Register Number:……..

KUMARAGURU
college of technology
character is life

**B.E DEGREE EXAMINATIONS: MAY 2017**

(Regulation 2014)

Sixth Semester

**U14GST002: TOTAL QUALITY MANAGEMENT**

(Statistical table to be provided)

(Common to ECE & MCE)

**COURSE OUTCOMES**

**CO1:** Understand quality concepts and philosophies of TQM

**CO2:** Apply TQM principles and concepts of continuous improvement

**CO3:** Apply and analyze the quality tools, management tools and statistical fundamentals to improve quality

**CO4:** Understand the TQM tools as a means to improve quality

**CO5:** Remember and understand the quality systems and procedures adopted

**Time: Three Hours** **Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. Match list I (elements of a document pyramid of ISO standard) with list II (objective of the element) and select the correct answer using the codes given below the lists. CO5 [$K_2$]

| List I | List II |
|---|---|
| A. Policy | 1. Who, When, & Where |
| B. Procedures | 2. Evidence |
| C. Work instructions | 3. Why & what |
| D. Records | 4. How |

| | A | B | C | D |
|---|---|---|---|---|
| a) | 4 | 3 | 2 | 1 |
| b) | 3 | 1 | 4 | 2 |
| c) | 1 | 2 | 3 | 4 |
| d) | 2 | 3 | 4 | 1 |

2. Match list I (ISO 9000 series of standards – old version) with list II (detail of coverage of standards) and select the correct answer using the codes given below the lists. CO5 [$K_2$]

| List I | List II |
|---|---|
| A. ISO 9001 | 1. Model for quality assurance in final inspection and testing |
| B. ISO 9002 | 2. This standard provides guidance on the technical, administrative and human factors affecting quality of products and services at all stages of the quality loop |
| C. ISO 9003 | 3. Model for quality assurance in production and installation |
| D. ISO 9004 | 4. Model for quality in design / development, production, installation and servicing |

| | A | B | C | D |
|---|---|---|---|---|
| a) | 1 | 2 | 3 | 4 |
| b) | 4 | 3 | 2 | 1 |
| c) | 3 | 2 | 1 | 4 |
| d) | 4 | 3 | 1 | 2 |

3. Consider the following statements CO1 [$K_1$]

1. do not use inspection as a means to achieve quality
2. create consistency of purpose for improvement of product and service
3. eliminate numerical quotas / targets
4. remove barriers to pride of workmanship

Which of these statements belong to the 14 point programme of Deming (Principles of TQM)

a) 1,2 b) 1,4

c) 3,4 d) a and c

4. Consider the following statements (with respect to quality circles) CO1 [$K_2$]

1. membership is drawn from people doing different work or from different work areas
2. membership is drawn from people doing similar work or from the same work area
3. the group is given a problem to tackle
4. the group selects the problem to be tackled

Which of these statements are correct?

a) 1,3 b) 1,4

c) 2,3 d) 2,4

5. Assertion (A): Deming advocates that Do not use inspection as a means to achieve quality CO1 [K2]
Reason (R): Inspection accepts and pays a worker to produce defective items and then to connect them

a) Both A and R are Individually true and R is the correct explanation of A
b) Both A and R are Individually true but R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true

6. Assertion (A): Bench marking might lead to putting a full stop to innovation CO4 [K2]
Reason (R): Benchmarking involves imitating the best-in-class / best practices with not much of individual thinking

a) Both A and R are Individually true and R is the correct explanation of A
b) Both A and R are Individually true but R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true

7. Consider the following 5S principles CO2 [$K_2$]

1. Seri-Seiton
2. Seiketsu
3. Seiso
4. Shitsuke

The correct sequence of the 5S principles is

a) 2-3-4-1
b) 1-3-2-4
c) 3-4-2-1
d) 4-1-3-2

8. The steps adopted to create a PDPC is stated CO3 [$K_2$]

1. Conduct brainstorming, find what could go wrong, i.e., "what-if"
2. State ultimate objective to be achieved
3. List the $1^{st}$ and $2^{nd}$ level activities to complete the objective
4. Plan for counter measures for each "what-if" and place them in a balloon

a) 1-2-3-4
b) 3-1-4-2
c) 2-3-1-4
d) 4-3-2-1

9. When sample size is constant, np-chart also can be used instead of CO3 [$K_2$]

a) $\overline{c}$ – chart
b) u – chart
c) p – chart
d) X - R chart

10. The TQM principle "End the practice of awarding business on price tag alone" was stated by: CO1 [$K_1$]

a) Dr. W. Edwards Deming
b) F.W. Tailor
c) Crosby
d) Juran

**PART B (10 x 2 = 20 Marks)**
**(Answer not more than 40 words)**

| | | | |
|---|---|---|---|
| 11. | State the various quality costs. | CO1 | [$K_1$] |
| 12. | State the impact of MBWA as a senior management approach in TQM. | CO1 | [$K_2$] |
| 13. | Draw the Teboul model for Customer Satisfaction. | CO2 | [$K_1$] |
| 14. | Draw and explain the U-Shaped layout used in TPS. | CO2 | [$K_2$] |
| 15. | List the new seven management tools. | CO3 | [$K_1$] |
| 16. | Outline double sampling? | CO3 | [$K_1$] |
| 17. | Draw the House of Quality under QFD. | CO4 | [$K_1$] |
| 18. | Illustrate the meaning of 'Total Productive Maintenance"? | CO4 | [$K_2$] |
| 19. | What does ISO 14001:2004 deal with? | CO5 | [$K_2$] |
| 20. | Briefly list the ISO audit procedure. | CO5 | [$K_1$] |

**Answer any FIVE Questions:-**
**PART C (5 x 14 = 70 Marks)**
**(Answer not more than 300 words)**

**Q.No. 21 is Compulsory**

| | | | |
|---|---|---|---|
| 21. | State the 14 Quality Management steps by Crosby and explain them. | CO1 | [$K_2$] |
| 22. | State the 5S housekeeping principles and explain how to implement the same in a manufacturing unit. | CO2 | [$K_3$] |
| 23. | Select a situation of your choice and apply the concept of Kaizen and discuss its impact based on the underlying principles of continuous improvement. | CO2 | [$K_3$] |
| 24. | A radio manufacturer wishes to use SQC charts for the detection of non conformities per unit on the final assembly line. The sample size is finalized as 10 radios. Data on the number of non-conformities in 20 samples of 10 radios are shown in the following table. | CO3 | [$K_3$] |

| Sample number | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| No. of non conformities | 18 | 20 | 10 | 11 | 15 | 10 | 14 | 13 | 18 | 12 |

| Sample number | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|
| No. of non conformities | 19 | 20 | 18 | 14 | 17 | 20 | 22 | 10 | 14 | 12 |

| | | | |
|---|---|---|---|
| 25. | Discuss the concept of Quality Function Deployment (QFD) and its impact for success of TQM. | CO4 | [$K_2$] |
| 26. | Draw the "Failure Mode and Effect Analysis (FMEA)" table and explain it with a suitable example. | CO4 | [$K_2$] |
| 27. | List all the clause and sub clause of ISO 9001 standards in a tabular form. | CO5 | [$K_1$] |

**********