.
<b>22 &amp; 23</b>	<b>Implant Training/ Project work (Work in a team )</b>
<b>24 &amp; 25</b>	<b>Revision</b>
<b>26</b>	<b>Examination</b>