

Strength of Materials II (a)

The deflection formula for simple beams by methods of double integration and moment-area. Built in and other statically indeterminate beams. Super-position. Shear force distribution in beams. Laminated leaf and coiled springs. Composite beams. Elementary consideration of reinforced-concrete beams. Combined stresses in two dimensions only. Mohr's Circle. Principal stresses.

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.

Strength of Materials II (b)

Members subjected to combined bending, torsion, and axial loading. Euler's column theory. Rational column formulæ. Eccentric loading. Stress and strain in thin and thick-walled cylinders. Further consideration of statically indeterminate beams. Curved beams. Strain energy theory.

Further consideration of the properties of ferrous and non-ferrous metallic materials. The iron-carbon equilibrium diagram. Heat-treatment. Impact, hardness, fatigue, and creep testing. The choice of a rational working stress.

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.

*Surveying and Applied Geology (a). (Two papers—three hours each)**Paper (a) : Surveying*

The theory, structure, and adjustments of the principal surveying and levelling instruments, and the principles of their employment under various conditions; errors of observations and their elimination. Chain surveys; compass, dial, and theodolite surveys, including the adjustment of the closing errors; plane-tabling, tachemetry.

Paper (b) ; Applied Geology

A general survey of the chief igneous, sedimentary, and metamorphic rock types, and the more important rock-forming minerals of which they are composed. Properties of rocks which render them specially suitable for purposes of construction, and typical localities from which supplies of economic value are obtained. Denudation by physical agents at the earth's surface, and the transport and deposition of sediments. Landslips, earthquakes. The common intrusive forms of igneous rocks; lava flows.

Common geological structures and their representation on geological maps and sections; unconformity, folds, faults, joints.

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 prescription and that his attendance and work have been satisfactory.

*Surveying and Applied Geology (b). (Two papers—three hours each)**Paper (a) : Surveying*

Levelling and contouring; setting-out of engineering works, triangulation and adjustments; precise levelling; curve-ranging. Mining surveying and simple hydrographical surveying; principles of photographic and air surveying, and its developments. Elements of spherical trigonometry and geodetic survey.