

# Advertisement No. IITM/R/3/2017 dated 01.08.2017

## RECRUITMENT FOR THE POST OF JUNIOR TECHNICIAN (Glass Blowing)

### SYLLABUS FOR TEST

**Basic concepts;** Macroscopic and microscopic points of view; temperature; pressure, conduction, convection and radiation of heat; concept of temperature and specific heat, melting and boiling, constant volume and constant pressure gas thermometers; equation of state of a perfect gas; idea of mean free path. Difference between solids, liquids and gases.

**Glass basics:**Types of glasses and their thermal properties- identification of different types of glasses, physical properties of glass, working point, annealing point, flame annealing of glass, strain point, coefficient of thermal expansion of glasses, bursting pressure of Pyrex, quarts and mechanical properties of glass

**Glass blowing tools and equipment:** Furnace, annealing ovens, mechanical laths, pressure regulator, vacuum systems {basics of rotary and diffusion pumps, liquid nitrogen traps} and their maintenance; measuring gauges, low and high temperature measurements, glass blowing burners and torches, different types of flames, gases used in burners, heat resistant cloths and wares.

**Preliminary glass blowing operations-** fire polishing and flared ends, round bottom tubes, flat bottom tubes, healing cracks, glass fusion, glass tube bending and joints.

**Fundamentals of glass blowing seals-** straight seals, T-seals by rotation, bulb forms, capillary tubing, test tube with different open edges. Sealing glass to metals- ampule preparation and vacuum sealing of quartz glass. Usage of Vernier calipers; perimeter, area and volume measurements

**Safety aspects of glass blowing:** Protection for eye, firefighting equipment, recommended dresses, knowledge of first aid, prevention and management of possible fire accidents and cuts during glass blowing.

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