

SUBJECT: PAPER – II: RECENT ADVANCES IN CIVIL ENGINEERING

Day: Wednesday
Date: 24/04/2019

Time: 10.00 AM TO 1.00 PM
Max. Marks: 100

S-2019-5360

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat labelled diagrams **WHEREVER** necessary.

Q.1 What is a hydraulic jump? When and where it occurs? Elaborate pressure fluctuations in a hydraulic jump? **(10)**

OR

Q.1 What is the basic of construction of hydraulic models? How their scale is decided? **(10)**

Q.2 How the scour around a bridge pier is different in case of uniform and non uniform sediments? **(10)**

OR

Q.2 What is Remote sensing? How remote sensing and GIS applications are useful in hydraulic structures? **(10)**

Q.3 List the various theories of failures. Elaborate any two with suitable examples. **(10)**

OR

Q.3 What are the different modes of failure of column? How they depend on whether the column is a long column or short column? What are the factors affecting buckling of columns? **(10)**

Q.4 What are different types of concrete composites? Explain with suitable examples. **(10)**

OR

Q.4 How the lateral force due to earthquake is determined using Equivalent Static method? **(10)**

Q.5 What is a slip circle method? Elaborate in detail with its applications. **(10)**

OR

Q.5 Write about 'Rankine's Earth Pressure Theory' and its applications. **(10)**

P. T. O.

Q.6 What is CPM and PERT? How it is used in planning a project? **(10)**

OR

Q.6 What are the factors affecting selection of equipment on a large construction project site? **(10)**

Q.7 Compare slow sand filter, rapid sand filters and dual media filters with respect to operating procedures and relative loading rates. **(10)**

OR

Q.7 Write the step in the design of a filtration unit. **(10)**

Q.8 What are air pollution control methods for stationary sources? Explain electrostatic precipitation. **(10)**

OR

Q.8 Explain the theory and concept behind solid waste management. **(10)**

Q.9 What are rigid pavements? How they are designed? **(10)**

OR

Q.9 What are IRC guidelines in the design of pavements? **(10)**

Q.10 What are different types of Urban Transport system? Elaborate in detail. **(10)**

OR

Q.10 Discuss BOT and BOOT. **(10)**

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