

GUJARAT TECHNOLOGICAL UNIVERSITY

BE-6 SEMESTER – OLD PAPER – S22 TO W25 – QUESTION BANK

Subject Name & Code:

BASICS OF INDUSTRIAL ENGINEERING (3161907)

Unit 1: Location Selection and Plant Layout

Repeated Questions:

1. Discuss the factors to be considered for the location of the thermal power plant. (S23 - Q1c, 07) (S25 - Q1c, 07)
2. Differentiate between product layout and process layout. (S24 - Q1c, 07) (W25 - Q1b, 04) (W23 - Q1b, 04) (S23 - Q1a, 03) (W22 - Q1c, 07)
3. What type of layout is used in Shipbuilding? Justify your answer. (W24 - Q1b, 04) (S24 - Q1b, 04)
4. List the factors that influence the selection of a plant location. / What are the factors deciding the location of a Plant? (S25 - Q1a, 03) (W22 - Q1a, 03)

Other Important Questions (Newest to Oldest):

1. Explain the importance of plant location in brief. (W25 - Q1a, 03)
 2. List the different factors affecting plant layouts. Explain any Three factors. (S22 - Q1b, 04)
 3. Which are the different analytical tools of Plant Layouts? (S22 - Q1a, 03)
 4. Name various types of plant layouts. Explain any two with neat sketch. (S22 - Q1c, 07)
 5. From given following data select the site which is suitable for the selection as plant location considering rate of return method: [Table Data are Given - refer Question paper of W23]. (W23 - Q1c, 07)
 6. State the objectives of good plant layout. (S22 - Q1a, 03) (W24 - Q4a, 03)
 7. Enlist the factors influencing plant layout. (S24 - Q2a, 03)
 8. Describe the impact of material handling considerations on plant layout. (S25 - Q1b, 04)
 9. A Company has to choose one of three locations on basis of the given data, suggest a suitable location and justify [Table Data are Given - refer Question paper of S25]. (S25 - Q2c, 07)
 10. Discuss the factors to be considered for the location of the nuclear power plant. (W25 - Q1c, 07)
 11. Explain the flow process chart (material type) with a suitable example. (W25 - Q1b, 04)
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Unit 2: Production Planning and Control (PPC)

Repeated Questions:

1. **Explain the terms Loading, scheduling, dispatching, and expediting.** (W25 - Q2b, 04) (S22 - Q2 OR, 07) (W24 - Q2 OR, 07)
2. **What is the Role of production planning and control in industry? Also explain function of PPC.** (W24 - Q3 OR, 07) (W23 - Q2c, 07)
3. **Name the various methods of sales forecasting. Describe any two of them.** (W25 - Q2c, 07) (S22 - Q2c, 07)
4. **Define the following types of production systems: Job Shop, Batch Production, Mass Production, and Continuous Production with example.** (S25 - Q2 OR, 07) (W22 - Q1c, 07)
5. **Comparisons: Job type production and Batch type production system.** (W24 - Q3a, 03) (W23 - Q2a, 03)
6. **List sales forecasting technique to develop a production plan. Explain any one in detail.** (S25 - Q3c, 07) (S24 - Q3a, 03) [Paraphrased: Enlist the six applications...]
7. **What do you mean by Process Planning? Explain step by step procedure of Process Planning.** (S25 - Q2b, 04) (W22 - Q2a, 03)

Other Important Questions (Newest to Oldest):

1. **What is line balancing? What is the procedure for line balancing?** (W25 - Q2a, 03)
2. **Explain with reference to PPC, the following: Routing, Scheduling, Loading and Dispatching.** (S25 - Q3b, 04)
3. **Give a detailed explanation of the three phases of PPC.** (S24 - Q3 OR, 07)
4. **What is line of balance? Describe the procedure of line of balance.** (S23 - Q2c, 07)
5. **List out advantage of Production Planning and Control.** (S25 - Q2a, 03)
6. **The data given in below Table shows sales data of XYZ company for last 10 years. Forecast the sales for the year 2024 using three months moving average. [Table Data are Given - refer Question paper of S23].** (S23 - Q2 OR, 07)
7. **For the following given data, calculate the forecast for the 11th month using 1) two months average; 2) Three months average. [Data given - refer Question paper of S24].** (S24 - Q3b, 04)
8. **The following table represents sales data of cars sold by XYZ showroom during the January to December month. Take $\alpha = 0.2$ and for the January month forecast of 100 cars. Calculate the forecast value by the exponential smoothing method. [Table Data are Given - refer Question paper of S24].** (S24 - Q3 OR b, 04)
9. **Discuss the following methods of sales forecasting: (i) Exponential smoothing (ii) Method of weighted moving average.** (W24 - Q2c, 07) (W23 - Q2 OR, 07)
10. **Calculate the sales forecast for the month of July 2020 if the sales for the last 8 months is shown as below: [Table Data are Given - refer Question paper of W22].** (W22 - Q2c, 07)
11. **Define line balancing. Explain what is precedence diagram with a simple example.** (W22 - Q2 OR, 07)
12. **Explain the functions of Production Planning and Control.** (W22 - Q2b, 04)
13. **List any eight objectives of Production Planning and Control.** (S24 - Q2b, 04)
14. **Write the steps for process planning.** (S22 - Q2a, 03)
15. **What are the major functions of dispatching process?** (S22 - Q2b, 04)
16. **What is Routing? Explain in brief.** (S23 - Q2a, 03) (W24 - Q4a, 03)

Unit 3: Productivity and Work Study

Repeated Questions:

1. **What is Productivity? Discuss the factors affecting the productivity of the manufacturing organization.** (W24 - Q1c, 07) (W23 - Q3c, 07)
2. **Explain the principles of motion economy and work place design.** (W25 - Q4c, 07) (S23 - Q3c, 07) (W24 - Q4 OR, 07)
3. **What is therbligs? Explain any two therbligs with their abbreviation and symbol.** (S23 - Q3b, 04) (W24 - Q4b, 04)
4. **State objectives of work study.** (S23 - Q3a, 03) (S25 - Q3 OR a, 04)
5. **Explain "String diagram" & its uses.** (W24 - Q2b, 04) (W23 - Q3b, 04)
6. **Define Productivity. Give various ways to improve productivity.** (W25 - Q2 OR, 07) (S23 - Q2b, 04) (S24 - Q4a, 03)

Other Important Questions (Newest to Oldest):

1. **Discuss the string diagram in detail.** (W25 - Q3a, 03)
2. **What is a method study? List the objectives of the method study.** (W25 - Q4a, 03)
3. **Explain the two-handed process chart with a neat sketch.** (W25 - Q3c, 07)
4. **Differentiate Minimum Wage, Fair Wage, and Living Wage.** (W25 - Q3 OR a, 03)
5. **Explain the travel chart in brief.** (W25 - Q3 OR b, 04)
6. **What is work measurement? List various methods of work measurement and explain how standard time is calculated.** (W25 - Q3 OR c, 07)
7. **List the equipment used for time study and explain the fly-back timing method.** (W25 - Q4 OR a, 03)
8. **Prepare a list of Therbligs used in the industry. (Any Eight)** (W25 - Q4 OR b, 04)
9. **What is Work measurement? List the various techniques of work measurement and also explain how the Standard time is calculated.** (W23 - Q3c, 07)
10. **List the criteria for selecting a particular Job for method study.** (W23 - Q3a, 03)
11. **Draw and give a meanings of following symbols used in process charts: (i) Operation (ii) Transport (iii) Storage (iv) Inspection & Operation.** (W23 - Q3b, 04)
12. **Explain Travel Chart.** (W23 - Q3a, 03)
13. **Define the following: 1. Productivity 2. Work study 3. Ergonomics.** (S24 - Q4 OR a, 03)
14. **What is Therbling? State its importance in micro motion study.** (S24 - Q4 OR b, 04)
15. **Discuss the String diagram by considering any appropriate example and also state its advantages.** (S24 - Q4 OR c, 07)
16. **Which are the various tools and techniques to improve productivity?** (S22 - Q3a, 03)
17. **What is method study? List the objectives of method study.** (S22 - Q3 OR b, 04)
18. **How time study is carried out? Explain equipments used for carrying out time study.** (S22 - Q3 OR c, 07)
19. **Define allowance: State importance of allowance.** (S25 - Q3a, 03)
20. **Explain : 1) Observed time 2) Rating Factor 3) Standard time 4) Normal Time 5) Working environment 6) Anthropometry.** (S25 - Q3b, 04)
21. **Write short note on : Ergonomics.** (S25 - Q3 OR a, 03)
22. **Write short note on 1. MTM 2. PMT.** (S25 - Q3 OR b, 04)
23. **Explain the reasons for increase and decrease in productivity.** (W22 - Q1b, 04)
24. **Explain Operation Process Chart with suitable example.** (S23 - Q1b, 04)
25. **Define the following terms. 1. Cycle time 2. Balance Delay 3. Line efficiency.** (W24 - Q2a, 03) (S24 - Q3a, 03)
26. **Define Production and Productivity. List Factor affecting the Productivity.** (S25 - Q3 OR a, 03)
27. **What do you mean by Line balancing? What is the procedure for line balancing?** (S25 - Q3 OR c, 07)
28. **Write in brief about work content.** (S23 - Q3 OR a, 03)
29. **Explain the two handed process chart with neat sketch.** (S23 - Q3 OR b, 04)
30. **Define ergonomics and explain how it helps to improve system performance.** (S23 - Q3 OR c, 07) (W24 - Q5c, 07)

31. **What are the symbols used in the Flow Process chart?** (W22 - Q3a, 03)
 32. **Explain the objectives of Method study.** (W22 - Q3b, 04)
 33. **What is SIMO chart?** (W22 - Q3 OR b, 04)
 34. **State the importance of micromotion study.** (W25 - Q4b, 04)
 35. **Discuss the Operation Process Chart by considering any appropriate example.** (S24 - Q4c, 07)
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Unit 4: Job Evaluation and Wage Plan

Repeated Questions:

1. **State various method of Job Evaluation. Discuss in brief. / Discuss the different methods of Job Evaluation.** (S25 - Q3 OR c, 07) (W22 - Q3c, 07)
2. **Explain Taylor's differential piece rate system.** (W24 - Q5a, 03) (S23 - Q4a, 03)
3. **Briefly explain different types of wages. Also explain various types of incentives. / What are different types of Wages ? Explain briefly.** (S25 - Q3c, 07) (W23 - Q4 OR c, 07)
4. **What is incentive ? state different type of incentives.** (W24 - Q5b, 04) (W22 - Q3 OR c, 07)

Other Important Questions (Newest to Oldest):

1. **What is job evaluation? Discuss any one method of job evaluation.** (W25 - Q3b, 04)
 2. **Differentiate: Minimum Wage, Fair Wage and Living Wage.** (S22 - Q3a, 03)
 3. **Define job evaluation and describe ranking method of job evaluation with its advantages and disadvantages.** (S23 - Q4 OR c, 07)
 4. **Define Merit rating.** (W22 - Q3 OR a, 03)
 5. **Explain the different Incentive plans for workers.** (W22 - Q3 OR c, 07)
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Unit 5: Industrial Legislation

Repeated Questions:

1. **What is Industrial Legislation and why it is required? / What is the need of industrial legislation?** (S25 - Q3.5a, 03) (W24 - Q4a, 03)
2. **What is an industrial dispute? State aims of Industrial Dispute Act.** (S25 - Q3.5 OR a, 03) (S23 - Q4b, 04) (W24 - Q4b, 04)
3. **Discuss Factory's Act 1948 / What are the Factories Act ? What are the major provisions for safety and health?** (W22 - Q4a, 03) (W23 - Q4c, 07)
4. **Aims and Objectives of Industrial Legislation. / Make a list of the goals and objectives of Industrial Legislation.** (W23 - Q4 OR a, 03) (S24 - Q4b, 04)

Other Important Questions (Newest to Oldest):

1. **Explain the Payment of Bonus Act 1965 in brief.** (W25 - Q5a, 03)
 2. **Discuss the provisions of 'Working hours' as per Factories Act, 1948.** (S22 - Q5b, 04)
 3. **Discuss the major provisions of Factory Act, 1948.** (S23 - Q4 OR b, 04)
 4. **Explain the workmen's compensation Act 1923 (with latest amendments).** (S22 - Q5c, 07)
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Unit 6: Entrepreneurship

Repeated Questions:

1. **State various government incentives to entrepreneurs. / Describe various government financial initiatives for entrepreneurship development. / What financial initiatives does the government have in place to support the growth of entrepreneurship?** (S23 - Q4c, 07) (W23 - Q4b, 04) (W25 - Q5 OR c, 07)
2. **State the characteristic of an good entrepreneur. / Discuss characteristic of good Entrepreneur. / Describe important attributes required in entrepreneur.** (W24 - Q4c, 07) (W23 - Q4 OR b, 04) (S23 - Q4 OR a, 03)

Other Important Questions (Newest to Oldest):

1. **Define Entrepreneur and Entrepreneurship.** (S22 - Q5a, 03)
 2. **List the obstacles in the way of Entrepreneur's development. / List out obstacles in the way of an Entrepreneur's development.** (S22 - Q5 OR a, 03) (S24 - Q5b, 04)
 3. **Briefly state sources of industrial finance.** (S22 - Q5 OR b, 04)
 4. **Explain the concept of Entrepreneurship.** (W22 - Q4 OR a, 03)
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Unit 7: Inspection and Quality Control

Repeated Questions:

1. What is an OC curve? Write the step by step procedure for construction of an OC curve. (W24 - Q3c, 07) (S22 - Q4 OR c, 07)
2. Define Following Terms: 1. Quality Control 2. Reliability 3. Quality Audit 4. Quality Assurance 5. T.Q.M (S25 - Q3.5 OR b, 04) (W23 - Q5b, 04)
3. Discuss the functions of Inspection department in a manufacturing plant. / Explain the function of inspection department in manufacturing plant. (S25 - Q3.5b, 04) (W23 - Q5a, 03)
4. Differentiate between variable charts and attribute charts. (S25 - Q3.5 OR c, 07) (S24 - Q2c, 07) [Paraphrased: Explain operating characteristics curves...]
5. Define : (i) Mean (ii) Range (iii) Standard Deviation (vi) Variance. (W23 - Q5b, 04) (S22 - Q4 OR b, 04)

Other Important Questions (Newest to Oldest):

1. Explain the double sampling plan. When do you apply double sampling in place of single sampling? (W25 - Q5b, 04)
2. Distinguish consumer's risk and producer's risk. (W25 - Q5 OR b, 04)
3. What is acceptance sampling? Describe its benefits. (S23 - Q5a, 03)
4. Explain control chart patterns and reasons for such patterns. (S23 - Q5c, 07)
5. Explain brief about process capability. (S23 - Q5 OR a, 03)
6. The samples are taken of product manufactured in industry. Below table shows the data. Draw p-chart and give your comments. [Table Data are Given - refer Question paper of S23]. (S23 - Q5 OR c, 07)
7. Define the following terms. 1. Acceptable Quality Level (AQL) 2. Rejectable Quality Level (RQL) 3. Average Outgoing Quality (AOQ). (S24 - Q1a, 03)
8. The following table shows the number of defects observed in 25 similar castings. 1. Find $\bar{C}$. 2. Compute trial control limits. [Table Data are Given - refer Question paper of S24]. (S24 - Q2 OR, 07)
9. What are Quality Circles? (W22 - Q4b, 04)
10. Define the terms Producer's risk and Consumer's risk with respect to O.C curve. (W22 - Q4c, 07)
11. Why is inspection necessary and what are the types of inspection? (W22 - Q4 OR c, 07)
12. Discuss Total Quality Management. (W22 - Q5a, 03)
13. Draw the X bar for the following data and tell whether process is under control. Value of $A_2 = 0.577$ [Table Data are Given - refer Question paper of W22]. (W22 - Q5c, 07)
14. Explain the principle of Six Sigma. (W22 - Q5 OR b, 04)
15. What is Sampling and what are the different types of sampling plans. (W22 - Q5 OR c, 07)
16. Explain briefly Quality Circles. (W23 - Q5c, 07)
17. What is concept of S.Q.C. (W23 - Q5 OR a, 03)
18. Short note on ISO and Six Sigma. (W23 - Q5 OR c, 07)
19. Explain the purpose of a Quality Circle. (S22 - Q4a, 03)
20. What is quality assurance? Distinguish between Quality Control (QC) and Quality Assurance (QA). (S22 - Q4b, 04)
21. Describe the processes of Single and Double sampling plans. (S22 - Q4c, 07)
22. List the different types of Inspection to confirm the quality of the product. (S22 - Q4 OR a, 03)
23. Explain the Six Sigma concept, principle, and methodology. (W25 - Q5 OR a, 03)
24. Enlist various sampling plans and explain the Double sampling plan with suitable examples. (S24 - Q5c, 07)
25. Define "Process capability". For the examples listed below, what will be the process's final outcome? 1. $CP > 1$ 2. $CP < 1$ 3. $CP = 1$. (S24 - Q5 OR c, 07)
26. How X and R charts are prepared? Explain. (W24 - Q5b, 04)

Unit 8: Waste Management

Repeated Questions:

1. **Define waste. Classify waste in terms of industrial aspect? / Enlist the various kinds of waste.** (S25 - Q3.5c, 07) (S24 - Q5a, 03)
2. **Give a Reasons for generation and accumulation of Obsolete. / State and explain the causes of obsolescence.** (W24 - Q3 OR a, 03) (S23 - Q5b, 04) (W23 - Q4a, 03)
3. **Write short note on 'Identification and Control of Waste'. / Discuss in brief about identification and control of waste.** (W25 - Q5c, 07) (S22 - Q5c, 07) (S23 - Q5 OR b, 04)

Other Important Questions (Newest to Oldest):

1. **Briefly justify the need for waste management. / What are the ways of managing waste in industries. / Explain Waste management in Industries.** (S24 - Q5 OR a, 03) (W22 - Q5b, 04) (W22 - Q5 OR a, 03)
2. **Introduction and Meaning, Reasons for generation and accumulation of obsolete, Surplus and scrap items, Identification and control of waste, disposal of scrap.** (From Syllabus File - Not a question but key topic)
