

GUJARAT TECHNOLOGICAL UNIVERSITY**B E Sem-VI Examination May 2011****Subject code: 161907****Subject Name: Industrial Engineering****Date: 26/05/2011****Time: 10.30 am – 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** Which are the major factors affecting plant location? **07**
(b) What is Productivity? Give various ways to improve productivity and also **07**
 Explain at least one way, with the help of suitable example.

- Q.2 (a)** What is P.P.C.? Give the major objectives of the same. **07**
(b) Forecast the demand for the following series by exponential smoothing **07**
 method. (take $\alpha = 0.3$)

Period	1	2	3	4	5	6	7	8	9	10
Actual demand	10	12	8	11	9	10	15	14	16	15

OR

- (b)** The process time for five jobs and due date(days) of the jobs are given in **07**
 following table.

Jobs	1	2	3	4	5
Process Time (Days)	3	6	9	5	7
Due date (days)	6	20	30	12	25

Jobs may be sequence according to following rules

1. Minimum process time
2. First come first served
3. Due date (days)

- Q.3 (a)** Define Method Study and explain technique with its various steps? **07**
(b) What is Work measurement? List the various techniques of work **07**
 measurement and also explain how the Standard time is calculated.

OR

- Q.3 (a)** Differentiate between Micro & Macro motion study. Explain in brief various **07**
 techniques for micro motion study.
(b) Write a note on (Any Two) **07**
 1. Flow process chart
 2. String Diagram
 3. Two handed process chart

- Q.4 (a)** What is term S.Q.C.? Explain operating characteristic curves for acceptance sampling. **07**
- (b)** Following are the readings of diameters taken for pins manufactured on the lathe machine. Draw the $\bar{X}$ and R chart and also give the process trend. **07**
(Take value of $A_2=0.729$, $D_4= 2.282$. $D_3= 0$) for the process.

1	2	3	4	5	6	7	8	9	10
14.8	14.9	14.8	15.0	14.6	16.1	15.2	14.8	14.9	14.9
15.1	14.6	14.9	16.2	15.1	14.7	15.1	15.4	15.9	16.3
15.0	15.2	15.2	14.9	15.3	14.9	15.3	15.2	15.5	14.8
14.9	15.1	15.3	14.7	14.8	15.1	15.1	14.9	14.5	15.3

OR

- Q.4 (a)** Define following terms **07**
1. Quality
 2. Quality control
 3. Quality assurance
 4. Reliability
 5. Quality audit
 6. Inspection
 7. T.Q.M.
- (b)** Following are the observations of bulb manufacturing company for the 12 days. Draw the P chart and express opinion for the process based on the chart **07**

Days	1	2	3	4	5	6	7	8	9	10	11	12
Nos. of Inspected bulbs (n)	59	102	48	130	78	65	80	96	110	145	68	86
Nos. of Defective bulbs (d)	4	12	6	18	8	7	6	1	3	37	8	5

- Q.5 (a)** Define wages and explain in brief various types of incentives **07**
- (b)** What are factories Act? As per the factories act 1948 what are the major provisions for safety and Health? **07**

OR

- Q.5 (a)** What is entrepreneur and explain his major characteristics. **07**
- (b)** Differentiate **07**
1. Process layout plan v/s product layout plan
 2. Production v/s Productivity
