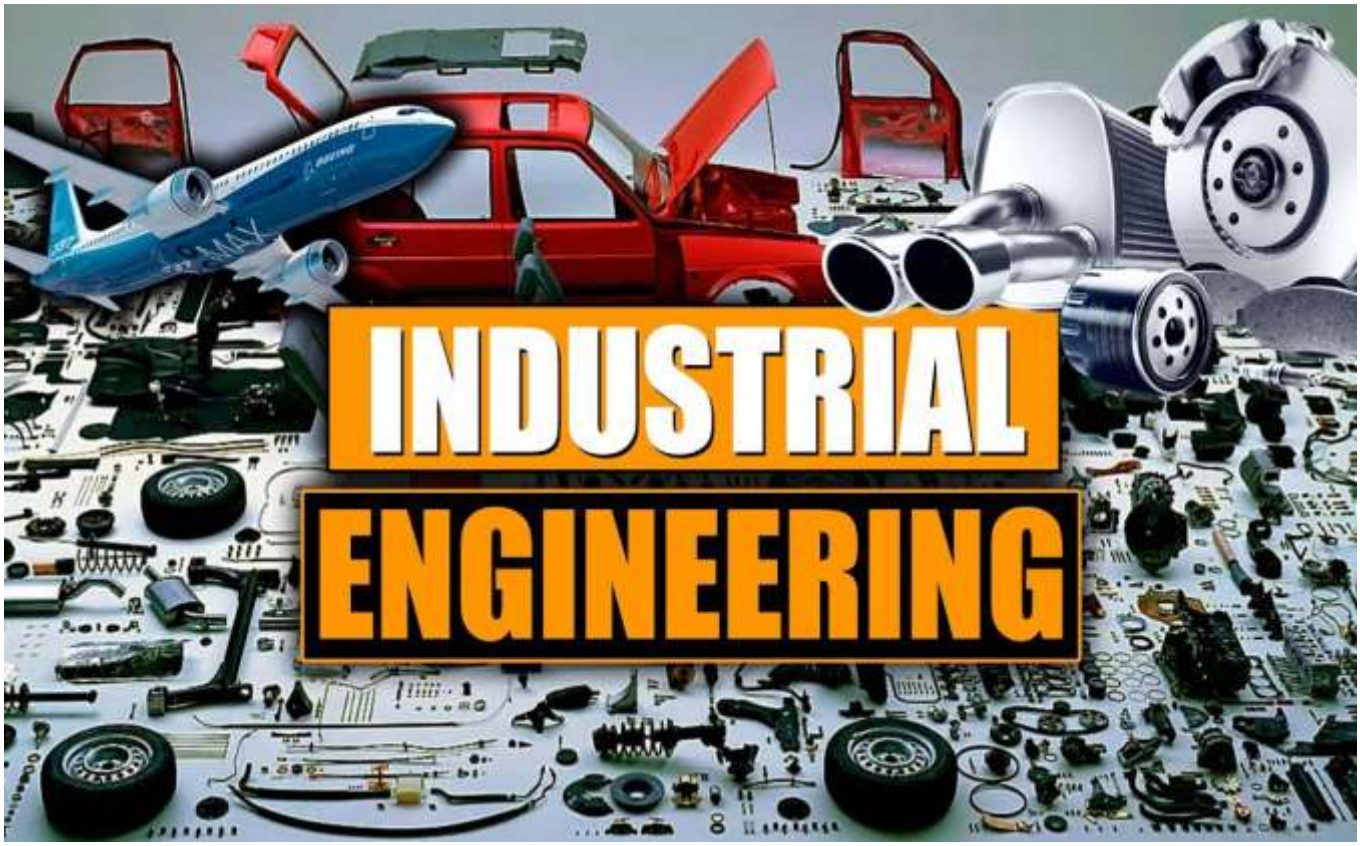
SREENIVASA INSTITUTE of TECHNOLOGY and MANAGEMENT STUDIES
(AUTONOMOUS)

(INDUSTRIAL ENGINEERING & PSYCHOLOGY)

QUESTION BANK

IV - B.TECH / I - SEMESTER REGULATION: R18



PREPARED BY
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DESIGNATION : ASSISTANT PROFESSOR
DEPARTMENT : MECHANICAL

IV B. Tech I Semester

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18OMEC412 INDUSTRIAL ENGINEERING & PSYCHOLOGY
(OPEN ELECTIVE - II)

Course Educational Objectives:

1. To learn the concepts of management and characteristics of personnel management and organization
2. To understand the organizational structures and plant layout for productivity improvements
3. To know the productivity, planning and control of a product
4. To discover the material handling techniques and Inventory control of manufacturing a product
5. To learn the industrial psychology and work study in an industry

UNIT – 1: CONCEPTS OF MANAGEMENT

Management: Importance of administration and organization – Managerial skills, policies, goals and objectives – Scientific management – Contribution of FW Taylor, Henry Foyal and Gilberth – Principles, types, process, levels and functions of management – Management chart – Basic concepts in project management and MIS – Industrial ownership – Responsibilities of supervisor/foreman – Leadership concepts.

Personnel Management: Recruitment, selection, training, job evaluation and merit rating – Wage plans and incentives – Welfare measures – Promotion, lay-off, transfer and discharge.

UNIT – 2: ORGANIZATIONAL STRUCTURES AND PLANT LAYOUT

Organization: Concept, importance, characteristics, elements, and process of organization – Organization theory, principle, structure, chart and committees – Project, matrix and informal organization – Departmentation – Authority and delegation – Group dynamics – Organizational change, development and conflict – Managerial leadership and communication system.

Plant Layout: Types –Flow pattern – Work station – Storage space – Layout procedure – Consideration in factory design.

UNIT – 3: PRODUCTION PLANNING AND CONTROL

Productivity: Input output model – Factors affecting the productivity – Productivity resources and measures. **Production Planning:** Continuous and intermittent production – Job, open and closed job shop – One time large projects – Forecasting – Process planning – Economical batch quantity – Tool control –Control of production – Loading, scheduling, dispatching and routing – Progress and flow control.

UNIT – 4: MATERIALS MANAGEMENT AND INVENTORY CONTROL

Materials Management: Concepts – Procurement – Purchase and order – Buying techniques.

Inventory Control: Classification – Objectives – Functions – Economic order quantity (EOQ) – Inventory models –ABC analysis – Material requirements planning (MRP) – Manufacturing resource planning (MRP-II).

UNIT – 5: WORK STUDY AND INDUSTRIAL PSYCHOLOGY

Work study: Ergonomics principles – Method study – Process chart symbols – Flow process

and multiple activity chart – Flow and string diagram – Operation analysis – Analysis of motion – Design of work place – Therbligs – SIMO chart – Time study – Standard data – Analytical estimating –Performance rating – Allowances – PMTS. **Industrial Psychology:** Concept – Individual and group –Motivation theories – Hawthorne experiment – Morale and motivation – Working and environmental condition – Industrial fatigue.

Course Outcomes:

On successful completion of the course, Students will be able to		POs related to COs
CO1	Understand the concepts of management and characteristics of personnel management and organization	PO1, PO11, PO12
CO2	Explain the organizational structures and plant layout for productivity improvements	PO1,PO2, PO11, PO12
CO3	Describe the productivity, planning and control of a product	PO1,PO2, PO11, PO12
CO4	Explain the material handling techniques and Inventory control of manufacturing a product	PO1,PO2, PO11, PO12
CO5	Demonstrate the industrial psychology and work study in an industry	PO1,PO2, PO11, PO12

Text Books:

1. Industrial Engineering and Management, 17/e, 2010, O.P. Khanna, Dhanpat Rai Publishing Company (P) Ltd., New Delhi.
2. Industrial Engineering and Management, Pravin Kumar, 1/e, 2015, Pearson Education, NewDelhi.

Reference books:

1. Production and Operations Management, S. N. Chary, 6/e, 2019, Tata McGraw-Hill Education Pvt.Ltd., Noida.
2. Operations Management, William J Stevenson, 12/e, 2018, Tata McGraw-Hill Education Pvt. Ltd., Noida.
3. Production and Operations Management, Shailendra Kale, 1/e, 2013, Tata McGraw-Hill EducationPvt. Ltd., Noida.
4. Production and Operations Management, Kanishka Bedi, 3/e, 2013, Oxford University Press, India.

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QUESTION BANK **INDUSTRIAL ENGINEERIN& PSYCHOLOGY (18OMEC412)**

Question No	Questions			
UNIT-I CONCEPTS OF MANAGEMENT				
PART-A (TWO MARK QUESTIONS)		CO	BL	PO
1.	Define the term scientific management	**CO1**	**1.2**	**PO1**
2.	Differentiate Beurecratic and Democratic leaders	**CO1**	**1.2**	**PO1, PO11**
3.	What is the role of administration in industry?	**CO1**	**1**	**PO1**
4.	what is the difference between policy and objective?	**CO1**	**1**	**PO1**
5.	What is the need of Management Information System?	**CO1**	**1**	**PO1**
6.	Who is father of scientific management and father of modern management?	**CO1**	**1**	**PO1**
7.	What is the role of supervisor in an industry?	**CO1**	**1**	**PO11**
8.	According to Fayol what is meant by Esprit de corps and unity of command	**CO1**	**1**	**PO1**
9.	Define management and list out different types of management	**CO1**	**1,2**	**PO12**
10.	List out the different skills required by a manager?	**CO1**	**1**	**PO1**
PART-B (TEN MARKS QUESTIONS)				
1.	State the important characteristics of management and Demonstrate Management contribution of FW Taylor towards Scientific Management.	**CO1**	**1,2**	**PO1, PO12**
2.	Demonstrate Management contribution of Henry Fayol towards Scientific Management.	**CO1**	**1,2**	**PO1, PO12**
3.	Define management and explain Process of management	**CO1**	**1**	**PO1**
4.	Define industrial ownership and explain different types of industrial ownerships	**CO1**	**1,3**	**PO1, PO11**
5.	Explain various skills required by a manager	**CO1**	**1**	**PO1**
6.	Name and describe the various Functions of management	**CO1**	**1**	**PO1**
7.	Discuss in detail Levels in management and types of management	**CO1**	**1**	**PO1**
8.	Explain different types of leaderships and what are the qualities required for a good leadership	**CO1**	**1**	**PO1, PO11**
9.	Discuss in detail Recruitment and selection process	**CO1**	**1**	**PO1, PO11**
10	What is the importance and functions of HRM	**CO1**	**1**	**PO11**

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Question No	Questions			
UNIT-2: ORGANIZATIONAL STRUCTURES AND PLANT LAYOUT				
PART-A (TWO MARK QUESTIONS)		CO	BL	PO
1.	Define flat organization	**CO2**	**1**	**PO1**
2.	Which layout is suitable for ship building industries, define that?	**CO2**	**1.2**	**PO1, PO2**
3.	Define military organization why is it called so?	**CO2**	**1**	**PO1**
4.	Define product layout and mention where it is applicable?	**CO2**	**1.2**	**PO1, PO2**
5.	Write a definition for delegation and authority?	**CO2**	**1**	**PO1**
6.	Define process layout and mention where it is applicable?	**CO2**	**1.2**	**PO1, PO2**
7	Define departmentation and list out various types of departmentation?	**CO2**	**1.2**	**PO1**
8.	Define plant layout	**CO2**	**1**	**PO1**
9.	What is organizational change and mention types of changes in organization?	**CO2**	**1.2**	**PO1**
10.	Define group dynamics and name the stages in group development?	**CO2**	**1**	**PO1**
PART-B (TEN MARKS QUESTIONS)				
1.	Explain different types of plant layouts.	**CO2**	**1,2**	**PO1, PO12**
2.	Explain the following organizations with its merits and demerits. a) Functional organization b) Matrix organization c) Project organization	**CO2**	**1,2**	**PO1, PO11**
3.	Demonstrate different types of flow patterns	**CO2**	**1,2**	**PO1**
4.	Describe the different types of departmentation with neat sketch? Write merits and demerits of departmentation.	**CO2**	**1**	**PO1, PO12**
5.	What is the importance of organisation and discuss various steps involved in process of organisation?	**CO2**	**1**	**PO1**
6.	What do you mean by organizational chart and explain different types of organizational chart with neat sketch?	**CO2**	**1,2**	**PO1, PO11**
7.	Define managerial leadership and explain Blake and Moutons grid chart	**CO2**	**1,2**	**PO1, PO11**
8.	Define delegation and discuss various steps involved in process of delegation.	**CO2**	**1**	**PO1**
9.	Define organization and explain different types of organization structure with advantages and dis advantages?	**CO2**	**1**	**PO1**
10	Explain plant layout procedure and Consideration in Factory design	**CO2**	**1,3**	**PO1, PO11**

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Question No	Questions			
UNIT-3: PRODUCTION PLANNING AND CONTROL				
PART-A (TWO MARK QUESTIONS)		CO	BL	PO
1.	Define production and productivity?	**CO3**	**1**	**PO1**
2.	What is meant by process planning?	**CO3**	**1.2**	**PO1**
3.	Define scheduling and why it is needed in industry?	**CO3**	**1**	**PO1**
4.	Define forecasting and forecasting error?	**CO3**	**1.2**	**PO1, PO2**
5.	Write about Brass Ring System and M.C. Caskey System	**CO3**	**1**	**PO1**
6.	Define continuous production system and mention where it is applicable?	**CO3**	**1.2**	**PO1, PO2**
7.	Write about routing and dispatching	**CO3**	**1.2**	**PO1**
8.	Control System in Production Involves Four Stages mention them	**CO3**	**1**	**PO1**
9.	Differentiate between closed job shop and open job shop?	**CO3**	**1.2**	**PO1**
10	What is Master Production Scheduling (MPS) and write any two objectives of MPS	**CO3**	**1**	**PO11**
PART-B (TEN MARKS QUESTIONS)				
1.	Define input output productivity model and explain three productivity measures	**CO3**	**1**	**PO1**
2.	Find the partial productivity and total productivity for a company for which the following data is available Labor input is Rs 4500, Material input is Rs 3000, Capital input is Rs 4500, Energy input is Rs 1500, other input expenses Rs 750 and output is Rs 15000. Assume the above values are in constant with respect to base period.	**CO3**	**1,3**	**PO1, PO2**
3.	Describe continuous and intermitted production system with characteristics, advantages and limitations.	**CO3**	**1.2**	**PO1**
4.	For given data generate the forecast for each of time period using simple moving average for n=3 Period: 1 2 3 4 5 6 7 8 9 10 Demand: 240 460 530 360 190 290 510 460 ? ?	**CO3**	**1,3**	**PO1, PO2**
5.	For given data generate the forecast for each of time period using weighted moving average for n=4 Period: 1 2 3 4 5 6 7 8 9 10 Demand: 240 460 530 360 190 290 510 460 ? ?	**CO3**	**1,3**	**PO1. PO2**
6.	The sales of a car in 6 consecutive years are given in following table, with smoothing constant of 0.1 find forecast for next year Period: 1 2 3 4 5 6 7 Demand: 650 700 810 800 900 700 ?	**CO3**	**1,3**	**PO1, PO2**

7.	Define economic batch quantity. Derive equation for the same.	**CO3**	**1.2**	**PO1, PO2**
8.	Define Scheduling. Compare and contrast forward and backward scheduling	**CO3**	**1.2**	**PO1, PO2**
9.	Define Loading. Illustrate Vertical Loading and Horizontal Loading with an example	**CO3**	**1.2**	**PO1, PO2**
10.	Define productivity. Explain different factors affecting productivity.	**CO3**	**1**	**PO12**

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Question No	Questions			
UNIT-4: MATERIALS MANAGEMENT AND INVENTORY CONTROL				
PART-A (TWO MARK QUESTIONS)		CO	BL	PO
1.	Define material management with objectives	**CO4**	**1.2**	**PO1**
2.	What are the functions of material management?	**CO4**	**1.2**	**PO1**
3.	Write any two advantages and dis advantages of centralized purchasing?	**CO4**	**1**	**PO1**
4.	What is the function of purchasing department?	**CO4**	**1**	**PO1**
5.	List out the buying techniques and explain any one of them?	**CO4**	**1**	**PO1**
6.	If 24000 speakers are produced and are used at rate of 8000 per month and cost per unit is ½ find optimum economic order quantity?	**CO4**	**1,3**	**PO1, PO2**
7.	Write a definition of tender? What are the different tenders available?	**CO4**	**1**	**PO1**
8.	Define inventory and inventory control	**CO4**	**1**	**PO1**
9.	Write a short note on inventory classification?	**CO4**	**1**	**PO1**
10.	What are the methods used in inventory management and define them?	**CO4**	**1**	**PO1**
PART-B (TEN MARKS QUESTIONS)				
1.	Define Inventory. Why do industries keep inventory?	**CO4**	**1**	**PO1**
2.	Describe the different types of inventory models.	**CO4**	**1**	**PO1**
3.	Define economic order quantity. Derive equation for the same	**CO4**	**1.2**	**PO1, PO2**
4.	Prepare ABC analysis for on the following sample of items Item: A 300, B 2800, C 30, D 1100, E 40, F 220, G 150, H 800, I 600, J 80 Unit Price: A 10, B 15, C 10, D 5, E 5, F 100, G 50, H 5, I 15, J 10	**CO4**	**1.2**	**PO1, PO2**
5.	Discuss briefly about various techniques available for inventory control	**CO4**	**1**	**PO11**
6.	what is meant by material requirement planning (MRP) and describe various inputs and outputs of MRP	**CO4**	**1.2**	**PO1, PO11**
7.	With the help of neat diagram explain the following terms: (i)Economic Order Quantity (ii) Lead Time (iii) Re-order Point iv) safety stock	**CO4**	**1.2**	**PO1, PO2**
8.	A factory uses annually 24,000 units of raw material which costs Rs 125 per unit placing each order costs Rs 25 and carrying cost is 6% per year of the average inventory. i) Find EOQ and total inventory cost including cost of material ii) The factory works for 320 days a year. If the procurement time is 10 days and safety stock is 450 units, find the re order point, maximum and minimum inventory level.	**CO4**	**1.3**	**PO1, PO2**
9.	What are the functions of inventory? Describe the cost associated with the inventories.	**CO4**	**1.2**	**PO1, PO2**

10	A factory uses annually 24,000 units of raw material which costs Rs 125 per unit placing each order costs Rs 25 and carrying cost is 6% per year of the average inventory. i) find out the economic order quantity? ii) how many orders to be placed in a year? iii) what is the total inventory cost for the year including the cost of material?	**CO4**	**1.3**	**PO1, PO2**
11	A plant manager of a chemical plant must determine the lot size for a particular chemical that has a steady demand of 30 barrels per day The production rate is 190 barrels per day, annual demand is 10500 barrels, setup cost is Rs 200, Annual holding cost is Rs 0.21 per barrel and plant operates 350 days per year? a) determine economic product lot size b) determine total annual cost c) determine time between orders d) determine production time per lot	**CO4**	**1.3**	**PO1, PO2**

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Question No	Questions			
UNIT-5: WORK STUDY AND INDUSTRIAL PSYCHOLOGY				
PART-A (TWO MARK QUESTIONS)		CO	BL	PO
1.	Define ERGONOMICS? what are the objectives of ergonomics?	**CO5**	**1**	**PO1**
2.	What are the various process chart symbols used mention them?	**CO5**	**2**	**PO1**
3.	Write a short note on multiple activity chart?	**CO5**	**1**	**PO1**
4.	"SIMO" stands for? why SIMO chart is used?	**CO5**	**1**	**PO1**
5.	Define PMTS and what is the primary use of PMTS?	**CO5**	**1**	**PO1,**
6.	Define the terms industrial psychology and industrial fatigue	**CO5**	**1**	**PO1**
7.	In which areas Hawthorne conducted his experiments?	**CO5**	**1,2**	**PO11**
8.	Herzberg's Theory is based on what kind of factors	**CO5**	**1.2**	**PO1, PO11**
9.	What is the objective of time study and method study?	**CO5**	**1.2**	**PO1**
10	Define personnel management?	**CO5**	**1**	**PO1**
PART-B (TEN MARKS QUESTIONS)				
1.	State and explain the steps involved in method study procedure	**CO5**	**1,2**	**PO1**
2.	Explain outline process chart and flow process chart with an example	**CO5**	**1**	**PO1, PO12**
3.	Describe the Maslow's Hierarchy of human needs	**CO5**	**1**	**PO1, PO11**
4.	State and explain the Douglas Mc-Gregor's Theory X and Theory	**CO5**	**1**	**PO1**
5.	Describe the Hertzberg's Two factor theory of motivation	**CO5**	**1**	**PO1, PO11**
6.	Illustrate stop watch time study procedure to calculate standard time of a job	**CO5**	**1.2**	**PO1, PO2**
7.	Name various types of charts available for recording the data. Explain them in detail.	**CO5**	**1.2**	**PO1, PO12**
8.	Describe the steps involved in SIMO chart and What is therblig. List the table with details	**CO5**	**1**	**PO1, PO2**
9.	Discuss principles of motion economy related to human body and work place arrangement?	**CO5**	**1.2**	**PO1, PO2**
10.	What is the purpose of string diagram and explain it with an example?	**CO5**	**1.2**	**PO1, PO11**

*****ALL THE BEST*****