

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI(NEW) EXAMINATION – WINTER 2022****Subject Code:2161907****Date:16-12-2022****Subject Name: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.

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| <b>Q.1 (a)</b> Define the following term  | <b>03</b>    |
| (1) Inspection  |              |
| (2) T.Q.M.  |              |
| (3) Quality control   |              |
| <b>(b)</b> What is quality? Discuss various factors affecting quality   | <b>04</b>    |
| <b>(c)</b> Discuss the factors to be considered for the selection of the site for Cement manufacturing industry | <b>07</b>    |

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| <b>Q.2 (a)</b> Discuss different types of Plant layout  | <b>03</b> |
| <b>(b)</b> Discuss different types of production system. Give one example of each production system.  | <b>04</b> |
| <b>(c)</b> An online store finds that number of mobiles sold during the past seven quarters is related to an economic index and the data is as follows: | <b>07</b> |

Quarter	Economic index	Mobile sales (1000 units)
1	87	13.1
2	122	17.4
3	119	15.3
4	130	22.8
5	93	11.6
6	124	19.2
7	115	14.7

Determine the equations of the least squares line that gives relationship between the economic index and sales.

Also calculate sales for the next quarter, if the economic index for a future period is 127.

**OR**

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| <b>(c)</b> What is Production Planning and Control? Briefly explain the phases of Production, planning and control. | <b>07</b> |
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| <b>Q.3 (a)</b> What is Productivity? Give various ways to improve productivity.                 | <b>03</b> |
| <b>(b)</b> What is line of balancing? Explain assembly line balancing with example.             | <b>04</b> |
| <b>(c)</b> What is Work measurement? Explain with example, how is the Standard time calculated? | <b>07</b> |

**OR**

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| <b>Q.3 (a)</b> Differentiate standardization and simplification        | <b>03</b> |
| <b>(b)</b> Discuss the reasons for 'Low productivity' in the industry. | <b>04</b> |
| <b>(c)</b> Briefly discuss two handed process chart                    | <b>07</b> |
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| <b>Q.4 (a)</b> What is industrial legislation and why it is required? | <b>03</b> |
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- (b) Discuss major provisions of 'Employee Provident Fund Scheme, 1952' **04**  
 (c) Incentives are important for the efficient functioning of the manufacturing system. – Justify the statement **07**

**OR**

- Q.4** (a) What is industrial dispute? **03**  
 (b) Under which conditions, 'Strike' is not possible by employees as per Industrial dispute Act, 1947. **04**  
 (c) Briefly explain Halsey Incentive Plan and Emerson's efficiency Plan **07**

- Q.5** (a) What is Six sigma concept? Why it is important? **03**  
 (b) Write characteristics of an entrepreneur. **04**  
 (c) The balls for XYZ bearing company are inspected by attribute. A sample of 100 is inspected daily for continuously 10 days. The samples are taken randomly from the daily production of 1000 balls. Compute the control limits for P-chart and np-chart. **07**

Date	1	2	3	4	5	6	7	8	9	10
Rejections	18	12	6	15	2	20	14	10	8	6

**OR**

- Q.5** (a) What is ISO 9000, ISO 14000 and QS 9000? **03**  
 (b) Briefly discuss the incentives which are being offered to the entrepreneurs by the Government. **04**  
 (c) The number of customer complaints regarding network problem received daily by an internet service provider in the rural area is as follows. **07**

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Complaint	2	3	0	1	9	2	0	0	4	2	0	7	0	2	4

Does it mean that the number of complaints regarding network problem is under statistical control?

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