R09

Code No: C5207

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I - SEMESTER EXAMINATIONS APRIL/MAY-2012
QUALITY ENGINEERING IN MANUFACTURING
(DESIGN FOR MANUFACTURING)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks
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1.a) Describe about general loss function for nominal - is - best situation.
b) How the production design can be considered to improve the quality in production processes.

2.a) How the variation in tolerances affect the economics of manufacturing?
b) Describe patero - optimal designs in the manufacturing to increase quality.

3.a) What is the need for tolerance design in manufacturing and explain about the larger the better characteristics.
b) Derive the quadratile loss function and explain its characteristics.

4.a) How the tolerance design is made for N–type, L–type and S–type characteristics?
b) Determine the manufacturing tolerance for microphone cable impedance. Customer specification for voltage drop in standard length microphone cables sold are 120 ± 10mv. The factory's cost to adjust the impedance of the cable is Rs 500/-, which effects a deviation of ± 4mv in voltage drop. What should be the manufacturing specification limits (around target 120mv) on voltage drop?

5.a) Differentiate between Two–way ANOVA and three–way ANOVA.
b) Three different catalysts are under study. It is suspected that the yield of a chemical product will be different when the three different catalysts are used. Five batches were produced using each catalyst. Following are the results.

Yield in gms

Catalyst 1	Catalyst 2	Catalyst 3
100	76	108
96	80	100
92	75	96
96	84	98
92	82	100
Total 476	**397**	**502**

Based on the above data, can it be inferred that the effect of the three catalysts differ significantly with respect to yield of the chemical product.

6.a) Describe about dummy treatment and Nested factor Experiment and discuss about it.
b) Describe the solution by 'F' test and explain its draw backs.

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7.a) What is orthogonal array and explain about percent contribution, Signal–to–Noise ratio?

b) How the analysis is made in $L_8(2^7)$ orthogonal array?

8. Answer the following
a) ISO – 9000 Quality System
b) Quality circles
c) Parameter design and tolerance selection.

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