

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VI EXAMINATION – WINTER 2025

Subject Code:3161907

Date:19-11-2025

Subject Name:Basics of Industrial Engineering

Time:02:30 PM TO 05:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

	Marks
Q.1	03
(a) Explain the importance of plant location in brief.	03
(b) Explain the flow process chart (material type) with a suitable example.	04
(c) Discuss the factors to be considered for the location of the nuclear power plant.	07
Q.2	03
(a) What do you mean by line balancing? What is the procedure for line balancing?	03
(b) Explain the terms Loading, scheduling, dispatching, and expediting.	04
(c) Name the various methods of sales forecasting. Describe any two of them.	07
OR	
(c) Define productivity. Give various ways to improve productivity and explain them to anyone with a suitable example.	07
Q.3	03
(a) Discuss the string diagram in detail.	03
(b) What is job evaluation? Discuss any one method of job evaluation.	04
(c) Explain the two-handed process chart with a neat sketch.	07
OR	
Q.3	03
(a) Differentiate Minimum Wage, Fair Wage, and Living Wage.	03
(b) Explain the travel chart in brief.	04
(c) What is work measurement? List various methods of work measurement and explain how standard time is calculated.	07
Q.4	03
(a) What is a method study? List the objectives of the method study.	03
(b) State the importance of micromotion study.	04
(c) Explain the principles of motion economy and workplace design.	07
OR	
Q.4	03
(a) List the equipment used for time study and explain the fly-back timing method.	03
(b) Prepare a list of Therbligs used in the industry. (Any Eight)	04

(c) What is the purpose of control charts? Explain any one attribute type chart in detail. **07**

Q.5 **(a)** Explain the Payment of Bonus Act 1965 in brief. **03**
(b) Explain the double sampling plan. When do you apply double sampling in place of single sampling? **04**
(c) Write a short note on 'Identification and Control of Waste.' **07**

OR

Q.5 **(a)** Explain the Six Sigma concept, principle, and methodology. **03**
(b) Distinguish consumer's risk and producer's risk. **04**
(c) What financial initiatives does the government have in place to support the growth of entrepreneurship? **07**

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-VI (NEW) EXAMINATION – WINTER 2024****Subject Code:3161907****Date:28-11-2024****Subject Name:Basics of Industrial Engineering****Time:02:30 PM TO 05:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

Marks

Q.1 (a) Enlist the six applications of Sales forecasting techniques. **03**
(b) What type of layout is used in Shipbuilding? Justify your answer. **04**
(c) What is Productivity? Discuss the factors affecting the productivity of the manufacturing organization. **07**

Q.2 (a) Define the following terms. **03**
1. Cycle time 2. Balance Delay 3. Line efficiency
(b) Explain “String diagram” & its uses. **04**
(c) Discuss the following methods of sales forecasting: **07**
(i) Exponential smoothing
(ii) Method of weighted moving average.

OR

(c) Explain the terms Loading, scheduling, dispatching, and expediting. **07**

Q.3 (a) Comparisons: Job type production and Batch type production system. **03**
(b) Differentiate between product layout V/s process layout. **04**
(c) What is an OC curve? Write the step by step procedure for construction of an OC curve. **07**

OR

Q.3 (a) Give a Reasons for generation and accumulation of Obsolete. **03**
(b) Discuss-Assembly Line Balancing. **04**
(c) What is the Role of production planning and control in industry ?Also explain function of PPC. **07**

Q.4 (a) State the objectives of good plant layout. **03**
(b) What is an industrial dispute? State aims of Industrial Dispute Act. **04**
(c) State the characteristic of an good entrepreneur. **07**

OR

Q.4 (a) What is Routing? Explain in brief. **03**
(b) What is therbligs? Explain any two therbligs with their abbreviation and symbol. **04**
(c) Explain the principles of motion economy and work place design. **07**

Q.5 (a) What is the need of industrial legislation? **03**
(b) How X and R charts are prepared? Explain. **04**

(c) Discuss the Operation Process Chart by considering any appropriate example. **07**

OR

Q.5 (a) Explain Taylor's differential piece rate system. **03**

(b) What is incentive ? state different type of incentives. **04**

(c) Define ergonomics and explain how it helps to improve system performance. **07**

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2023****Subject Code:3161907****Date:07-12-2023****Subject Name:Basics of Industrial Engineering****Time:02:30 PM TO 05:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

Q.1 (a) State the objectives of good plant layout. **03**
 (b) Differentiate between product layout Vs process layout. **04**
 (c) From given following data select the site which is suitable for the selection as plant location considering rate of return method: **07**

Particulars	Site A	Site B	Site C
Total Initial Investments	300000	300000	300000
Total Expected Sales	375000	400000	375000
Raw Material Expenses	80000	90000	100000
Power&Water Supply Exp.	60000	75000	60000
Distribution Exp.	60000	55000	50000
Wages and Salaries	40000	60000	50000
Other Exp.	15000	20000	30000
Community Attitude	In-Different	Want-Business	In-Sufficient

Q.2 (a) Comparisons: Job type production and Batch type production system. **03**
 (b) Discuss-Assembly Line Balancing. **04**
 (c) What is the Role of production planning and control in industry ?Also explain function of PPC. **07**

OR

(c) Discuss the following methods of sales forecasting: **07**

- (i) Exponential smoothing
- (ii) Method of weighted moving average.

Q.3 (a) List the criteria for selecting a particular Job for method study. **03**
 (b) Draw and give a meanings of following symbols used in process charts: **04**
 (i)Operation (ii)Transport (iii)Storage (iv) Inspection & Operation
 (c) What is Work measurement? List the various techniques of work measurement and also explain how the Standard time is calculated. **07**

OR

Q.3 (a) Explain Travel Chart. **03**
(b) Explain “String diagram” & its uses. **04**
(c) What is Productivity ? Discuss the factors affecting the productivity of the manufacturing organization. **07**

Q.4 (a) Give a Reasons for generation and accumulation of Obsolete. **03**
(b) State various government Incentives to Entrepreneurs. **04**
(c) What are the Factories Act ? What are the major provisions for safety and health ? **07**

OR

Q.4 (a) Aims and Objectives of Industrial Legislation. **03**
(b) Discuss characteristic of good Entrepreneur. **04**
(c) What are different types of Wages ? Explain briefly. **07**

Q.5 (a) Discuss the functions of Inspection department in a manufacturing plant. **03**
(b) Define : (i) Quality (ii) Quality Control
(iii) Quality Assurance (iv) Quality Audit. **04**
(c) Explain briefly Quality Circles. **07**

OR

Q.5 (a) What is concept of S.Q.C. **03**
(b) Define : (i) Mean (ii) Range (iii) Standard Deviation (vi) Variance. **04**
(c) Short note on ISO and Six Sigma. **07**

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI(NEW) EXAMINATION – WINTER 2022****Subject Code:3161907****Date:15-12-2022****Subject Name:Basics of Industrial Engineering****Time:02:30 PM TO 05:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

Q.1	(a) What are the factors deciding the location of a Plant? 03
	(b) Explain the reasons for increase and decrease in productivity. 04
	(c) Explain the types of Production systems with their typical characteristics and relate them to the types of Plant layouts. 07
Q.2	(a) Define Process planning in detail. 03
	(b) Explain the functions of Production Planning and Control. 04
	(c) Calculate the sales forecast for the month of July 2020 if the sales for the last 8 months is shown as below: 07

Month	Sales in thousands
Nov 2019	200
Dec 2019	150
Jan 2020	182
Feb 2020	190
March 2020	152
April 2020	135
May 2020	149

OR

(c) Define line balancing. Explain what is precedence diagram with a simple example. 07
Q.3 (a) What are the symbols used in the Flow Process chart? 03
(b) Explain the objectives of Method study. 04
(c) Discuss the different methods of Job Evaluation. 07

OR

Q.3 (a) Define Merit rating 03
(b) What is SIMO chart? 04
(c) Explain the different Incentive plans for workers. 07
Q.4 (a) Discuss Factory's Act 1948 03
(b) What are Quality Circles? 04
(c) Define the terms Producer's risk and Consumer's risk with respect to O.C curve. 07

OR

Q.4 (a) Explain the concept of Entrepreneurship. 03

(b) Why is project report necessary in Entrepreneurship? **04**

(c) Why is inspection necessary and what are the types of inspection? **07**

Q.5 **(a)** Discuss Total Quality Management. **03**

(b) What are the ways of managing waste in industries. **04**

(c) Draw the X bar for the following data and tell whether process is under control. Value of $A_2=0.577$ **07**

Table 1. Process Time Series Data

Subgroup	Sample One	Sample Two	Sample Three	Sample Four	Sample Five
1	102.7	102.2	102.7	103.3	103.6
2	108.2	108.8	106.7	108.6	109.1
3	101.9	103.0	100.6	101.4	101.3
4	103.9	105.5	104.3	104.5	104.5
5	97.2	99.0	96.5	94.9	96.5
6	94.4	93.0	93.0	95.2	93.6
7	104.7	103.6	103.7	104.7	104.5
8	102.5	102.7	101.2	100.6	103.1
9	101.9	103.1	101.0	101.2	101.4
10	95.0	95.3	95.3	94.4	94.2

OR

Q.5 **(a)** Explain Waste management in Industries. **03**

(b) Discuss the principle of Six Sigma. **04**

(c) What is Sampling and what are the different types of sampling plans. **07**
