

GANPAT UNIVERSITY**M. TECH SEM- II (ME-CAD/CAM) REGULAR EXAMINATION-APRIL-JUNE-2016
3ME215 Automation in Production & Quality Engineering**

MAX. TIME: 3 HRS

MAX. MARKS: 60

- Instructions: (1) This Question paper has two sections. Attempt each section in separate answer book.
(2) Figures on right indicate marks.
(3) Be precise and to the point in answering the descriptive questions

SECTION: I

- Q.1 (A) Describe the various steps in the application of Six Sigma. (10)
(B) What is S/N ratio in taguchi method?

OR

- Q.1 (A) Explain the failure pattern for complex product. (10)
(B) What is meaning of quality of conformance? Explain factors which influences the quality of conformance

- Q.2 (A) Explain process of Benchmarking for product quality improvement. (10)
(B) The mean and the standard deviation of a sample of 100 observations was calculated as 40 and 5.1 respectively. While comparing with the original data it was found that by mistake a figure of 40 was miscopied as 50 for one observation. Calculate the correct mean and standard deviation of the sample.

OR

- Q.2 (A) State and explain the advantages & limitation of acceptance sampling over 100% inspection. (10)
(B) It is desired to have a reliability of at least 0.990 for a specified service period of 8000 hours on the assumption of a uniform failure rate. What is the least value of Θ' that will yield this desired reliability?

- Q.3 Attempt Any Two. (10)
(A) Write a short note on T.Q.M
(B) Write short note on lean manufacturing.
(C) Explain concurrent Engineering.

SECTION: II

- Q.4 (A) Suggest Application of power sources (Hydraulics or Pneumatics) and reason for it. (10)
- Automobile wheel changing.
 - To handling Pre-cast RCC underground bridges.
 - Sheet metal punching
 - Robot Gripper
 - In forging industries

(B) Explain different automation systems depending on product variety and product quantity in factory automation.

OR

- Q.4 (A) What are the characteristics of a Hydraulic fluid? (10)
- (B) Explain working principle of Capacitive proximity sensor with neat sketch.

Q.5 (A) What is the application of rotary encoders in close loop systems? How will you select the type of encoder for particular application? (10)

(B) Why PLC system as more preferable in Automated manufacturing system?

OR

- Q.5 (A) What is Sensor? Explain Sensor used in Automated manufacturing. (10)
- (B) Draw block diagram of PLC. Explain function of various blocks

Q.6 Attempt Any Two. (10)

(A) What are the reason behind the increasing trend of Hydraulics and pneumatics in industries and mobile equipment? What are the differences in application of hydraulics and pneumatics?

(B) What are the strategies for automation?

(c) Explain the role of Mechatronics in manufacturing.

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