Final State Exam Topics

Engineering Management MSc Program

Engineering Module

**Material Handling and Logistics Specialization**

1. Introduction to digitalized logistics: Steps and elements of digitalized logistics

2. Application of e-procurement: Elements, methods and tools of e-procurement, and types of Electronic Auctions

3. Review of Industry 4.0.; Maturity model of industry 4.0.; Challenges in the industry 4.0.

4. The Concept of Smart city. Technologies of Industry 4.0. (IOT, Cloud computing, MES, Big Data, and Advanced Robotics)

5. Steps and methods of complex problem solving processes.

6. Solutions of product identification and monitoring. (Smart labelling system, RFD, Bar code, QR code, and Smart Manufacturing)

7. The importance of forecasting in production. Time-series forecasting methods. The measurement of forecasting errors (et, MAD, MSE, and tracking signal)

8. The concept of Intelligent Transport System. Application areas of Intelligent Transport System

9. Production logistics from procurement to manufacturing operations. (Inventories in production, inventory management systems, and supplier evaluation.)

10. Reverse logistics system. Solutions of service and aftermarket logistics.

11. Scheduling approaches of pull and push manufacturing. (MRP I, MRP Il, ERP, and KANBAN)

12. Supply chain management. Types of warehouses in supply chain. Methods of cross-docking. Category management, tracking and planning material and information flow.

13. Process modelling by event-driven process chain diagrams. Elements of EPC and, rules of EPC modelling.

14. Concept of logistics, aspects of LEAN-management. Just in time, pull logistics system, elements of pull logistics system. (Milk-run, supermarket, WIP, KPIs: Takt time, Lead time, cycle time, and FTQ)