Written Questions and Oral Examination Topics List

Chapter 1

Written Questions

1.A1 What are the main resources used in productive processes and what are the related productivity key management indicators to pursue value creation? What other important factors are to be considered for product success in industrial process setting out and management?

1.A2 Which are the investigations that you need to conduct to localize new productive locations? Indicate the 4 fundamental points of investigation.

Oral Examination Topics

1.B1 Make or Buy strategies and main items to be considered in decision making process per each strategy.

1.B2 Main strategic prerogatives of manufacturing systems.

Chapter 2

Written Questions

2.A1 Which are the standardization logics for products and processes? How can we apply standard solutions and guarantee distinctiveness of brands at the same time?

2.A2 Describe what are PMS and WBS. Describe the typical structure of PBS (sketch required) and the information embedded. Which are its main usage functions? How can we obtain the cost of direct material for «product series», starting from BOM?

Oral Examination Topics

2.B1 Key Points and macro phases for a New Model Industrialization Process. Best practices to shorten «time-to-market». What are the relations between Manufacturing Engineering and Product Development activities? Describe Physical and Informative Flows in Manufacturing Engineering.

2.B2 The integrated Information Technology System for Product/Process: basic functions for PDM, other technical databases and company's process fed up by the Information Technologies System. Product technical changes management.

Chapter 3

Written Questions

3.A1 Describe how to determine the Operative Time Sequence Diagram (sketch an example) and how the Standard Productive Capacity is obtained from it?

3.A2 Which are the two criteria applied for machine loading? Describe how to obtain machine loading in both of the two.

Oral Examination Topics

3.B1 Methodologies applied for working time analysis, man-machine interaction and Standard Working Time definition.

3.B2 Analysis of working time utilization for manufacturing systems: working time deployment diagram with machine time losses and key performance indicators.

3 B3 Installed Productive Capacity defining and Takt Time concept and calculation.

Chapter 4

Written Questions

4.A1 Calculate Direct Labour Requirement, by describing all main inputs required; describe what are the main functions of indirect labour and how its incidence is controlled?

4.A2 Define what is Direct Labour Efficiency; list and analyse the main causes of labour loss?

Oral Examination Topics

4.B1 Operative Plan and labour staff balancing; tactical and strategic leverages. Working time length and flexibility.

4.B2 Parameters to be considered for Labour Productivity evaluation and definition of Individual annual Labour Productivity (ILP). Improvement Plans and main criteria description. Value Added / Non Value Added activities and guidelines to pursue value in labour intensive areas.

4.B3 Assembly lines operative pace setting; assignment of tasks and workload balance on assembly lines. Advantages obtainable from job organization by «homogeneous islands» vs «traditional lines»; criteria for choosing the two different alternative solutions.

4.B4 Data for economical control management. Transformation cost analysis criteria.

Chapter 5

Written Questions

5.A1 Define what is a Plant Manufacturing / Technical System and describe briefly how to use WBS to deploy activities, roles and responsibilities during industrialization; describe how is organized the "working means and technical equipment database" necessary to financial control and depreciation plans management. Describe criteria for depreciation plans by equipment cluster.

5.A2 Define technical reliability. Calculate and describe graphically the trend for breakdowns severity index in relation to the progressive working time and list out maintenance strategies by different period of the life cycle of the equipment.

Oral Examination Topics

5.B1 Maintainability: criteria to be adopted to design equipment maintainability. Key indicators for maintainability and reliability.

5.B2 Maintenance activities classification and organization. Maintenance costs and labour requirement calculation. Total Productive Maintenance approach.

5.B3 General and Process Complementary Equipment management. Energy saving and Environment respect criteria. Tools and consumable materials management.

Chapter 6

Written Questions

6.A1 Define the tool "Operative Plan" (OP) used for Production and Delivery Planning, its elaboration process, the data related to vehicles sold included in it and the flow diagram followed for its confirmation; list and describe the main temporal horizons considered in production planning process and which tools used are used for each of them?

6.A2 List, define and describe in details the main Key Performance Indicators to evaluate logistic system's performances?

Oral Examination Topics

6.B1 Logistic flow in the Supply Chain (SC): SC structure, its levels, their interactions and the main flows and macro-phases that feature Logistics.

6.B2 Material Handling and Inventory Management: main areas of an integrated logistic process (input and output); containers and vectors management (classification of different types); intrinsic logistic complexity and material classification; handling unit and feeding frequency calculation; Just in Time approach

6.B3 Main characteristics of logistics information technologies systems applied for automotive production.

Chapter 7

Written Questions

7.A1 What is the role of Purchasing Department and what are the obligations to be procured to the Suppliers for an effective operation management?

7.A2 Describe the composition of the total supply cost for direct material starting from the definition of "cost of sale" for the supplier and "purchasing cost"? List and describe by each cluster the main indicators used to evaluate Purchasing Department performances.

Oral Examination Topics

7.B1 Evolution of global sourcing policies and classification of suppliers specialization profiles. Purchasing Marketing and Global Sourcing policies.

7.B2 Suppliers Network management: criteria for the evaluation and classification of Suppliers. Criteria used to assess the introduction of a new supplier in the network.

7.B3 Direct materials ordering procedure. Contract obligations in Purchaser/Supplier cooperation. Advantages obtainable from e-procurement technique.

Chapter 8

8.B *Written Questions*

8.A1 Explain the concept of «learning curve»: display the graph and the mathematical formula and indicate what do we mean for progressive flexion of costs?

8.A2 What is the typical trend of a production rump-up curve and what are the main factors influencing it in the different phases? Display on the ramp-up where are two important milestones of the industrialization process.

Oral Examination Topics

8.B1 Quality Management and organizational approach to generate proposal and improvement programs. Quality and Reliability assurance techniques to be used in product design phase.

8.B2 Total Quality Management (TQM) and Continuous Improvement approach: methodologies and tools to improve industrial product and process quality, TQM approaches and integration with TPM, TIE and JIT.

Chapter 9

Oral Examination Topics

9.B1 How Manufacturing Systems can generate value for the enterprise; actions necessary to obtain economy of scale and effects.