

GANPAT UNIVERSITY
M.Tech.[ME(AMT)] Sem-II
REGULAR EXAMINATION JULY 2013

3ME204 Precision and Quality Engineering

TIME – 3 HOURS

TOTAL MARKS- 70

- INSTRUCTION:-
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Make suitable assumptions wherever necessary.

SECTION-I

Que-1 [12]

- (a) Explain the term "Quality Assurance Function".
- (b) Explain ANOVA analysis in brief.
- (c) Describe the goal and importance of Six Sigma quality approach.

OR

Que-1 [12]

- (a) Explain T.Q.M. models briefly.
- (b) State and explain the factor to be considered in designing for reliability.
- (c) Enlist Juran's steps for quality improvement and explain them in brief.

Que-2 [11]

- (a) Explain the various steps in quality control programme.
- (b) Determine the control limit for \bar{X} and R charts if $\sum \bar{x} = 357.50$, $\sum R = 9.90$. Number of subgroups = 20. It is given that $A_2 = 0.18$, $D_3 = 0.41$, $D_4 = 1.59$ and $d_2 = 3.735$. Also find the process capability.

OR

Que-2 [11]

- (a) What is the meaning of quality of design? Explain the factors which influence the quality of design.
- (b) Control charts for \bar{X} and σ are maintained on the weight in kg. of the contents of a certain container. The subgroups size is 10. The values of \bar{X} and σ are computed for each subgroup. After 18 subgroups $\sum \bar{x} = 595.8$ and $\sum \sigma = 8.24$. Compute the values of σ' on the assumption that the process is in statistical control. Take $A_1 = 1.03$, $B_4 = 1.73$ and $B_3 = 0.28$.

Que-3 [12]

Attempt Any three.

- (a) Explain Taguchi's philosophy in brief.
- (b) Explain robust design with example.
- (c) Explain concurrent engineering.
- (d) Write a short note on lean manufacturing.

SECTION-II

- Que-4 [12]
- (a) Gives types of micromachining process and explain one of it. What is micromachining process?
 - (b) Give the name of Precision Finishing Processes. Explain it.
- OR**
- Que-4 [12]
- (a) What is leaser machining process? Explain in deep. Drawback of leaser machining process.
 - (b) What is MEMC? Explain in MEMC system and also explain sensor and actuator.
- Que-5 [11]
- (a) What is an Air or Gas Bearing? Explain in detail.
 - (b) How Defect categorization in Precision vision, inspection & measurement system.
- OR**
- Que-5 [11]
- (a) Give Five major steps of product's life cycle, and explain one of them.
 - (b) Explain in detail Magnetic float polishing process.
- Que-6 [12]
- Attempt Any three.**
- (a) Explain Honing process.
 - (b) Explain eaching process in micromachining.
 - (c) Notable advantages of precision grinding over diamond turning.
 - (d) Give detail about Precision Grinding Processes.

*****END OF PAPER*****