Heating and Ventilating (b)

Heating.—Estimation of radiator surface requirements for different types. Panel and other forms of low temperature heating. Water quantities. Pipe sizing and pipe losses. General layout of system. Pumps and circulators. Thermal electric storage systems. The heating of buildings by forced warm air systems. The domestic hot-water requirements of large buildings such as hospitals, institutions, blocks of flats, and offices. Steam requirements for kitchens in hospitals and institutions. The layout of D.H.W. systems.

Air Conditioning.—The physical properties of air, and air-vapour mixtures. The total heat of air, psychometric charts. The basic problems of air conditioning. Comfort conditions. Heating load in winter, cooling load in summer, sun load, occupant load. The simultaneous control of temperature and humidity. The calculation of air quantities, heating and cooling loads. Air-conditioning equipment: fans, filters, air washers, thermostatic control, extended surface heating and cooling coils. The mechanical production of cold. Types of refrigeration and methods of rating. The heat pump. Air conditioning and the control of humidity for specific manufacturing problems.

Economic Considerations.—Factors governing the choice of a suitable system of heating or air conditioning from economic considerations.

Hydraulics (a)

The development from basic principles of mechanics of the laws of fluid flow. Equation of motion and continuity. Bernouilli's Equation. Applications of the principles of conservation of mass and energy. The Venturi Meter. Flow of fluids through orifices and over notches. The experiments of Froude and Reynolds: Applications of the principle of dynamical similarity in respect of the viscous resistance of fluids.

A candidate in this subject will be required to present a certificate from the Principal of the institution attended that he has carried out a course of practical work of at least fifteen hours' duration based on the above prescription and that his attendance and work have been satisfactory.

Hydraulics (b)

The flow of water through pipes and open channels. Backwater curves. Methods of gauging. The boundary layer. Hydraulic machines—turbines, centrifugal and reciprocating pumps, hydraulic ram, pressure-machines. Similarity and models. Dimensional analysis.

A candidate in this subject will be required to present a certificate from the Principal of the institution attended that he has carried out a course of practical work of at least sixty hours' duration based on the above prescriptions and that his attendance and work have been satisfactory.

Industrial Administration

Industrial Development—Formation and Development of Manufacturing Organizations

Sales Organization.—Types of different products. Market study in relation to technical development. Price determination. After service.

Design Organization.—Designing for production. Control of quality in designs. Organization of the design department and flow of work. Relationship of research to design. Organization and control of inspection activities. Estimating specifications, contracts, and costing.