

Fifth year (part time) —

	Day.	Evening.
Heat Engines (<i>b</i>)	..	2
Industrial Administration	..	1
Strength of Materials II (<i>b</i>)	..	1
Theory of Machines (<i>b</i>)	2	..
*Optional Subject (<i>b</i>)	2	..
	—	—
	4	4

*One chosen from—

Engineering Chemistry
Heating and Ventilating
Hydraulics
Locomotive Engineering
Marine Engineering
Physical Metallurgy
Refrigeration Engineering

In each of these subjects there are two prescriptions, (*a*) being the fourth and (*b*) the fifth year prescription.

II. PRESCRIPTIONS

(Arranged in alphabetical order)

N.B.— Unless otherwise indicated there will be only one paper of three hours' duration in each subject.

Applied Electricity

Principles of the application of electricity to engineering. An outline of the generation, transmission, and utilization of electrical energy with elementary underlying theory.

Elementary principles of simple types of A.C. and D.C. machines and transformers.

Construction, action, and application of principal types of ammeters, voltmeters, and wattmeters. The vacuum diode valve and its use as rectifier. Static characteristics of vacuum triode valve. Elementary description of cathode-ray tubes.

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 thirty hours' duration based on the above prescription and that his attendance and work have been satisfactory.

Applied Heat

Calorimetry, heat quantity, specific heats.

The first and second laws of thermodynamics. The gas laws of Charles, Boyle, Avogadro, Dalton, and Joule (internal energy); absolute temperature. Use of the gas constant R ; internal and external energy; gases and vapours; phenomena of the critical state; total heat of wet, dry, and superheated steam; dryness fraction of steam; entropy; use of steam tables; isothermal and adiabatic expansion and compression; heat added = increase of internal energy plus work done; application to constant-volume, constant-pressure, isothermal and adiabatic changes, the P/V diagrams for the following cycles: Otto, Carnot, Joule, Ericsson, Stirling, Rankine, Atkinson. Calculation of pressure, volume, and temperature throughout the cycles.

Calorific value of fuels; higher and lower values; quantity of air required for combustion of carbon and hydrogen.

The indicator card for the reciprocating engine; mean effective pressure; diagram factor; horse-power, indicated and brake.