Code No: **R4203D** **R10** **Set No. 1**

IV B.Tech II Semester Supplementary Examinations, July/Aug - 2015

QUALITY AND RELIABILITY ENGINEERING

(Common to Mechanical Engineering and Automobile Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1. a) Discuss views of different quality gutur. [8]
   b) Explain any seven new quality improvements tools. [7]

2. a) Distinguish between a P chart and a C chart. Discuss the situations in which C chart is most appropriate to use. [7]
   b) State the objectives of X bar and R charts. [8]

3. Construct the OC curve for the single sampling plan : N = 830, N = 62, c = 1 and r = 2 use at least seven points. [15]

4. a) Explain about loss function with example. [8]
   b) Discuss about various steps in tolerance design. [7]

5. Write a short notes on the following
   a) quality circle
   b) ISO9000
   c) Kaizen [15]

6. a) Explain Reliability in terms of Hazard rate and failure density, conditional Probability and multiplication rules. [7]
   b) Define and explain ii) mean time to failure. ii) Mean time between failure. [8]

7. Explain about various time dependent Hazard models. [15]

8. Write a short note on maintainability and system availability. [15]

Code No: **R4203D** **R10** **Set No. 2**

IV B.Tech II Semester Supplementary Examinations, July/Aug - 2015

QUALITY AND RELIABILITY ENGINEERING

(Common to Mechanical Engineering and Automobile Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1. a) Explain product design in quality engineering. [8]
   b) What do you understand by statistical control of production process? [7]

2. a) Compare Xbar and R charts. Discuss the circumstances in which either of the two or a combination of there will be used for the purpose of control. [8]
   b) Assuming all the plotted points are inside the 3σ limits in a control chart, state the additional rules to identify the process variations and show the same graphically [7]

3. a) Given P0.10=0.053 and P0.95=0.014, Determine the single sampling plan which exactly meets the consumers stipulation and comes closer to the producers stipulation. [7]
   b) Explain about acceptance sampling by variables and attributes. [8]

4. a) Explain N-type and L-type determination of tolerance. [8]
   b) Write short notes on online quality control. [7]

5. a) Explain in detail about Deming's fourteen Points. [8]
   b) What do you understand by ISO? State its levels mention its importance in the field of quality how it can be achieved. [7]

6. a) Short notes i) failure data analysis ii) Mean time to repair. [8]
   b) Explain the term reliability. How it is important in manufacturing? How it is related with quality? How it can be improved? [7]

7. a) Give the difference between time dependent stress dependent hazard models. [8]
   b) Derive MTTF for weibull distribution on production based. [7]

8. a) Explain about frequency of failures. [8]
   b) Write a short note on economics of reliability. [7]