

B.Tech. (Sem. - 5<sup>th</sup>)

## INSPECTION &amp; QUALITY CONTROL

SUBJECT CODE : PE - 309Paper ID : [A0218]

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours

Maximum Marks : 60

## Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

## Section - A

Q1)

(10 × 2 = 20)

- a) Advantages of sampling inspection.
- b) Quality assurance.
- c) Average out going quality limit (AOQL).
- d) Difference between inspection and quality control.
- e) Cause effect diagrams.
- f) Relationship between universe standard deviation and sample standard deviation.
- g) Quality traits.
- h) Cost analysis in design.
- i) Internal and external failure costs.
- j) Dimensions of quality.

## Section - B

(4 × 5 = 20)

- Q2) The high voltage output of a certain power supply unit for copy machine is specified as  $350 \pm 5V$ . Subgroup size of 4 units are drawn approximately every hour and tested. After 30 sub-groups,  $\Sigma \bar{X} = 10,560$  and  $\Sigma R = 86.5$
- (a) Determine the control limits for  $\bar{X}$  & R charts and estimate the value of sigma.
  - (b) Assuming the process is in control, what proportion of defective products is being made?
- Q3) How the quality audit is carried out.
- Q4) What is quality circle? Explain the formation and working of quality circles.
- Q5) What is Total Quality Management? Explain in brief the six basic concepts of TQM.
- Q6) Explain in brief the various costs associated with maintaining the quality of a product.

## Section - C

(2 × 10 = 20)

- Q7)  $\bar{X}$  and R charts have been maintained on a certain quality characteristic. All points have fallen within the control limits. A sudden change in the process occurs that increases  $\mu$  by  $1.5\sigma$  but does not change  $\sigma$ . In answering the following questions, assume that the quality characteristic is normally distributed before and after the change and that the control limits are based on observations made before the shift.
- (a) If the sub group size is 3, approximately, what % age of points would expect to fall outside the control limits on charts because of change in  $\mu$ .
  - (b) Answer the same question assuming a subgroup size of 5.
  - (c) Answer the same question assuming a subgroup size of 8.
- Q8) Explain the step by step procedure of implementing ISO 9000 Quality Management system in an organization.
- Q9) Explain in brief the following :
- (a) Quality of design and quality of conformance.
  - (b) Chance and assignable causes of variation.

