<table>
<tr><td>1</td><td>Name of Syllabus</td><td>C.C.IN OPERATION ON SHEET METAL (303118)</td></tr>
<tr><td>2</td><td>Max. No’s of Student</td><td>25 students</td></tr>
<tr><td>3</td><td>Duration</td><td>6 Month</td></tr>
<tr><td>4</td><td>Type</td><td>Part Time</td></tr>
<tr><td>5</td><td>No’s Of Days / Week</td><td>6 Days</td></tr>
<tr><td>6</td><td>No’s Of Hours /Days</td><td>4 Hrs</td></tr>
<tr><td>7</td><td>Space Required</td><td>Workshop = 600 Sq feet
Class Room = 200 Sq feet
TOTAL = 800 Sq feet</td></tr>
<tr><td>8</td><td>Entry Qualification</td><td>7th passed</td></tr>
<tr><td>9</td><td>Objective Of Syllabus/ introduction</td><td>Introduction – the syllabus of Operation on sheet metal has been evolved in such a way that after completion of course of 6 Months , the student would acquire good working skill suited to work as Tin Maker.
Objective:-
1) Develop skills in sheet metal work.
2) Develop various joints shapes.
3) Develop skill in punching and riveting.
4) Handling & uses of different types of tools used in sheet metal work.</td></tr>
<tr><td>10</td><td>Employment Opportunity</td><td>Self employment/ wage employment</td></tr>
<tr><td>11</td><td>Teacher’s Qualification</td><td>Diploma OR Degree in related course</td></tr>
<tr><td>12</td><td>Training System</td><td>Training System Per Week<table><tr><td>Theory</td><td>Practical</td><td>Total</td></tr><tr><td>6 Hours</td><td>18 Hours</td><td>24 Hours</td></tr></table></td></tr>
<tr><td>13</td><td>Exam. System</td><td><table><tr><th>Sr. No.</th><th>Paper Code</th><th>Name of Subject</th><th>TH/PR</th><th>Hours</th><th>Max. Marks</th><th>Min. Marks</th></tr><tr><td>1</td><td>30311811</td><td>Sheet Metal</td><td>TH-I</td><td>3 hrs</td><td>100</td><td>35</td></tr><tr><td>2</td><td>30311821</td><td>Sheet metal work</td><td>PR-I</td><td>3 hrs</td><td>100</td><td>50</td></tr><tr><td>3</td><td>30311822</td><td>Tin article</td><td>PR-II</td><td>6 hrs</td><td>200</td><td>100</td></tr><tr><td></td><td></td><td>TOTAL</td><td></td><td></td><td>400</td><td>185</td></tr></table></td></tr>
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C. C. IN OPERATION ON SHEET METAL

THEORY PAPER – I, SHEET METAL

1. Importance of safety and general precautions observed in institute. Importance of Trade in development of Industrial economy of the country.
   All the necessary guidance to be provided to the new comers to become familiar with working of Training institute. Introduction of the Trade, safety precautions.
2. Metals and non metals – Metal and non Metal characteristics, Types sizes and uses of sheet Metal. Standard wire gauge as per ISI uses of reference table.
3. Try square, Dividers, combination set, Marking block, various type of snips shears their uses. Description and uses of guillotine shears and circle cutting m/c, Bench vice, clamp, pliers, Engineering Hammers use of grooving rails and grooves.
4. Sheet Metal joints types of sheet metal joints. Description of sheet metal seamed, Grooved, Locked, paned down seam, knocked up seam etc.
5. Sheet metal Hammers, types, classification and their uses mallets, types of materials and their cloes. Description of Hacksaw frame and Hacksaw blade their specification. Description of folders, types of bar folder wing adjustment and explanation
6. Clips and connecter – their uses. And allowances of 'S' clips Government clips, drive drive clips, mailing clips. Etc.
7. Description of files, types and their classifications, chisels ISI types specification cutting angle different cutting angle.
8. Use of Dies and Die holder, Description of Tapes and Tap wrench, Reading of micrometer, Reamers, Description and their uses.
9. Description of 'Mandrel' preparation of pickling solution, protection- coating. Cleaning and preparing of sheet metals.
10. Technical Abbreviation used in Trade, Definition of Trade, Term such as pattern, development, stretch out pattern, master pattern, template etc. Folding, bending, seaming, notching, turning, grooving, edge stiffingning,, homing ,
11. Fastening of sheet metal, various types of Fastening devices for sheet metal, screws, self-threaded screw etc. Development of pipe.
12. Introduction to tube and pipes, laying out pattern of segmental quarter bend pipe. Discretion and operating principles of seaming machines. Laying out pattern of cylindrical out obliquely. Description of roll forming m/c, types and operation principle. Description of slip roll forming m/c and its function. Introduction of pipe tube bending, description of Hydraulic pipe bending machine operating principle etc.
13. Rivets and Riveting - riveting pitch parts, selecting of rivet heads, Types of Rivet and their uses, standard size of rivets and Reverting tools. Description of flushes for dissimilar metals.
14. Fundamental of arc welding, Advantages and disadvantages of electric arc welding precaution to be taken while welding. Use of oxycutterm methods of overcoming distortion while welding, methods of brazing using blow pipes. Types of nozzles and purposes, other types of blow pipes for other gases. Use of coal gas for heating
15. Process of painting, spray painting and metal spraying.

PRACTICAL - I SHEET METAL WORK

1. Introduction of machinery tools and types of work done trainee with safety precautions.
2. Practice in cutting sheet metal to these shapes marking and cutting of sheds to various angle.
3. Practice in drawing simple metrical shapes on the metals.
4. Practice on cutting with different types of strips, dutting off inside and outside curve, cutting of notches.
5. Bending and folding.
6. Practice on sheet metal seamed is folded, groove pane down, knocked up and pits burg lock.
7. Development on parallel line method of forming Rectangle shapes sing taen forming cylindrical job using various stokes.
8. Preparation of soft soldering sticks, practice soft soldering on lap joints and platter butt joints, making round cylindrical with lap, joints and soldering.
9. Making cylindrical container with knocked up, bottom grooved joint and hemmed top.
10. Practice on simple brazing forming, "cramped seam" or Dovetail seam.
11. Use of solid/Round punches as per ISI and use of Hollow punches for making hole in sheet metal with the help of grained block of wood. Making 'Chimney' for kerosene cooker.
12. Making holes in sheet metal using punch m/c making holes in sheet metal with twist drill, electric drilling m/c, Grinding a drill bit
13. Riveting practice using various types of Rivets heads, single chain Riveted joint. Double chain and zig zag riveted joints
14. Making a dust pan corner riveted handle riveted. Making fire bucket with Riveted joint.

15. Practice in drilling holes in brick walls as applied in applied to ducting work (use of masonry buts) use of raw plug.
16. Practice on removing tents of spherical or handrispherical articles using wheching and raising machines.
17. Wiring practice on straight edge, wiring practice on curned dege. Making a rectangular article with wired top.
18. Fitting a flange to circular pipe by using clamped joint.
19. Making various types of locks and joint as applied in ducting work joining blows. **:-**
20. Forming square section segmental quarter bend pipe with suitable lock
21. Practice on cutting cylindrical obliquely. To make a 'T' pieces of equal diameter (Round) and joint them at right angle.
22. To make a 'T' piece with unequal diameter pipe. To make a 60 'T' pieces with unequal diameter piece.
23. Practice on pipe bending (hand process), pipe bending using hydraulic pipe bendi.

PRACTICAL - II TIN ARTICLES

1. Making a 'MUG' with wire edge side and bottom locked grooved and nckedup joint, harmed edge handle.
2 .Cone forming in frustum.
3. To make a taper chute squares to square. To make a taper chute and flat back.

4. Forming on elbow between round and conical lebster back shape bend
5. Simple tacking by gas welding on ferrous metal sheets.
6. Practice of welding butt joint on ferrous metal and non ferrous metal spot welding practice.

7. Welding practice on white metal making pipes (three way tapered 'V' piece.)

8. Prepare a tapered tray with welded corner, brazing Copper and brass. Articles by making cylindrical pipe.

9. Make a 90˚ elbow with black iron sheet welded joint. A lobster back bend with welded joint.

10. Fusing welding on aluminum and its alloys.
11. Practice on external Threading using Die and Die Holder. Practice on internal threading using taps and wrench.
12. Sawing by backsaw, chipping, cross files, and draw filing.
13. Project work-blocking of urnlid and trmbler lid (Aluminum sheet) by using wooden blocks, cleaning cleaning and publishing.
14. Making brass flower vase by brazing joint with inside tinning
15. A dust cyclone with round inlet (Model) making gutter5s of different shapes.

16. A Rectangular bell mouth with twine cutlets (Models).
17. Metal spinning making a cylindrical – Medicine container of Aluminum sheet.

18. Typical folding, bending practice, making steel rack, reinforcement with angle, Iron, use of self threaded screw.
19. Making steel trunk.

Reference book:-

Work shop Tech:-- Hajara and chaudhari

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