

**Sample Question Paper:
Scheme – I**

Programme Name : Mechanical Engineering
Programme code : ME
Semester : VI Sem
Course Title : Industrial Engineering and Quality Control
Marks :70

22657

Time :3Hrs.

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1) Attempt any FIVE of the following.

(10 Marks)

- a) Define Method Study. State its objectives.
- b) state the factors of production
- c) Enlist various QC tools
- d) Name the various control charts in SQC
- e) State the types and location of display.
- f) State the characteristics of Quality
- g) State the merits of acceptance sampling.

Q.2) Attempt any THREE of the following.

(12 Marks)

- a) Explain in brief different "Recording Techniques" used in Method study
- b) Describe 'Part Print Analysis' with suitable example.
- c) Explain Ergonomic considerations applied to types and location of display
- d) Differentiate between Inspection & quality control

Q.3) Attempt any THREE of the following.

(12 Marks)

- a) Define process chart .draw the symbols used in process chart
- b) Prepare a two handed process chart for a task of sharpening the pencil with appropriate process chart symbol
- c) State considerations for selection of manufacturing processes for a given product
- d) Apply ergonomics aspect for designing Lever for hand Press Machine

Q.4) Attempt any THREE of the following.

(12 Marks)

- a) Write different steps to be followed for Ergonomic consideration in Machine design.
- b) Apply Ergonomic principles for designing Display unit of Reciprocating air Compressor.
- c) With suitable example explain the criterion for machine selection.
- d) Explain in detail OC curve and show following element on OC curve.
 - i) α -Risk
 - ii) β -Risk
 - iii) AOQ
 - iv) LTPD

- e) In a manufacturing process the number of defectives found in the inspection of 10 lots of 400 items each are given below

lot Number	01	2	3	4	5	6	7	8	9	10
No. of defectives	2	0	14	3	1	18	6	0	3	6

Determine the trial control limits for np chart.

Q.5) Attempt any TWO of the following. (12 Marks)

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

Sr. No.	1	2	3	4	5	6	7	8	9	10
- X	2.011	2.008	2.001	2.003	1.998	1.995	1.997	1.997	2.002	2.003
R	0.011	0.017	0.009	0.026	0.27	0.21	0.014	0.017	0.023	0.015

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

Draw the appropriate control chart

Q.6) Attempt any TWO of the following. (12 Marks)

- Draw the X-R control chart and explain the following terms on it
 - Extreme variations
 - Shift
 - Indication of trend.
- The following table gives the no. of defects in alignment observed at the final inspection of a certain model of an aero plane, prepare a C-chart and comment on it.

Aeroplane Number	01	2	3	4	5	6	7	8	9	10	11	12	13
No. of alignment defect	07	6	6	7	4	7	8	12	9	9	8	5	5

- c) Two machines producing components are checked up for the statistical stability. Draw the 'P' chart for both machines and comment upon the processes. Sample size for both machines are 200.

Machine A:

Sample No.	1	2	3	4	5	6	7	8	9	10
Defectives	25	28	30	30	20	29	31	26	31	27

Machine B:

Sample No.	1	2	3	4	5	6	7	8	9	10
Defectives	11	08	22	15	12	27	10	15	10	02

Sample Test Paper I
Scheme – I

22657

Programme Name : Mechanical Engineering
Semester : Sixth
Program Code : ME
Course : Industrial Engineering and Quality Control
Marks : 20 **Time : 1 hour**

Instructions: All questions are compulsory

1. Illustrate your answers with neat sketches wherever necessary
2. Figures to the right indicate full marks
3. Assume suitable data if necessary
4. Preferably, write the answers in sequential order

Q.1 Attempt any FOUR. (8 Marks)

- a) Define anthropometry
- b) Define (i) event (ii) activity
- c) List recording techniques in method study
- d) Define method study and work measurement .
- e) Define supply chain management
- f) State the functions of process engineer

Q.2 Attempt any THREE. (12 Marks)

- a) State the meaning and draw symbol for the following therbligs :
(i) Find (ii) Search (iii) Grasp (iv) Hold
- b) Explain production system with block diagram. Also give two examples.
- c) Explain the principles of Supply Chain Management
- d) State are the factors of production? Explain any two factors of production.
- e) Explain the concept of man machine system in ergonomics
- f) Explain static dimension and dynamic dimension
- g) Draw network, mark critical path and find total project duration.

Activity	1-2	1-3	2-4	3-5	3-6	4-6	5-7	6-8	7-8
Time in days	10	10	10	20	10	20	20	10	10

**Sample Test Paper II
Scheme – I**

22657

Programme Name : Mechanical Engineering
Programme Code : ME
Semester : Sixth
Course : Industrial Engineering and Quality Control
Marks : 20 **Time :1 hour**

Instructions: All questions are compulsory

1. Illustrate your answers with neat sketches wherever necessary
2. Figures to the right indicate full marks
3. Assume suitable data if necessary
4. Preferably, write the answers in sequential order

Q.1 Attempt any FOUR. (8 Marks)

- a) State the principles of TQM
- b) List the types of inspection
- c) State the meaning of ISO 9000
- d) Define cost of quality and value of quality.
- e) List advantages of S.Q.C .
- f) Define Median, Mode
- g) State the significance of Quality by Variable

Q.2 Attempt any THREE. (12Marks)

- a) Define term Quality. State meaning of term quality of product and quality of services.
- b) State merits and demerits of acceptance sampling.
- c) Describe principles of TQM.
- d) State different types of control charts used in SQC. State the types suitably used for Quality by Attributes and Quality by Variables.
- e) Compare single and double sampling plan