

22657

23124

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answers with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following: 10**
- a) State the need of inspection.
 - b) Define fatigue.
 - c) Define method study. State its objectives.
 - d) Define process planning.
 - e) Name various control charts in SQC.
 - f) State any two symbols used in process chart.
 - g) Enlist various QC tools.
- 2. Attempt any THREE of the following: 12**
- a) Explain the concept of line balancing. State its objectives.
 - b) Explain man-machine relationship in terms of ergonomics.
 - c) Differentiate between inspection and quality control.
 - d) State merits and demerits of acceptance sampling.

P.T.O.

3. Attempt any THREE of the following: 12

- a) Why allowances are considered while calculating standard time?
- b) Explain the producer's risk and consumer's risk.
- c) Explain cost of quality.
- d) Apply principles of ergonomics for design of lever for hand press machine.

4. Attempt any THREE of the following: 12

- a) State the principles of TQM.
- b) Construct two handed process chart for an activity of replacing the old battery of mobile handset.
- c) Write advantages and limitations of ISO 9000 (four each).
- d) Compare variable measurement and attribute measurement.
- e) Prepare operation process sheet and sequence of operation for step turning operation on lathe machine.

5. Attempt any TWO of the following: 12

- a) Explain the types of displays and draw sketch of any two.
- b) Explain the concept of supply chain management and state it's functions.
- c) In a manufacturing process following observations are recorded. Draw appropriate control chart and conclude.

Sample No.	Defective found out of 50
1	3
2	2
3	0
4	3
5	5
6	1

6. Attempt any TWO of the following:**12**

- a) Outline an appropriate process chart for the activity “replace old battery of car”.
- b) Draw and explain Histogram, Pareto chart and Scatter diagram.
- c) 10 samples of size 5 have been collected with following observations.

Sr. No.	\bar{X}	R
1	2.011	0.011
2	2.008	0.017
3	2.001	0.009
4	2.003	0.026
5	1.998	0.027
6	1.995	0.021
7	1.997	0.014
8	1.997	0.017
9	2.002	0.023
10	2.003	0.015

Given : $A_2 = 0.577$, $D_3 = 0$, $D_4 = 2.114$

Draw the appropriate control chart and state whether the process is in statistical control or not.
