

SYLLABUS

1.వర్ణమాల	-2 రోజులు
2.గుణింతాలు	-2 రోజులు
3.పదాలు	-2 రోజులు
4.వత్తులు	-2 రోజులు
5.వాక్యాలు	-2 రోజులు
6.కథలు	-2 రోజులు
7.స్టేడ్ టైపింగ్	-3 రోజులు
8.వెడ్డింగ్ కలరింగ్ కార్డ్	-2 రోజులు
9.వెడ్డింగ్ డిజైన్	-2 రోజులు
10.సెమినార్స్	-3 రోజులు
11.ఫోటో ఎడిటింగ్	-2 రోజులు
12.కంప్యూట్ టూల్ బార్.	-2 రోజులు
13.కలర్ పాలెట్	-2 రోజులు
14.పేజ్ అలైట్మెంట్	-2 రోజులు

Digital Album Making using Photoshop

Syllabus

1: Introduction to Digital Album Making

- Definition and purpose of digital album making
- Benefits and advantages of digital albums
- Types of digital albums (wedding albums, travel albums, family albums, etc.)
- Importance of storytelling through digital albums

2: Photoshop Basics for Digital Album Making

- Photoshop interface and navigation
- Essential tools and their functions
- Understanding layers and layer management
- Basic image editing and adjustments

3: Image Organization and Preparation

- Efficient image organization strategies
- File naming conventions and folder structures
- Batch editing and resizing images
- Image selection, sorting, and optimization

4: Designing Album Layouts

- Using pre-designed templates for album layouts
- Composition techniques for creating visually appealing layouts
- Arranging and positioning images in the layout
- Incorporating background elements and graphics

5: Adding Text and Captions

- Typography principles and font selection for album text
- Adding, formatting, and styling text in Photoshop
- Positioning and aligning text in the album layout
- Using text to enhance storytelling and convey information

6: Creating Photo Collages and Montages

- Techniques for creating photo collages and montages

- Layer masks and blending modes for seamless integration
- Arranging and combining multiple images in a creative way
- Adding borders, overlays, and effects to enhance the collage

7: Enhancing Album Aesthetics

- Color correction and tonal adjustments for image enhancement
- Retouching techniques for improving image quality
- Applying artistic filters and effects to enhance visual appeal
- Creating a consistent and cohesive look throughout the album

8: Exporting and Sharing Digital Albums

- Exporting digital albums for web and print distribution
- Choosing the appropriate file formats and settings
- Optimizing images for different platforms and devices
- Uploading and sharing digital albums on online platforms or websites

INTRODUCTION

What is a soap:

Chemically soap is sodium or Potassium salt of fatty acids of long carbon chains.

What are fatty Acids:

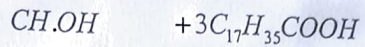
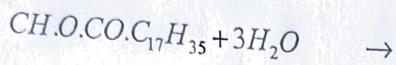
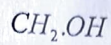
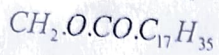
All animal fats such as lard, goose fat, bone fat, butter etc and fatty vegetable oils such as olive, linseed, rape, palm and cotton seed oil which are obtained by pressing the seeds or fruit of certain plants. When heated with dilute sulphuric acid or with water, under pressure, they are decomposed into glycerol and a mixture of acids, most of which belong to $C_nH_{2n}O_2$ series. The occurrence of these acids in natural fats and oils and the fact that the higher members of the series resemble fats in physical properties led to the use of the term "fatty acid" which is applied to all the members of the series.

The chemical compounds of which these fats are composed of were investigated by Chevreul, who showed them to be esters of the fatty acids with the trihydric alcohol, glycerol. These esters are

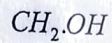
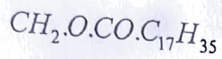
collectively termed glycerides and are named after the acids from which they are formed. The glyceride formed from acetic acid is called triacetin, that from oleic acid, triolein.

Simple glycerides are found in fats and oils in small proportions only. The chief components are mixed glycerides in which two or more fatty acids are combined with glycerol. Lard for example, contains Palmitodisterin, Stearodipalmitin, Oleopalmito Stearin and Palmito diolein. When fat contains in combination a relatively large proportion of palmitic or stearic acid it is solid and comparatively hard at ordinary temperatures. When however it contains a relatively large proportions of combined oleic acid, it is soft and pasty (Lard) or liquid (olive oil).

These glycerides, like other esters are decomposed by water and by dilute mineral acids at moderately high temperatures and are converted into glycerol and an acid. In the case of tristearin for example the hydrolysis takes place as follows.




Stearic Acid



Glycerol

Since fats and oils consists of mixed glycerides, they yield mixture of various fatty and other acids.


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SOAPS

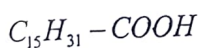
Soaps are alkali salts of higher fatty acids. They are mainly obtained by the hydrolysis of fats and oils with sodium hydroxide or potassium hydroxide.



Tripalmitin

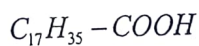
Glycerol

Soap is made by the hydrolysis of naturally occurring fats and oils by sodium or potassium hydroxide. The fats and oils used are tristers of propane - 1,2,3 triol with long - chain organic acids.



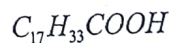
Hexadecanoic acid

(Palmitic acid)



Octadecanoic acid

(Stearic acid)



Octadec - 9 -

enoic acid

(Oleic acid)

When boiled with alkalies, the glycerides are decomposed much more rapidly than by water and alkali salts of acids are formed together with glycerol.

In the manufacture of soaps, a mixture of fats or oils, such as tallow, palm oil palm kernel oil or coconut oil is heated in an iron pan with a sufficient quantity of a solution of sodium hydroxide, after some time there is formed a thick, homogeneous frothy solution which contains glycerol and the salts of various acids which were present in glycerides - that is to say, the sodium salts of stearic palmitic oleic and related acids. Some common salt is now added - Here due to common ion effect, the sodium salts of the acids (soaps) separate at the surface as a curd, because they are insoluble in salt water.

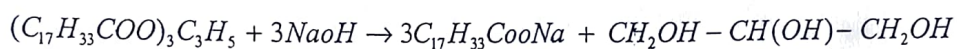
After allowing of to settle for some hours, the lower layer, a solution of glycerol and salt is run off and the curd(soap) which contains some salt and alkali is boiled with sufficient water to give a homogeneous liquid, after which salt is again added and the layer is re-formed.

After further treatments involving boiling, salting and settling, there is finally obtained a homogeneous liquid which solidifies to a hard soap, and unless previously mixed with filling materials such as salt, sodium silicate (Sodium Carbonate) is known as genuine soap. It consists of a mixture of sodium salts of fatty acids originally present as glycerides in fats or oils, together with water, small proportions of salt and glycerol and a little alkali.

When fats or oils are boiled with caustic potash, similar chemical changes take place and the potassium salts of acids are formed, the homogeneous solution is allowed to cool, where on it sets to a jelly like mass of soft soap which is a mixture of potassium salts of above named acids with glycerol and a large percentage of water.

The decomposition of fats and oils in this way, in process of soap making was formerly called saponification and the fats and oils were said to be saponified. The term saponification was then applied generally to the analogous decomposition of other esters by alkalies

(inspite of fact that the products were not soaps) but the word hydrolysis is now used instead.



(Soap)

Glycerol

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PROCESS OF SOAP MANUFACTURE

This involves 3 steps:

- 1) Hydrolysis of fat into fatty acids:
- 2) Separation of fatty acids.
- 3) Neutralisation of fatty acids by bases.

1) *Hydrolysis of fat into fatty acids:*

The oil is taken in a stainless steel tower. Catalyst such as zinc oxide or calcium oxide or magnesium oxide is added. The mixture is heated to 240-250°C and a pressure of 4.1 mpa is applied. The mixture is blended by steam. The hydrolysis is carried out for 2-3 hours. The glycerol obtained in the reaction is water soluble and is distilled off.

2) *Separation of fatty acids:*

The fatty acids, usually a mixture are dried and subjected to fractional distillation and the mixture is separated. The quantity of soap depends upon the composition of fatty acids in mixture and soap maker chooses the required fatty acids and then mixes in the required

proportion according to the properties desired.

3) Neutralisation of fatty acids by bases:

3) The soap is then prepared by continuous neutralisation of fatty acids with bases like KOH, NaOH, $Mg(OH)_2$, $Ca(OH)_2$, triethanolamine etc.,

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KINDS OF SOAP

1) **Transparent Soaps:** These are made by dissolving ordinary soaps in warm alcohol and allowing them to set.

2) **Marine Soaps:** These are soaps made from coconut oil. They lather with salt water.

3) **Floaty Soaps:** These are ordinary soaps slightly heavier than water. They can be made to float if air is blown into them.


4) **Medicated soaps:** These soaps contain sulphur, neem. These are prepared by incorporating these ingredients in the soap.

5) **Liquid Soaps:** These are made by dissolving potash soap in water or alcohol and adding some glycerol.

6) **Shaving Soaps:** These contain mixture of potassium & sodium soaps. They are generally made from tallow & lard. They contain some gum or glycerin to prevent too rapid drying up.

7) **Insoluble Soaps:** These are heavy metal salts of fatty acids.

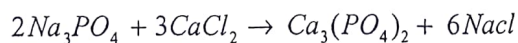
Although useless for washing they have got special uses as driers for paints as insecticides and for the preparations of greases etc.,


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QUALITY OF SOAP

Dissolve 1.5 gms of soap in 100ml of distilled or soft water. Take 10ml of this soap solution in a boiling tube with a rubber - stopper and shake it vigorously for 15secs. Allow the solution to stand for 30 secs. Observe the level of foam. Perform same experiment on different kinds of soaps available in the market. A good soap is that which gives the largest amount of lather. Add 4 drops of 4% CaCl_2 solution and observe the foam level after shaking for 15 secs and allow setting for 30 secs. Add 1gm of Na_3PO_4 to this solution. Shake for 15 secs and allow it to stand for 30 secs. Observe the foam level.

Upon addition of CaCl_2 the foam level decreases because Ca^{2+} is hard water ion. Addition of Na_3PO_4 again increases the foam level because Na_3PO_4 removes the Ca^{2+} ions.




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CLEANSING ACTION OF SOAP

The dirt particles are held on the cloth or skin by some greasy material. When rubbed with soap and water, the soap solution not only emulsifies the grease and loosens its grip on the dirt but it also lowers the surface tension of water. As a result of this the soap solution quickly spreads through the fibre and looses dirt particles, which are absorbed on it and removed.

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ADD ON PROGRAMME ON PC MAINTENANCE, TROUBLESHOOTING AND REPAIR

SYLABUS

UNIT-1 Introduction: Introduction to the Computer Lab Manager Training Course- Importance of Practical Learning- Importance of Self Study- Introduction to module1.

UNIT-2 Basic Computer Technical Knowledge: How a Computer Works-Hardware-Software- Computer Maintenance-Why Maintain- Updating Software-Virus and Malware Prevention and Removal-Computer Hardware Maintenance-Peripheral Hardware Use and Maintenance.

UNIT-3 Setting Up or Customizing a Computer-When a Computer Arrives-Partitioning a Hard Drive-Installing Operating Systems-Installing and Uninstalling Other Software-Setting Up User Accounts.

UNIT-4 Computer Troubleshooting and Repair Basics-Improving Slow Performance-Stepwise guides for Common Problems-Understanding Error Messages-How to Search for Information-How to Distinguish a Software Issue from a Hardware Issue-Fixing Software Problems-Fixing Hardware Problems-Troubleshooting and Repairing Printers-Managing E-Waste.

Communicative Skills topics/Syllabus

Unit	Title
1	Names and Actions
2	Descriptions and Connections
3	Resources and Environment
4	Composition - 1
5	Composition - 2
	Model Question Paper

SYLLABUS

Module 1: Income Tax - Introduction

Income tax- meaning – direct taxes and indirect taxes – important terms – previous year vs assessment year – residential status.

Module 2: Income from Salary

Five heads of income - income from salary – salary- allowances – perquisites – profits in lieu of salary – deductions u/s 16 - deductions u/s 80 - calculation of salary income (including illustrations).

Module 3: Filing of Income Tax Returns

Tax avoidance and tax evasion - ITR Forms – types – due dates – penalties and prosecutions.

Syllabus

SYLLABUS

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2. గుణింతాలు. -3 రోజులు
3. ఒత్తులు. -3 రోజులు
4. పదాలు. -3 రోజులు
5. వాక్యాలు. -3 రోజులు
6. కథలు -4 రోజులు
7. పేజీ & బోర్డర్ కలరింగ్. -2 రోజులు
8. పేజీ & బోర్డర్ డిజైన్. -3 రోజులు
9. వెడ్జింగ్ కార్డ్ డిజైన్. -3 రోజులు
10. పోటో ఎడిటింగ్ -3 రోజులు

SOLDERING AND BRAZING

Structure

1. origins of solders and soldering
2. Introduction
- Objectives
3. Principle of Brazing
4. Principle of Soldering
5. Different Types of Solders
6. Types of Soldering Fluxes
7. Soldering Methods
8. Soldering Tools
9. Soldering Procedure
10. Soldering Defects and their Remedies
11. Safety Precautions in Soldering
12. Brazing Processes
13. Brazing Joints and Surface Preparation
14. Brazing Fluxes and Equipment and Filler Metal
15. Comparison of Soldering, Brazing and Welding
16. Summary

1. Origins of Solders and Soldering

The word *solder* derives from the Old French, *soudure*, which in turn stems from the Latin *solidare*, which means to fasten together. Its earliest use in a completely English context as a noun meaning “a fusible metallic alloy used for uniting less fusible metal surfaces or parts” dates to about 1350. It is interesting to note that in 19th century English, just as in modern French, the “l” would have been omitted and the word pronounced “sod-der,” a form that still persists in the United States of America today. Although the origin of solders and soldering is lost to antiquity, it is possible to speculate on how the invention arose. Lead was first obtained as a by-product of silver production. Silver extraction from ores involved cupellation of lead, and the base metal was then recovered from the litharge [Tylecote 1976]. The softness and malleability of lead were clearly recognized, and there exist examples of lead being used as a

setting agent to fix posts in the ground and lock mortised stones. It was observed that in this instance the lead filler could give a stronger joint than a simple friction grip. Lead was used by the Mesopotamian (3000 B.C.) to join pieces of copper together, although perhaps more by luck than design since pure lead does not wet copper at all readily. The Romans are known to have produced lead separately from silver, taking advantage of the fact that this metal can be easily extracted from its sulfide ore, galena, simply by roasting the mineral in air [Tylecote 1976].

The earliest examples of tin are Egyptian and date from 2000 B.C. What might be construed as a manufactured solder alloy has been found in King Tutankhamen's tomb (1350 B.C.), although there is some debate among scholars about the deliberateness of the metallurgy of this joint. Solders comprising alloys of lead and tin were almost certainly used during the Iron Age [Tylecote 1962]. By the Roman Imperial period there is evidence, both from literary sources and from surviving artifacts, that lead-tin solders were in regular use. Pliny the Elder (1st century A.D.) speaks of *tertiarium*, an alloy of two parts of (black) lead and one part of white lead (tin) being used for joining metal pipes [Pliny, *Natural History* xxxiv 161 (Rackham 1952)]. Pliny also remarks that the price of this alloy is 20 denarii per pound. With 25 denarii (silver pieces weighing approximately 4 gm, or 0.14 oz, each) to 1 gold aureus of close to 8 gm (0.28 oz), the price of Roman solder works out at \$70 per kilogram, assuming that gold has maintained its purchasing power since Pliny's day. The current price for the same alloy (Pb-33Sn) is lower by an order of magnitude, which indicates how much more precious solder was in antiquity.

An analysis of soldered joints in Roman artifacts has shown that both tin-rich and lead-rich alloys were used. The solder in a force-pump from Roman Silchester contains lead to tin in a weight ratio of close to 3 to 1, which is similar to the composition of plumbers' solder [Tylecote 1962]. Elsewhere, solders containing mainly tin (80 to 100% Sn), have been encountered in finds from 4th and 5th century sites in Britain [Lang and Hughes 1991].

Soldering, unlike many Roman crafts, either did not die out during the Dark Ages or enjoyed an early revival. The soldering iron, not mentioned at all in Classical times, was well known and in widespread use by the early Middle Ages. Soldering was used for joining the lead strips in stained glass windows, with the oldest complete examples being the Five Prophets windows in Augsburg Cathedral that date from the late 11th century. From 1700 onwards it is

clear that soldering was well established with the appearance of “tinsmiths” and “white-iron men” as trades. Newcomen’s discovery of the effectiveness of the internally condensing steam engine in 1708 is attributed to the faulty repair, by soldering, of a blowhole in the cast bronze cylinder. This permitted a spray of external condenser water into the cylinder and the development of the internal condenser; a design that was not superseded until Watt developed the separate condenser nearly 70 years later. Modern soldering practice dates to the early 20th century when improved extraction techniques, which enabled exotic metals to be available at affordable cost, coupled with the appearance of alloy phase diagrams, gave rise to the diversity of alloys now available.

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- Tylecote, R.F., 1962. *Metallurgy in Archaeology: A Prehistory of Metallurgy in the British Isles*, Edward Arnold
- Rackham, H., 1952. *Natural History*, Vol 10, Cambridge, MA, *Translation of Pliny 1. Historia Naturalis*, Vol 34 (No. 161)
- Lang, J. and Hughes, M.J., 1991. “Joining Techniques in Aspects of Early Metalurgy,” *British Museum Occasional Papers*, No. 17, British Museum, p 169–177

SOLDERING AND BRAZING

2 INTRODUCTION

Soldering and brazing provide permanent joint to bond metal pieces. Soldering and brazing process lie some where in between fusion welding and solid state welding. These processes have some advantages over welding process. These can join the metal having poor weld-ability, dissimilar metals, very less amount of heating is needed. The major disadvantage is joint made by soldering and brazing has low strength as compared to welded joint.

Objectives

After studying this unit, you should be able to

- introduction to allied welding processes,
- welding soldering and brazing comparative study,
- different methods of soldering and brazing and machine tool, and

□ defects and applications of soldering and brazing.

3. PRINCIPLE OF BRAZING

In case of brazing joining of metal pieces is done with the help of filler metal. Filler metal is melted and distributed by capillary action between the faying surfaces of the metallic parts being joined. In this case only filler metal melts. There is no melting of work piece metal. The filler metal (brazing metal) should have the melting point more than 450°C. Its melting point should be lesser than the melting point of work piece metal. The metallurgical bonding between work and filler metal and geometric constrictions imposed on the joint by the work piece metal make the joint stronger than the filler metal out of which the joint has been formed.

4. PRINCIPLE OF SOLDERING

Soldering is a joining process used to join different types of metals together by melting solder. Solder is metal alloys usually made of tin and lead which is melted using a hot iron. The iron is heated to temperatures above 600 degrees Fahrenheit which then cools to create a strong electrical bond.

How does it work?

Solder is melted by using heat from an iron connected to a temperature controller. It is heated up to temperatures beyond its melting point at around 600 degrees Fahrenheit which then causes it to melt, which then cools creating the soldered joint.

As well as creating strong electrical joints solder can also be removed using a desoldering tool.

Solder is a metal alloy used to create strong permanent bonds; such as copper joining in circuit boards and copper pipe joints. It can also be supplied in two different types and diameters, lead and lead free and also can be between .032" and .062". Inside the solder core is the flux, a material used to strengthen and improve its mechanical properties.

Soldering is very much similar to brazing and its principle is same as that of brazing. The major difference lies with the filler metal, the filler metal used in case of soldering should have the melting temperature lower than 450°C. The surfaces to be soldered must be pre-cleaned so that these are faces of oxides, oils, etc. An appropriate flux must be applied to the faying surfaces and then surfaces are heated. Filler metal called solder is added to the joint, which distributes between the closely fitted surfaces. Strength of soldered joint is much lesser than welded joint and less than a brazed joint.

What Metals are used?

Filler metals used in soldering were once lead based (lead solder), however, owing to regulations, lead-based solders are increasingly replaced with lead free solders, which may consist of antimony, bismuth, brass, copper, indium, tin or silver.

Which Flux can be used for Soldering?

Occasionally at the site of the joint, there are impurities such as oil, dirt or oxidation, the flux helps prevent oxidation and can sometimes chemically clean the metal. The flux used is **rosin flux** which helps the mechanical strength and electrical contact of electrical joints. Sometimes it is also possible to apply a 'wetting agent' to reduce the surface tension.

5. DIFFERENT TYPES OF SOLDERS

Most of the solder metals are the alloy of tin and lead. These alloys exhibit a wide range of melting point so different type of soldering metal can be used for variety of applications. Percentage of lead is kept least due to its toxic properties. Tin becomes chemically active at soldering temperature and promotes the wetting action required for making the joint. Copper, silver and antimony are also used in soldering metal as per the strength requirements of the joint. Different solder their melting point and applications are given in the Table 6.1.

Common Soldering Alloys and their Applications

Filler Metal Compositions					Melting Point	Applications
Tin	Lead	Silver	Zinc	Antimony		
-	96	04	-	-	305°C	Joint making at elevated temperature
60	40	-	-	-	188°C	Electronic circuits
50	50	-	-	-	199°C	Wire joining
40	60	-	-	-	208°C	Automobile radiators
91	-	-	09	-	200°C	Joining of aluminium wires
95	-	-	-	05	238°C	Plumbing, etc.

A solder is selected on the basis of its melting point. If metals to be joined have higher melting point solder of higher melting point is generally selected. Solder of high melting point provides better strength of the joint.

6 TYPES OF SOLDERING FLUXES

Soldering fluxes can be classified as :

- (a) Organic, and
- (b) Inorganic fluxes.

Organic Fluxes

Organic fluxes are either rosin or water soluble materials. Rosin used for fluxes are wood gum, and other rosin which are not water soluble. Organic fluxes are mostly used for electrical and electronic circuit making. These are chemically unstable at elevated temperature but non-corrosive at room temperature.

Inorganic Fluxes

Inorganic fluxes are consists of inorganic acids; mixture of metal chlorides (zinc and ammonium chlorides). These are used to achieve rapid and active fluxing where formation of oxide films are problems. Fluxes should be removed after soldering either by washing with water or by chemical solvents. The main functions performed by fluxes are :

- (a) remove oxide films and tarnish from base part surfaces,
- (b) prevent oxidation during heating, and
- (c) promote wetting of the faying surfaces.

The fluxes should

- (a) be molten at soldering temperature,
- (b) be readily displaced by the molten solder during the process, and
- (c) leave a residue that is non-corrosive and non-conductive.

7. SOLDERING METHODS

There is a lot of similarity between soldering and brazing processes. The major difference between them is less heat and lower temperature is required in case of soldering. The different processes (methods) used in soldering are touch soldering, furnace soldering, resistance soldering, dip soldering and infrared soldering. All the above methods are common to both soldering and brazing processes. There are some more methods used in case of soldering only, these are hand soldering; wave soldering and reflow soldering. These methods are described below.

Hand Soldering

Hand soldering is done manually using solder iron. Small joints are made by this way in very short duration approximately in one second.

Wave Soldering

Wave soldering is a mechanical and technique that allows multiple lead wires to be soldered to a Printed Circuit Board (PCB) as it passes over a wave of molten solder. In this process a PCB on which electronic components have been placed with their lead wires extending through the through the holes in the board, is

loaded onto a conveyor for transport through the wave soldering equipment. The conveyor supports the PCB on its sides, so its underside is exposed to the processing steps, which consists of the following :

- (a) flux is applied through foaming, spraying, brushing, and
- (b) wave soldering is used pump liquid solder from a molten both on to the bottom of board to make soldering connections between lead wire and metal circuit on the board.

Reflow Soldering

This process is also widely used in electronics to assemble surface mount components to print circuit boards. In this process a solder paste consisting of solder powders in a flux binder is applied to spots on the board where electrical contacts are to be made between surface mount components and the copper circuit. The components are placed on the paste spots, and the board is heated to melt the solder, forming mechanical and electrical bonds between the component leads and the copper on the circuit board.

8 SOLDERING TOOLS

The main tool used for soldering is the soldering iron. In addition to soldering some consumable are also used in the process of soldering like fluxes, solder wire or stick and spelter. These are described below.

Soldering Iron

It consists of a copper bit attached to iron rod at its one end, and a wooden handle at the other end. It is used to melt the filler metal and paste it to make the joint. A soldering iron can be a forge soldering iron which is heated in a furnace to have sufficient temperature to melt the filler metal or it can be electric solder iron.

Electric solder iron is heated by passing electric current through it. Use of electric solder iron is popular and cost effective. It is used in making very precise joints in electronic and electrical equipment.

Spelter

Spelter is an alloy of zinc and copper in equal proportion. This is one of the filler metal with low melting point with other desirable properties to make good quality solder joint. Different types of solders and fluxes, which are common consumables used in soldering have already been described. Some precautions are to be followed to keep the soldering tools as described below.

- (a) Selection of correct tool according to the process. A defective tool should not be used.
- (b) Electrically heated solder iron should have proper earthing.
- (c) Hot solder iron, when idle, should be placed on its proper stand.
- (d) Tip of the solder iron should be cleaned before, its use.
- (e) Solder iron should be gripped at its handle while in use.

9 SOLDERING PROCEDURE

Following sequential steps should be carried out as soldering procedure.

Work Preparation

Work pieces which are to be joined together should be perfectly clean. There should not be any dirt, dust, rust, paint or grease. This is so that the solder or spelter can stick to the joint with proper strength. Cleaning is done

with the help of a file or sandpaper. In case of joining of conducting wires, insulation of portion to be joined should be perfectly removed. Sometimes chemicals are used to clean the work pieces. De-scaling (removal of scaling) is done by dipping the work pieces into dilute HCl.

Preparation of Joint

After cleaning work pieces should be kept together in correct position to make the final joint. Work pieces should be clamped to avoid any relative movement between them that may disturb the joint making. At the joint smaller grooves are made on the work pieces to facilitate better flow of molten solder and so good strength of the joint. There may be the two objectives of joint:

- to bear load, and
- to make electrical contact.

In case of load bearing joints lap joint or butt joints are preferred. It is important to note down that strength of a soldered joint cannot be compared with welded joint. If electrical contact is to be made the solder should be so selected that resistance of joint should match with the resistance of the conductor.

Fluxing

Fluxing includes selection of appropriate flux and its application to the joint. Selection of flux depends on the material of work piece keeping its purpose in view. It is applied to the joint with the help of a brush before soldering. It avoids oxidation of molten metal, helps in flow of molten solder into the joint and so maintains strength of the joint.

Tinning

In this step of soldering procedure, the bit of solder iron is cleaned; application of flux is done over it. It is brought in contact of solder wire so the bit carries sufficient amount of molten solder over it. After that it is used to make tags of solder at various processes throughout the joint. If soldering is done to make electrical contacts of conductivity wires the complete joint is made by tagging few times. In case of long joint, after tagging the molten solder is filled to the joint by bringing hot bit of solder iron and solder wire together in contact with the joint. Filling the joint with molten solder and allowing to solidify is the last step of the procedure called soldering

10 SOLDERING DEFECTS AND THEIR REMEDIES

Some of the common soldering defects are discussed below:

- (a) Granular formation at the surface of the joint of solder is one of the common soldering defects.
- (b) Formation of spheroids at the surface of soldering joint is also similar defect. This happens due to under heating or over heating of solder iron, insufficient use of flux. Formation of spheroids makes the joint ugly and weak in strength.
- (c) Improper or uneven application of flux may make the joint of weaker strength.
- (d) Proper coordination between flux application and soldering makes the joint of good quality.

11 SAFETY PRECAUTIONS IN SOLDERING

- (a) Keep solder iron always on its stand.
- (b) All electrically operated instruments/equipment should have proper earthing.
- (c) Sometimes emission of (smoke) soldering operation may be poisonous due to a particular type of flux. Operator should have protection from the same.
- (d) Flux should be applied gradually while soldering.
- (e) While diluting HCl, water should not be added to HCl but HCl should be mixed into the water drop by drop, to avoid accident.
- (f) Work place should have enough ventilation and smoking should be strictly prohibited during the operation. Work place should have the facility of first aid.
- (g) It should be noted down good quality surface preparation always contributes to good quality joint.

12 BRAZING PROCESSES

All the processes covered here can also be applied to soldering processes. These common processes are being described below.

Torch Brazing

In case of torch brazing, flux is applied to the part surfaces and a torch is used to focus flame against the work at the joint. A reducing flame is used to prevent the oxidation. Filler metal wire or rod is added to the joint. Torch uses mixture of two gases, oxygen and acetylene, as a fuel like gas welding.

Furnace Brazing

In this case, furnace is used to heat the work pieces to be joined by brazing operation. In medium production, usually in batches, the component parts and brazing metal are loaded into a furnace, heated to brazing temperature, and then cooled and removed. If high production rate is required all the parts and brazing material are loaded on a conveyer to pass through then into a furnace. A neutral or reducing atmosphere is desired to make a good quality joint.

Induction Brazing

Induction brazing uses electrical resistance of work piece and high frequency current induced into the same as a source of heat generation. The parts are pre-loaded with filler metal and placed in a high frequency AC field. Frequencies ranging from 5 to 5000 kHz is used. High frequency power source provides surface heating, however, low frequency causes deeper heating into the work pieces. Low frequency current is recommended for heavier and big sections (work pieces). Any production rate, low to high, can be achieved by this process.

Resistance Brazing

In case of resistance welding the work pieces are directly connected to electrical ---- rather than induction of electric current line induction brazing. Heat to melt the filler metal is obtained by resistance to flow of electric current through the joint to be made. Equipment for resistance brazing is same that is used for resistance welding, only lower power ratings are used in this case. Filler metal into the joint is placed between the

electrode before passing current through them. Rapid heating cycles can be achieved in resistance welding. It is recommended to make smaller joints.

Dip Brazing

In this case heating of the joint is done by immersing it into the molten soft bath or molten metal bath. In case of salt bath method, filler metal is pre-loaded to the joint and flux is contained in to the hot salt bath. The filler metal melts into the joint when it is submerged into the hot bath. Its solidification and formation of the joint takes place after taking out the work piece from the bath. In case of metal bath method, the bath contains molten filler metal. The joint is applied with flux and dipped to the bath. Molten filler metal, fills the joint through capillary action. The joint forms after its solidification after taking it out from molten metal bath. Fast heating is possible in this case. It is recommended for making multiple joints in a single work piece or joining multiple pairs of work pieces simultaneously.

Infrared Brazing

It uses infrared lamps. These lamps are capable of focused heating of very thin sections. They can generate up to 5000 watts of radiant heat energy. The generated heat is focused at the joint for brazing which are pre-loaded with filler metal and flux. The process is recommended and limited to join very thin sections.

Braze Welding

This process also resembles with welding so it is categorize as one of the welding process too. There is no capillary action between the faying surfaces of metal parts to fill the joint. The joint to be made is prepared as 'V' groove as shown in the Figure 6.1, a greater quantity of filler metal is deposited into the same as compared to other brazing processes. In this case entire 'V' groove is filled with filler metal, no base material melts. Major application of braze welding is in repair works.

Soldering

Soldering is a joining process used to join different types of metals together by melting solder. Solder is metal alloys usually made of tin and lead which is melted using a hot iron. The iron is heated to temperatures above 600 degrees Fahrenheit which then cools to create a strong electrical bond.

How does it work?

Solder is melted by using heat from an iron connected to a temperature controller. It is heated up to temperatures beyond its melting point at around 600 degrees Fahrenheit which then causes it to melt, which then cools creating the soldered joint.

As well as creating strong electrical joints solder can also be removed using a desoldering tool.

SYLLABUS

Module 1: Income Tax - Introduction

Income tax- meaning – direct taxes and indirect taxes – important terms – previous year vs assessment year – residential status-Incidence of Tax – Incomes Exempt from Tax (theory only).

Module 2: Income from Salary

Income from salary – salary- allowances – perquisites – profits in lieu of salary – deductions u/s 16 - deductions u/s 80 - calculation of salary income (including illustrations).

Module 3: Income from House Property

Annual Value, Let-out/Self Occupied/Deemed to be Let-out house -Deductions from Annual Value -Computation of Income from House Property

Module 4: Filing of Income Tax Returns

Tax avoidance and tax evasion - ITR Forms – types – due dates – penalties and prosecutions.

Syllabus of the course

Module 1

Introduce tailoring and tools ,machine working,-Terms used in Tailoring -
Stiching practice- knot-himming, sewing,- button stitching- hand stitching-
Lines, rounds,squares crosses stitching .

Module 2

Cut drayer Paper cutting and cloth stitching
Ful drayer Paper cutting and cloth stitching
Fillow cover Paper cutting and cloth stitching
Cross saree petticoat Paper cutting and cloth stitching
Plain saree petticoat Paper cutting and cloth stitching
Long petticoat Paper cutting and cloth stitching
Short 3/4 petticoat Paper cutting and cloth stitching
Gown Paper cutting and cloth stitching
Long jacket collar neck, round neck.square neck Paper cutting and cloth stitching
Long fruak Paper cutting and cloth stitching
School frauak Paper cutting and cloth stitching
Pawada Paper cutting and cloth stitching

Module 3

Punjabi dress top
Plain dress paper cutting and stitching

Umbrella paper cutting and stitching

Flour length paper cutting and stitching

Dress boat neck ,round neck,square neck paper cutting and stitching

Punjabi dress pants

Patiyala pant paper cutting and stitching

Chudidar paper cutting and stitching

Plain pant paper cutting and stitching

Module 4

Plain blouse paper cutting and stitching

V neck blouse paper cutting and stitching

Prince cut blouse paper cutting and stitching

Boat neck blouse paper cutting and stitching

Square neck blouse paper cutting and stitching

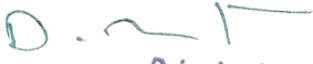
Back open blouse paper cutting and stitching

Front open blouse paper cutting and stitching

Reference

Mudra vedios Telugu

Tailoring triks and tips -pasta vedios Telugu


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