

ACADEMIC
11 OCT 2018

CIVIL ENGINEERING DEPARTMENT, IIT BOMBAY

11th October 2018

Sub: Selection Process for Admissions to Ph.D. Programme in Civil Engineering Department
2018-2019 (Spring Semester)

Dear Candidate,

This letter from HoD, Civil Engineering Department, IIT Bombay should be read in conjunction with the call letter that you have received from our academic office.

All the candidates called for interview and or written test should report to the Civil Engineering Department, IIT Bombay at 9.00 AM on 4th December 2018.

There will be written test and interview for the candidates opting for research areas in Structural Engineering Specialisation. The duration of the written test in structural engineering specialisation is 90 minutes. The syllabus for the written test in structural engineering is given at the end of this letter. This test will be used only for shortlisting the candidates for interview. The final selection of the shortlisted candidates is based on interview marks only.

There will be only interview for the candidates opting for the research areas in Transportation Systems Engineering, Geotechnical Engineering, Water Resources Engineering, Ocean Engineering, Remote Sensing, and Construction Technology and Management specialisations.

In addition to the subject knowledge, research aptitude and communication skills of the candidate will also be tested in the written tests and or interviews.

The exact schedule and venues of the written tests and interviews will be displayed at the civil engineering department office.

The candidates are advised to refer the research areas of the faculty (<http://www.civil.iitb.ac.in/fac.html>) in civil engineering department before coming to the written tests and or interviews. Candidates are encouraged to contact prospective research supervisors (through email) who are offering the research topics of their interest well before their written test/interview. Candidates should prepare a research proposal for each of the selected (at the most two) research topics and present at the time of interview. Each research proposal should be written in about 500-1000 words highlighting the research need, proposed methodology, design of experiments, expected contributions, and a few key references.

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Syllabus for Written Test in Structural Engineering

Engineering Mechanics: System of forces, free -body diagrams, equilibrium equations; Internal forces in structures; Friction and its applications; Kinematics of point mass and rigid body; Centre of mass; Euler's equations of motion; Impulse-momentum; Energy methods; Principles of virtual work.

Solid Mechanics: Bending moment and shear force in statically determinate beams; Simple stress and strain relationships; Theories of failures; Simple bending theory, flexural and shear stresses, shear centre; Uniform torsion, buckling of column, combined and direct bending stresses.

Structural Analysis: Statically determinate and indeterminate structures by force/ energy methods; Method of superposition; Analysis of trusses, arches, beams, cables and frames; Displacement methods: Slope deflection and moment distribution methods; Influence lines; Stiffness and flexibility methods of structural analysis

Concrete Structures: Working stress, Limit state and Ultimate load design concepts; Design of beams, slabs, columns; Bond and development length; Prestressed concrete; Analysis of beam sections at transfer and service loads.

Steel Structures: Working stress and Limit state design concepts; Design of tension and compression members, beams and beam-columns, column bases; Connections- simple and eccentric, beam-column connections, plate girders and trusses; Plastic analysis of beams and frames

 11/10/18

Head of Civil Engineering Department

Dr. P. S. RAO
HEAD
CIVIL ENGINEERING DEPARTMENT
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