

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA IN MECHANICAL ENGINEERING
SEMESTER- VI

Subject Name: Production Management and Information Systems
(Elective-I)

Subject Code: 2361913

Sr. No.	Subject Content	Hrs.
1	<p>INTRODUCTION.</p> <p>1.1 Know the objectives of learning this subject. 1.2 Need, Scope & importance of Production Management and Information Systems (PMIS). 1.3 Need of attitude, knowledge & skill required for application of PMIS. 1.4 Production Management – Concept, need and definition. 1.5 Types of production, their merits and demerits. 1.6 Layouts : - types, features, applications. 1.7 System approach to production management. 1.8 Functions of production management.</p>	4
2	<p>DEMAND FORECASTING.</p> <p>2.1 Demand forecasting.- definition, importance, types for new products & established products ,their features and applications. 2.2 Time series analysis: features, types (This includes simple average, simple moving average, weighted moving average and exponential smoothing), advantages and disadvantages of each type, method of forecasting for each type, examples of each type. 2.3 Forecast of error, sources of errors, measurement of error and methods of fitting a trend line.(This includes hand fitting & least square methods.). 2.4 Decomposition of time series: Seasonal variations, seasonal index, decomposition using least square regression, deseasonalized demand, method, examples.</p> <p>Note : Two problem questions of 6-8 marks out of total 70.</p>	6
3	<p>AGGREGATE PRODUCTION PLANNING AND CAPACITY REQUIREMEN PLANNING(CRP).</p> <p>3.1 Major production/operation planning activities, terminology, meaning and definition. 3.2 Aggregate production planning:Concept, goals, interrelationship in production system. 3.3 Types of production plan, factors affecting them, examples 3.4 CRP : Concept, need and meaning; method, decision variables, suitable mechanical engineering examples.</p>	6

	<p>Note: One problem question from CRP of 4-6 marks out of total 70.</p>	
4	<p>RESOURCE PLANNING & SCHEDULING.</p> <p>4.1 Definition, aim, purpose & types. 4.2 Information necessary for scheduling. 4.3 Material Requirement Planning (MRP) - definition, need, procedure, example. 4.4 Master Production Schedule (MPS) - concept, need, information flow, preparation steps; suitable preparation with example. 4.5 Estimation of shop loads. 4.6 Planning and scheduling system: scheduling techniques such as Gantt chart, Mile-stone chart, analytical method, Johnson method, Jackson's method, slotting technique, etc. 4.7 Short interval scheduling. 4.8 Critical ratio scheduling. 4.9 Manufacturing resource planning (MRP-II) : concept, meaning, definition, scope, importance and applications. 4.10 Enterprise Resource Planning (ERP): concept and definition, information on software available.</p> <p>Note: One problem question from scheduling of 4-5 marks out of total 70.</p>	8
5	<p>SYSTEM CONCEPT.</p> <p>5.1 Data-types. 5.2 Information : types, its economics. 5.3 Information system : need, concept, definition, features and objectives ; examples supporting features & objectives.</p>	3
6	<p>DATA MANAGEMENT.</p> <p>6.1 Data management-concept, need, basic terminology used. 6.2 Data base : definition, meaning, importance, approach and architecture. 6.3 Objectives of database organizations. 6.4 Data models : meaning, relationship and association, drawing schema, bubble chart & tree structure for suitable mechanical engineering application. 6.5 Data Base Management System (DBMS) - definition, scope, importance, awareness about current software packages & their features , Relational Data Base Management System (RDBMS) - concept, definition, features and applications. 6.6 Conceptual preparation steps/ procedure for creating, storing, editing & retrieval of database structure based on latest available database management software packages. (any one from dbase or Fox pro or MS Access or Oracle).</p>	6

	<p>Note : Software(dbase or Fox pro or MS Access or Oracle) based specific questions should be part of practical/ oral examination and should not be asked in theory examination.</p>	
7	<p>INFORMATION SYSTEMS.</p> <p>7.1 Role of computers in information systems.</p> <p>7.2 Management Information System (MIS) ; concept, definition, need & applications.</p> <p>7.3 Computer aided information systems related to mechanical engineering-take at least five varieties (such as inventory records, production schedule, tool issues, inspection and quality control reports, efficiency and utility reports, maintenance records, etc..) : need, importance, design considerations, software selection criteria, examples.</p> <p>7.4 Information communication :- communication process ; computer networks and its types, structures, need and applications, protocols - types, features, applications.</p> <p>7.5 Communication media – types, features, benefits for industrial environment, working (this includes Internet and Intranet, E-mail, etc.).</p> <p>7.6 Decision Support System (DSS): concept, definition and need.</p> <p>Note :One application question to design MIS and prepare database of 10-12 marks out of 70.</p>	9
	Total	42

Notes:

A. FOR STUDENTS.

- a. It is advised that student download this copy of syllabus and plan to achieve the objectives of learning this subject.

B. FOR PAPER SETTER/MODERATOR.

- a. Refer GTU syllabus and do not take reference of previous TEB question papers.
- b. Ask the questions from each topic having marks weightage proportionate to hours allotted to that topic.

- c. Optional questions must be asked from the same topic. That is weightage of compulsory attendance part of questions will be equal to proportionate to hours allotted to each topic.
- d. Marks ratio of knowledge: comprehension: application types questions must be 30:30:40 respectively.
- e. Submit solution / answer keys along with distribution of marks in each question for the paper being submitted.

Reference Books:

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| 1. Computer database organization | Jame's Martin, by PHI publication |
| 2. Production and operations management | Everette, Adam, Jr. and
Ronald J. Ebert, (PHI publication) |
| 3. Production and operations management | Chase/Aquiline, Irwin publication |
| 4. Management information system | S.Sadagopan (PHI publication) |
| 5. Production and operations management | S.N.Charry (TMGH publication) |
| 6. Modern production & operations
management | Elwood S. Buffa and Rakesh
K. Sarin(John willy& sons publication) |
| 7. Operations research | S.D.Sharma |

Additional Reference Books:

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| 1. New information technology | Edited Alan Burns, Ellis
Harword ltd. |
| 2. Managing product and operations | Martin K. Star (PHI publication) |
| 3. Production and operations management | Ray Wild Cassel. |
| 4. Books on database software taken for study
and practice. | |
| 5. Production and operations management | N.G.Nair, TMGH publication. |