Reg. No: …….

Name:……..

Eighth Semester B tech Degree examination, May 2017

(2013 scheme)(Model question Paper)

13.806.1: INDUSTRIAL QUALITY CONTROL (M)

Time: 3 Hours Max Marks: 100

Instruction**: Use of statistical tables **permitted.

PART – A

Answer **all** questions. **Each** question carries **2** marks.

1. Differentiate between Quality control and Quality assurance?
2. What do you mean by process capability?
3. What are the limitations of $\bar{X}$ and R chart?
4. Write a short note on acceptance sampling?
5. What is Producers risk and Consumers risk?
6. Define the term reliability?
7. Explain the term maintainability?
8. What is product life cycle?
9. What do you mean by Latin square design?
10. What is Taguchi method?

PART –B

Answer **one full** question from each Module. **Each** question carries **20** marks.

MODULE-1

11. a) Explain the calculation procedure for $\bar{X}$ and R chart? **10**
    b) What are the difference between control chart for variables and attributes? **10**

OR

12. **a)** In a manufacturing process the number of defectives found in the inspection of 15 lots of 400 items each are given below.

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No: of defectives	2	5	0	14	3	0	1	0	18	8	6	0	3	0	6

i. Determine the trial control limits for np chart and state whether the process is in control.

ii. What will be the new value of mean fraction defective if some obvious point outside control limit are eliminated. What will be the corresponding upper control limit and lower control limit. Examine whether the process is still in control or not? **12**

b) Explain SQC? What are its benefits? **8**

MODULE-11

13. a) Explain the characteristics of OC curve in detail? **10**
b) Explain single double and multiple sampling plans with examples. **10**

OR

14. a) What is meant by AOQ and AOQL? What are their significance in sampling plan? **10**
b) A double sampling plan, N= 5000, n1= 100, c1= 0, n2= 100 and c2=1. Use Poisson's table to compute the probability of acceptance of 1% defective lot. **10**

MODULE-111

15. Explain the following related to reliability.

a) MTBF

b) MTTF

c) Hazard Rate.

d) Redundancy **20**

OR

16. a) A certain type of electrical components has a uniform failure rate of 0.00001 per hour. What is its reliability for a specified period of services of 10000 hours. **6**

b) What do you mean by Pareto analysis? **7**

c) A system is composed of 10 components connected in series. Each component has an exponential time to failure distribution with a constant failure rate of 0.5/ 4000 hr. Compute the reliability of the system for 2000 hrs of operation and find MTTF? **7**

MODULE-1V

17. Explain the performance characteristics of a Taguchi loss function ? **20**

OR

18. a) Explain S/N ratio in detail. **10**

b) What do you mean by an orthogonal array? **10**