

PROFORMA

DETAILS OF ENTRANCE TEST – 2014-2015

Name of the Faculty: Faculty of Engineering & Technology

Department/Centre: Civil Engineering

Name of the Program: B.E. (Civil Engineering)

About Program's Prospects:

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Summary of Entrance Test

S.No.	Test-Component (Strike off, if not applicable)	Test Duration (in minutes)	Max. Marks	Passing Marks	Negative Marking (Yes/No)
1	Objective/Multiple Choice Questions	180	130	15%	Yes
2	Professional Experience	--	40	--	--
Total			170		

Any other information about the Entrance Test:

Important Instructions for Test (Pl. add/modify as required)

Permissible Material/equipment for Entrance Test (as required):

- Black/Blue Ball Pen,
- Pencil

Detailed Syllabus for the Entrance Test

Please see Annexure

SYLLABUS FOR B.E. CIVIL (EVENING) ENTRANCE TEST

Engg. Mechanics (13 Marks)

Law of forces: Triangle, Parallelogram and Polygon laws, Moments, Couple, Centre of gravity, Centroid, Moment of Inertia, Motion, Velocity and Acceleration. Equations of motion, Momentum, Newton's laws of motion, Conservation of momentum, Work, Power and Energy, Horse Power, types of energies, Conservation of Energy, Curvilinear motion, Angular Velocity, Centripetal and centrifugal force, simple machines lever, Axle, Wheel, Pulley.

Analysis of Structures (25 Marks)

Stresses and strains, Hooke's law, Elastic constants and their relationship, shear force and bending moment diagrams for cantilever, simply supported and over-hang beams subjected to concentrated, uniformly distributed and varying loads, point of contra-flexure, bending of beams, section modulus. Deflection of simply supported beams and cantilever (udl and point loads only); Analysis of Trusses: Methods of section and joints (simple truss only); simple columns and struts, slenderness ratio, Torsion: equation, stress and Strain in pure torsion; degree of indeterminacy, fixed and continuous beam, three moment equation.

Design of Structures (25 Marks)

Concrete Technology: Ingredient of Concrete, Water-cement ratio law, Properties of Concrete. RCC: Properties of different types of steel, RCC beams, Balanced, under-reinforced and over-reinforced beams, shear strength of RCC beams section, Bond and anchorages, Design of one way slabs, General principle of design reinforced brick/lintels and slabs, Design Methods (Working stress and Limit State), structural steel connections-rivets and welds types, testing and design, Beams IS specifications, Design of compression members angle struts and axially loaded columns, built up columns, elements of plate girder and its function, design of purlins and joint of trusses, types of trusses and their application.

Soil Mechanics and Foundation Engg. (12 Marks)

Introduction; soils Classifications and identifications; Saturated and Partially saturated Soils; Effective stresses; Flow of Water through Soils; Deformation of soils; strength characteristics of soils; Soil Compaction; Application of soil Mechanics: shallow and Deep foundations; Soil Exploration: Reconnaissance, field identification, trial pits, borings, SPT and dynamic cone penetration test, sampling and sampler.

Surveying (15 Marks)

Chain surveying; calculation of area; compass surveying; spirit leveling and leveling instruments; plane table surveying; contouring; Theodolite surveying; Tacheometry; Setting out simple Circular Curves.

Environmental Engineering (10 Marks)

Water demand, sources of water supply, water quality, drinking water standards, water borne diseases, water distribution layout types, appurtenances, water supply arrangements in buildings, plumbing, terminology, types of piping systems, water supply fixtures and their installation, sewage, quantity of sewage-domestic and industrial, composition of sewage, collection of sewage, various types of traps, sewerage systems, types of sewerage systems, materials of sewers, sewerage – appurtenances, laying of sewerage systems and their maintenance, sewage treatment and disposal.

Transportation Engineering (10 Marks)

Highways: Introduction, history, highway alignment and surveys, geometric design, cross section elements, sight distance, horizontal and vertical alignment, traffic characteristics and studies, traffic control and intersection design, highway materials and testing, flexible and rigid pavement design, construction of roads, highway drainage and maintenance, hill roads. **Railways:** railway track and components, track defects, geometric design, points and crossings, track laying, maintenance, railway station. **Bridges:** types, site investigation and selection, foundations, piers, abutments, bearings, maintenance. **Tunnels:** necessity, methods of construction, ventilation and drainage.

Hydraulics and Irrigation Engineering (20 Marks)

Physical properties of liquids: Surface tension, capillary and viscosity, Pascal's law, total pressure, centre of pressure, vertical and inclined plane surface. Measurement of Pressures. Hydraulic coefficients. Flow through pipes: Reynolds numbers, critical velocity distribution, losses in pipe lines, change of direction, hydraulic gradient line and total energy line, Water hammer, flow through open channels. Discharge through channels: Chezy's, Manning's – Kutter and Bazin's formulae; rectangular, Trapezoidal and circular sections. Flow measurement: velocity, discharge, notch and orifice, types of notches, discharge formulae, weir and notches. Pumps and turbines. Irrigation Engg.: Introduction: Types of irrigation systems, Water requirement of crops. Flow irrigation, well and lift irrigation; silt Theories: Kennedy and Lacey's theories, Regime conditions of irrigation channels, Flow equations.
