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**MANIPAL INSTITUTE OF TECHNOLOGY**  
**MANIPAL**  
*(A constituent unit of MAHE, Manipal)*

**VII SEMESTER B.TECH. (MECHANICAL/IP ENGINEERING)**  
**END SEMESTER EXAMINATIONS, NOV/DEC 2018**

**SUBJECT: LEAN MANUFACTURING [MME 4007] (PE VI)**

**REVISED CREDIT SYSTEM**  
**(01/12/2018)**

Time: 3 Hours

MAX. MARKS: 50

**Instructions to Candidates:**

- ❖ Answer **all** questions.
- ❖ Missing data may be suitably assumed.

- 1A.** Write a short note on visible control system used in lean manufacturing. **(3)**
- 1B.** Briefly explain what are the primary purposes of Toyota Production System . **(3)**
- 1C.** Explain the significance of value stream mapping is an essential tool. **(4)**
- 2A.** Explain what are the characteristics of lean value stream. **(4)**
- 2B.** Write a short note on Kanban implementation process. **(4)**
- 2C.** Enumerate the points one should consider while designing Kanban? **(2)**
- 3A.** Calculate the time in each shift for improvement in a company for a month by **(3)**  
considering 30 days in a month, 4 holidays, 8 hours per shift, two shifts per  
day, 60 minutes for monthly safety meeting, 60 minutes for weekly kaizen  
meeting and 120 minutes for TPM, PM and 5s cleaning.
- 3B.** Write a short note on internal lead time and supplier lead time. **(3)**
- 3C.** Discuss the framework of Toyota production smoothing with a flowchart. **(4)**
- 4A.** Compare MRP and Kanban. **(3)**

- 4B.** With a flowchart explain the framework for reducing lead time. **(4)**
- 4C.** Explain the goals and elements of standard operations. **(3)**
- 5A.** Differentiate product flow layout and job shop layout. **(4)**
- 5B.** Explain four setup concepts of shortening setup time. **(4)**
- 5C.** Represent the fish bone diagram for oorganization structure for promoting **(2)**  
setup time reduction.

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