

16010421063 - Arya Nair
G1-3

Q1) Describe function of double sided UV Exposure Unit.

Ans. Double sided UV Exposure Unit

- A Double sided UV Exposure Unit is essential tool for production of parts especially double sided PCB.
- The vacuum which can be included in UV exposure unit which makes it sustainable for processing UV sensitive flexible substrate
- Double-sided exposure takes about 160 seconds.

Q2) List softwares used for PCB Layout design and explain how to design layout using DIPTRACE or EAGLE

Ans. Software for PCB Design

- Eagle
- Proteus
- Altium Designer
- Tiny CAD
- Diptrace
- TINA
- AutoTRAXDEX

Designing Layout using EAGLE

- Open PCB Layout in EAGLE
- In general window we find all components, left click on the component and drag it on the screen and drop. Right click on the screen then place next components.
- To change Label, right click on the component and option appears.

iv) There are two sides of PCB that is top and bottom. At top we see Component name and details and on the bottom we see padding.

v) Rotate the components to arrange in systematic manner.

vi) After rotating arrange all components and start drawing layout and complete all connections.

vii) Layout is now ready to print, we can also place copper pour which is very useful for complex circuits to reduce complexity as simplicity of layout. This increase the clearance.

viii) After completion of layout we can print it.

Q3) Write and explain in short the steps for fabrication of PCB.

Ans- Design and output

- PCB softwares are used to create layouts
- Software performs checks to verify everything is error-free.
- Designers also examine the plan with regard to element to track the width, board, edge spacing, tracing, hole size and spacing

File to film

- Manufacturers use a special printer called plotter which makes photo films of PCB to PCB
- The final product results in plastic sheet with photo negative of PCB in black ink.
- Each layer receives its own clear and black film sheet.

Printing inner layers

- Printing the figure on film onto a copper foil
- This step applies only to boards with more than two layers
simple two layer board skip to drilling

Removing unwanted copper

- Just as alkaline solution removes the resist, a more powerful chemical preparation eats away excess copper.
- The copper solution removes all exposed copper meanwhile the desired copper remains fully protected beneath hard layer of photo-resist.

Layer alignment optical inspection

with all layers ready the layers require an alignment punch to ensure they all line up.

Layer up and bond

- The outer layer material consists of sheets of fibre-glass a thin copper foil also covers a top and bottom of original substrate.
- Bond them together on a heavy steel cable with metal clamps.

Drill

- Finally holes are bored into stack board
- Additional copper is removed by profiling tool

Plating on copper deposition

- After drilling the panel moves to plating. The process forces the different layers together using chemical deposition.

Final Etching

3

The conducting area and connections are not properly established

Solder Mask Application

- The board receives a blast of UV light, which passes through a solder mask photo film.
- The covered portion remains unhardened and will undergo removal

Surface Finish

- To add extra solder-ability to PCB we chemically plate them with gold and silver

Silk screen

- The nearly completed board receives Ink-Jet writing on its surface which is used to indicate vital information about PCB

Electrical Test

- technician performs electrical test to confirm it works according to its design.

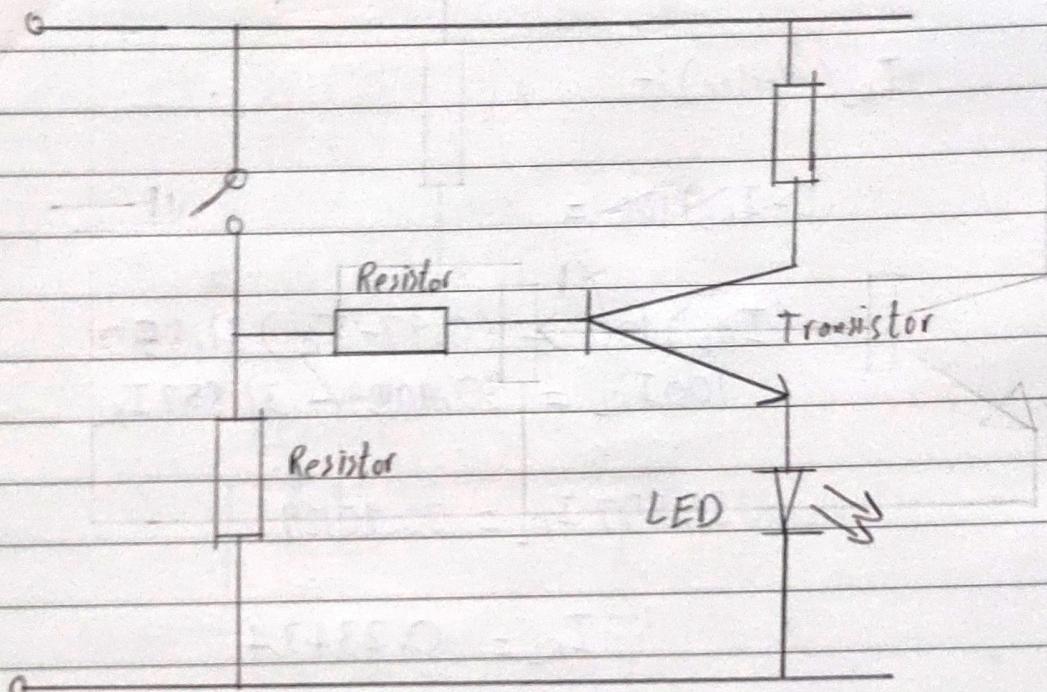
Proofing

Different Boards are cut from original panel.

Q4) Explain PCB in detail

- Ans.
- A PCB mechanically supports and electrically connects electrical or electronic components using conductive tracks, pads and other features etched from one or more sheet layers of copper laminated with non conductive material
 - It is built by altering layers of conductive copper with layers of non conductive insulation materials and so on until printed circuit board is complete
 - Electronic components are added to outer layer of PCB when all layers have been etched and laminated together
 - Surface mounts parts are automatically with robots and through parts are manually placed
 - During manufacturing the inner copper layers are etched leaving traces of copper to connect circuit compounds.
 - Once etched copper layers are laminated to insulation material and so on until PCB is completed
 - All pieces are the soldered onto board using techniques such as reflow or wave soldering.
 - The final assembly is placed after which solder mask and silk screen leg ending is applied

Q5) Draw any one electronic schematic diagram with its PCB layout
Circuit Diagram



PCB LAYOUT

