SIX SIGMA – TEST I

Time: 50 minutes, Max marks:20

Use of Statistical Tables is permitted

1) Compare Six Sigma with TQM.

(2 marks)

2) What do you mean by a Black Belt in Six Sigma? What is the training given to him?

(3 marks)

3) A survey was conducted of male and female employees in a factory. Their monthly salaries were found to be as follows:

	531	471	478	523	506	492	526	475	568	531
Men	486	511	461	507	528	448	518	512	518	532
	482	577	496	494	548	512	476	513	480	467

	533	549	556	526	567	588	498	540	520	542
Women	535	563	502	536	519	582	556	569	562	547
	560	547	539	564	544	547	530	549	549	506

Construct a comparative box plot. Is there a significant difference between the salaries of men and women?

(5 marks)

4) A Six Sigma team measured the life (in million cycles) of 15 samples of an electronic component as given in the following table. Construct a normal probability plot on ordinary graph paper. Are the values normally distributed?

13	12	6	1	5	2	5	5
1	20	1	5	1	10	10	

(5 marks)

5) The hardness of a steel casting is known to normally distributed with an average of 300BHN and standard deviation of 10MPa. What is the probability that a single casting will have a hardness greater than 320MPa?

(2 marks)

6) The diameter of a sample of 6 shafts had a mean of 40.12mm and a standard deviation of 1.2mm. Determine the value of the diameter above which the mean diameter of the shaft will lie with a probability of 90%.

(3 marks)

7) The life of a battery is normally distributed with mean 50hours and standard deviation 1.5hrs. An engineer claims to have developed an improved chemical mixing procedure. With this procedure, a sample of eight batteries were manufactured and tested and the average life was found to be 51.23hrs. Formulate a hypothesis test and give your conclusion at a significance level of 0.05. Also determine the p value.

(5 marks)