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**May 2019-ENDSEM (Backlog)**

**S. Y. B. TECH. (Civil Engineering) (SEMESTER-I)**

**COURSE NAME: Infrastructure Engineering**

**COURSE CODE: CVUA21173  
(2017 PATTERN)**

Time: [2 Hours]

[Max. Marks: 50]

**Instructions to candidates:**

- 1) Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8
- 2) Figures to the right indicate full marks.
- 3) Use of scientific calculator is allowed
- 4) Assume suitable data wherever required and state them clearly

Q.1) a) Explain meaning & necessity of infrastructure development. [6 marks]

**OR**

b) Briefly describe 'B.R.T.S.' State its two advantages and two drawbacks. [6 marks]

Q.2) a) State whether 'True' or 'False'; giving proper justification. (i) Sleepers help holding rails to correct gauge and alignment, (ii) Broad gauge tracks are not used for railways as they are very inconvenient, and (iii) Welding the rails is very dangerous and welded joints must be avoided. [6 marks]

**OR**

b) State one function (Purpose) of each of the following: rail-sleeper, rail fasteners, ballast, fish plate, tilting of rails, coning of wheels. [6 marks]

Q.3) a) Explain with sketches 'points and turnouts' for a railway track. [6 marks]

**OR**

b) State the objectives of providing gradients for a railway track. Determine steepest gradient for a BG track section with a curve of  $2^\circ$  with a ruling gradient of 1 in 200. [6 marks]

Q.4) a) State four types of bridges & draw their schematic diagrams. [4 marks]

**OR**

b) Explain with sketch the operation 'blasting' for tunneling. [4 marks]

Q. 5) a) What is meant by Dredging? Clearly explain any one type of dredger with sketch. [6 marks]

b) State purpose of a breakwater. Explain requirements of an ideal breakwater with sketch. [4 marks]

c) Explain Dry Dock with neat labelled sketch. [4 marks]

**OR**

Q.6) a) Differentiate between (three points each): (i) Dry Dock - Wet dock, (ii) natural harbour and artificial harbour. [6 marks]

b) State eight requirements of an ideal port. [4 marks]

c) Define: Dredging, Wharves, Quays, and Jetties. [4 marks]

Q.7) a) Discuss following factors with reference to airport site selection and airport design: Geographical location, Topography, and Local meteorological conditions. [6 marks]

b) State whether True or False, giving justification: **(i)** Length of runway is fixed (Standard) for a particular class or category of airport, and **(ii)** Apron is provided for quick travel of passengers. [4 marks]

c) Clearly explain two corrections to be applied to the basic runway length for obtaining actual runway length. [4 marks]

**OR**

Q.8) a) State the meaning of: Basic Runway Length, Actual Runway Length, Wind-rose diagram, hangers, terminal building, Runway configuration. [6 marks]

b) Explain 'taxiway' for airports with the help of neat sketch. [4 marks]

c) Write a note on: Data to be collected and surveys to be conducted for planning an airport. [4 marks]

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