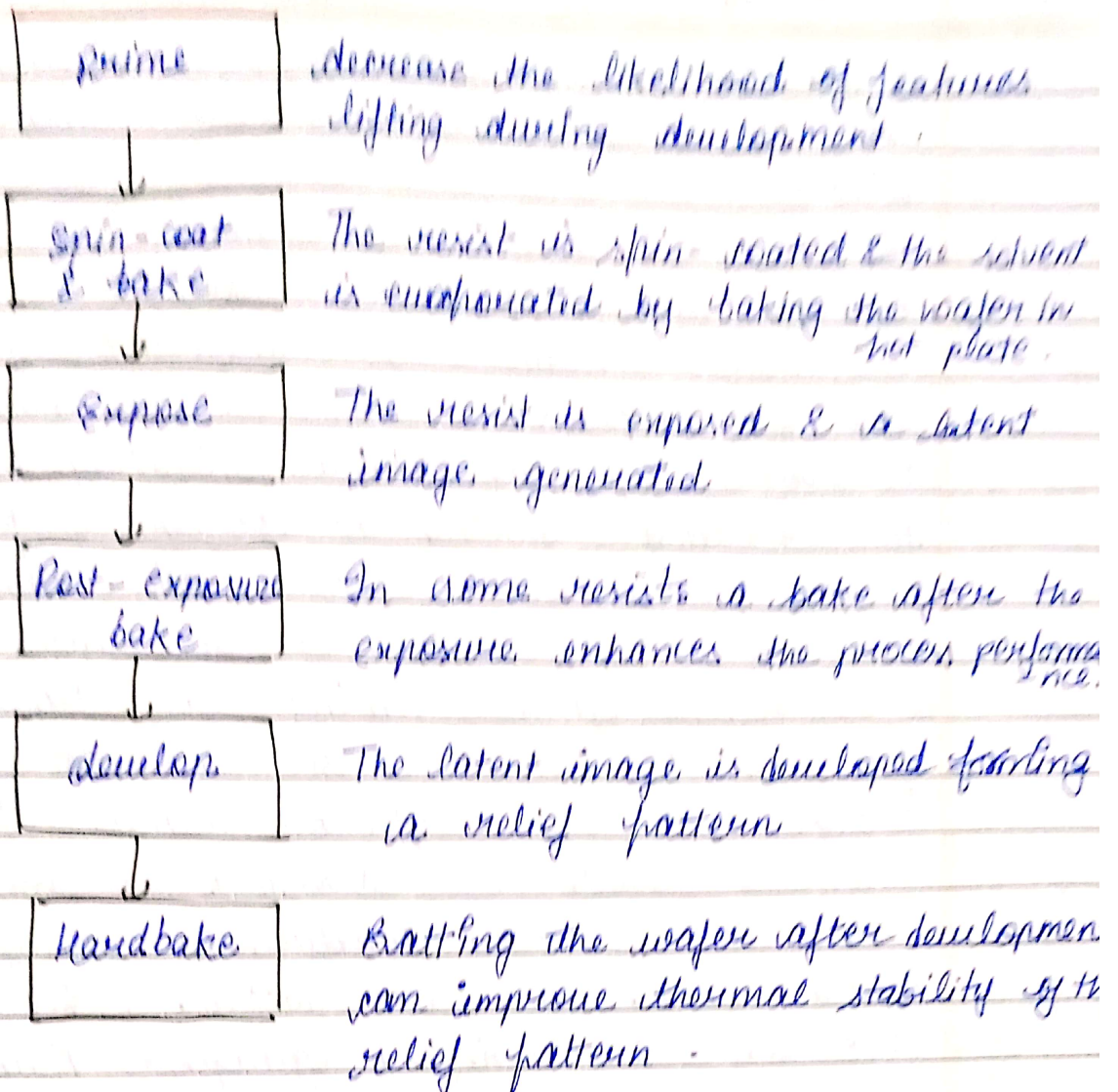




Flow chart of the photolithographic process. The post-exposure and Hard Bake steps can be omitted, depending on the process.

(5)

Question - Give Block Diagram of Vacuum Coating unit and explain the following in detail.

1. Rotary Pump
2. Diffusion Pump
3. Pirani Gauge
4. Penning Gauge

Solution :- Vacuum Coating unit :- In the present study a 0.3m conventional vacuum coating unit (G.A.U. Hind Hivac, India) was used for the film preparation. fig 1 shows the schematic diagram

of the conventional vacuum coating unit. The unit consist of three main section namely:-

vacuum

pumping or evaporating system

electrical equipments with connections.

The vacuum chamber is evacuated by a two stage oil diffusion pump. It is backed by

a double stage gas ballast rotatory pump with an evacuating capacity of 200 litres per min.

A magnetic isolation vacuum air admittance valve is in the system as a safety access.

bc704 silicon fluid having low vapour pressure of 1.3×10^{-5} pa is used as the

charge for the diffusion pump. The pressure inside the chamber is measured

with the thermal conductivity gauge -

Pirani Gauge for low vacuum ($66.9 \times 1.3 \times 10^{-4}$ p

and with an ionizing gauge - Penning gauge for high vacuum ($1.3 - 1.3 \times 10^{-4}$ Pa).

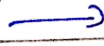
The resistivity heated source has been energized by an LT transformer with a

high current secondary. For all the three compositions tungsten conical,

bucket were used as source. The rate of the evaporation was properly

controlled and has been maintained constant during all the evaporation.

fig 1



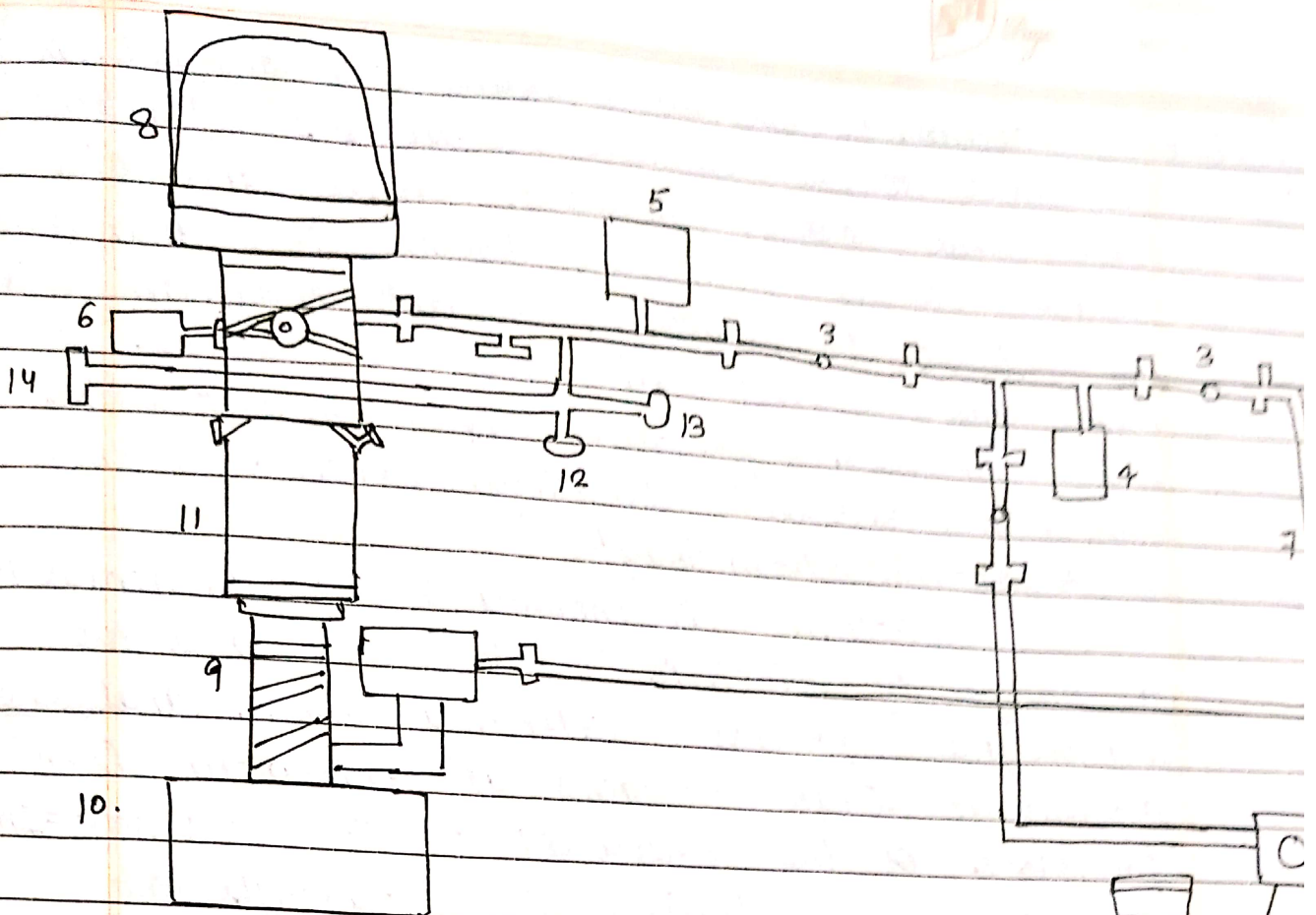
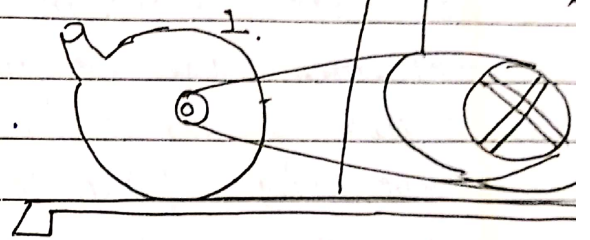


Fig 1 Block diagram of vacuum coating unit.



- | | | | |
|----|--------------------------|----|--------------------------------------|
| 1 | Rotatory pump | 12 | ^{Air} Liquid admittance val |
| 2 | Magnetic isolation valve | 13 | Needle valve |
| 3 | Butterfly valve | 14 | Baffle valve |
| 4 | Pirani Gauge I | | |
| 5 | Pirani Gauge II | | |
| 6 | Penning Gauge | | |
| 7 | Backing Line | | |
| 8 | Glass or metal Bell Jar | | |
| 9 | Diffusion Pump | | |
| 10 | Diffusion Pump heater | | |
| 11 | Liquid air trap | | |