



भारतीय प्रौद्योगिकी संस्थान दिल्ली  
Indian Institute of Technology Delhi

**DEPARTMENT OF CIVIL ENGINEERING**  
**CEL766 SYSTEMS DESIGN AND VALUE ANALYSIS**  
**MAJOR (2009-2010)**

Date: May 4, 2010

Time: 10:30 am to 12:30 pm

Maximum Marks: 30 Marks

Note: All questions are compulsory

1. Explain the statement "lean construction is not the same as waste elimination". (1 mark)
2. Using the swim-lane process mapping procedure draw a process map for post-tensioned slab-on-grade foundation construction for a small residential building. (3 marks)
3. Draw a partial CYCLONE model for transit-mixer arrival process on to a construction site for an unspecified period. Assume that the inter-arrival time between transit-mixers is 4 to 6 minutes. (3 marks)
4. What is the difference between push-based and pull-based scheduling? (1 mark)
5. Explain the two-pillars in the Lean Thinking House. Explain the T-F-V Theory of Production? (5 marks)
6. Explain the terms Muri, Mura, and Muda. (1.5 marks)
7. Explain shielding rules in LPS. What is the difference between AA and AMR in LPS? (2.5 marks)
8. Draw a FAST diagram for a computer projector. (5 marks)
9. Draw a CYCLONE model for the following construction process. Four flatbed trucks are transporting structural steel elements from a steel fabrication yard to a construction site. Loading of the truck at the yard is done by using a single overhead crane. Five elements are loaded one-by-one on to each truck. Loaded trucks depart from the yard in batches of 2 trucks. After traveling to the site each truck is unloaded by a single crane on the construction site. Both trucks are to be unloaded before they are allowed to return to the yard. (5 marks)
10. As a construction manager list steps you will undertake to deploy LPS system on your project. (3 marks)