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<b>QUALIFICATION: BACHELOR OF BUSINESS MANAGEMENT</b>	
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<b>COURSE: QUALITY MANAGEMENT SYSTEMS</b>	<b>COURSE CODE: BQM612S</b>
<b>SESSION: JANUARY 2020</b>	<b>PAPER: THEORY</b>
<b>DURATION: 3 HOURS</b>	<b>MARKS: 100</b>

## **2<sup>nd</sup> OPPORTUNITY EXAMINATION PAPER– 2020**

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**THIS EXAMINATION PAPER CONSISTS OF 5 PAGES  
(INCLUDING THIS FRONT PAGE)**

### **INSTRUCTIONS:**

1. Answer **all questions** from Section A to D.
2. Read all the questions carefully before answering.
3. Marks for each question are indicated at the end of each question.
4. Please ensure that your writing is legible, neat and presentable.

## **SECTION A – MULTIPLE CHOICE QUESTIONS (10 MARKS)**

1. Which one is right definition of Six Sigma?
  - a) It's a performance improvement approach that seeks to find and eliminate causes of defects or errors, reduce cycle times and cost of operations, improve productivity, better meet customer expectations, and achieve higher asset utilization and returns on investment in manufacturing and service processes.
  - b) It's a tool used to measure performance
  - c) It's an approach that seeks to increase causes of defects or errors
  - d) Can only be used in manufacturing industry
2. What's a unit of work?
  - a) It's the output of a process or an individual process step
  - b) It's a load
  - c) It's the actual work done
  - d) Its work done by a group of people
3. What is a non-conforming unit of work?
  - a) Has one or more defects or errors
  - b) Its work done
  - c) Has no defect or errors
  - d) Has been completed according to specifications
4. What are measures in Six Sigma metrics?
  - a) Refers to the numerical information that results from measurement and are associated with a metric
  - b) They are as a result of a process steps
  - c) They are numerical values that are not associated with a metric
  - d) They have no significance to Six Sigma metrics
5. What is a process? mark the correct answer.
  - a) A sequence of activities that are intended to achieve some results
  - b) A procedure to follow
  - c) A set of rules
  - d) A routine operation
6. SMART is the abbreviation for
  - a) Smooth, Measurable, Actionable, Related, Timely
  - b) Simple, Meaningful, Actionable, Related, Timely
  - c) Simple, Measurable, Actionable, Reasonable, Timely
  - d) Simple, Measurable, Actionable, Related, Timely
7. "Six sigma" is a
  - a) system that measures the productivity and performance of employees
  - b) defect- or error-based metric that equates to zero defects or errors per million opportunities
  - c) defect- or error-based metric that equates to 3.4 or fewer defects or errors per million opportunities
  - d) system without measures
8. Key Performance Measures in Services are about
  - a) Accuracy, Cycle time, Cost, Customer satisfaction
  - b) Accuracy, Down time, Cost, Customer satisfaction
  - c) Accuracy, Up time, Cost, Customer satisfaction
  - d) Accuracy, Down time, Cost, Customer satisfaction

9. Nonconformance (defect or error) is

- a) Countable
- b) Concerned with the degree of conformance of specifications
- c) Difficult for employees to trace
- d) any mistake or error that is passed on to a customer

10. A Project is

- a) a temporary work structure that starts up, produces some output or outcome, and then shuts down.
- b) not a temporary work structure that starts up, produces some output or outcome, and then shuts down.
- c) An operation that is carried out daily and does not produces some output or outcome, and then shuts down.
- d) about analyzing the production process

## **SECTION B**

### **ANSWER ALL QUESTIONS: TRUE OR FALSE?**

**[5 MARKS]**

- 1 The following are the quality management principles; Customer focus, Leadership, Involvement of people, Process approach, System approach to management, Continual improvement, Factual approach to decision making, and Mutual beneficial supplier relationship.
- 2 A learning cycle constitutes of the following steps; Planning, Execution of plans, Assessment of progress, Revision of plans based on the assessment findings
- 3 The value of 3.4 dpmo as a measure of Six Sigma performance stems from the notion of design specifications in the manufacturing and the ability of a process to achieve the specifications.
4. The Theoretical Basis for Six Sigma is that Six Sigma quality level corresponds to a process variation equal to half of the design tolerance while allowing the mean to shift as much as 1.5 standard deviations from the target.
5. The following are the quality management principles; Customer focus, Leadership, Involvement of people, Process approach, System approach to management, Continual improvement, Factual approach to decision making, and Mutual beneficial supplier relationship.

**SECTION C – ESSAY TYPE QUESTIONS (58 MARKS)**

1. Explain in brief on how Six Sigma works for each one of these players below; [8 MARKS]
  - a) Plant Manager
  - b) Human Resource Manager
  - c) Sales Manager
  - d) Anyone
  
2. What is Six Sigma? What does it focus on and what methodology is used in Six Sigma? [10 MARKS]
  
3. What operational problems are caused by excessive variation? List and describe them. [10 MARKS]
  
4. What are dashboards and balance score cards? How do they support Six Sigma projects? [10 MARKS]
  
5. Define the two general categories of processes in any organization and provide examples of each. [5 MARKS]
  
6. Explain Deming's red bead and funnel experiments? What lesson do they provide? [5 MARKS]
  
7. Explain the five stages of the project life cycle. [10 MARKS]

**SECTION D – COMPUTATIONS**

**(27 marks)**

1. **DPMO;**
  - a) Briefly explain how to calculate the dpmo metric. [3 MARKS]
  
  - b) An airline wishes to measure the effectiveness of its baggage handling system. Suppose that the average number of bags per customer is 1.6 and the airline recorded 3 lost bags for 8000 passengers in one month. Find epmo (error per million opportunities). [5 MARKS]
  
2. Suppose that the specification limits for some process are  $LSL=0.02$  and  $USL=0.10$ , with the nominal specification being 0.06. Find the Sigma level if the process standard deviation is 0.01. [4 MARKS]
  
3. Suppose that two instruments measure a dimension whose true value is 0.25 cm. Instrument A may read 0.248 cm and Instrument B may read 0.259 cm. (i) Find the relative error of instrument A and B respectively. (ii) Which instrument between the two is more accurate? [5 MARKS]
  
4. You and your friends have just measured the heights of your dogs (in millimeters). The heights are; 600mm, 470mm, 170mm, 430mm and 300mm. Find out the mean, the variance, and the standard deviation? [10 MARKS]

**END OF EXAM PAPER**