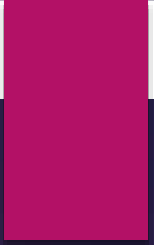


# REVIEW AND COMMENTS OF THE ASSIGNMENT 2

EMA2602: ENGINEERING MANAGEMENT II (MODULE B)



Questions 2.1-2.3 are  
based on chapter 6  
("Engineering contracts")

# Questions 2.1

► Requirements of an agreement to constitute a valid contract:

- ❑ **The parties must reach agreement (consensus)**
- ❑ **The parties must have the necessary contractual capacity (regulated by the law of persons)**
- ❑ **Performance must be certain or ascertainable, i.e. there must be certainty as to the obligations created by the contract**
- ❑ **Performance must be possible at the time the contract is entered into**
- ❑ **The conclusion of the contract and the performance and object of the contracting parties must be lawful**
- ❑ **The formalities (if any) must be complied with**

➤ Agreement:

- ❑ **In determining whether or not a contract has come into existence, it is necessary to determine whether there is consensual agreement by two or more parties**
- ❑ **A person cannot contract with him/ herself alone, though our courts have recognised the validity of contracts entered into by one person acting in different capacities (Ex parte Oberholzer 1951 1 SA 554 (A))**
- ❑ **The most common method for ascertaining whether there has been agreement is to identify an offer and acceptance of that offer, it being acknowledged that a binding contract is as a rule constituted by offer and acceptance**

# Questions 2.1

## ➤ Offer

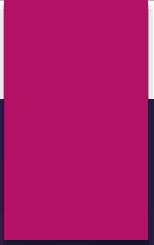
- ❑ An Offer- is a statement of intention in which one party (the offeror) discloses to what performance and on what terms he/ she will consent to bind him/ herself to the person to whom the offer is addressed (offeree)
- ❑ *In order for an offer to be regarded as valid, the following requirements should be in place:*
  - ✓ *The offer must be definite and complete*
  - ✓ *The offer must be a firm offer, such that the mere acceptance thereof will result in a contract*
  - ✓ *The offer must come to the attention of the offeree*
  - ✓ *An offer must, as a rule, be directed at a definite person or persons*
  - ✓ *Any formalities prescribed by legislation must be complied with*

# Questions 2.2

- ▶ **Terms of contract (essentialia, naturalia, incidentalialia)**
- ▶ **Express terms – communicates declarations whereas Implied/ Tacit terms are not expressed by words, but are incorporated into contracts by operation of law**
- ▶ **Conditions- are traditionally categorised as suspensive or resolutive conditions**
- ▶ **Time clauses- are differentiated from conditions in that a time clause determines a specific time or period within which the contract will either become operative or be dissolved**
- ▶ **Supposition- renders the operation of a contract dependent on an event that has already taken place, or an existing state of affairs at the time of contracting, with the parties uncertain as to the true state of affairs**
- ▶ **Warranties- is a contractual term whereby a contracting party assumes absolute liability for proper performance**
- ▶ **Cancellation Clauses- contracts may only be cancelled due to serious or material breach of the contract**
- ▶ **Penalty Clauses- with breach of contract, in order to claim damages, the injured party bears the onus of proving the exact extent of his/ her loss**

## Question 2.3

- ▶ The registration of professional engineers, technologists and technicians is regulated by the ECSA (Engineering Council of South Africa).
- ▶ In the interpretation of contracts, Primary rules of interpretation are always applied firstly, In the event of ambiguity remaining, secondary rules are applied, and in the event that these rules do not resolve the ambiguity, the tertiary rules of interpretation are applied as a last resort.



Questions 2.4-2.10 are  
based on chapter 8  
(TQM)

# Question 2.4

- ▶ **Total Quality Management (TQM)- is an interlocking arrangement of procedures and practices that ensures that all employees in every department are adequately trained and directed to continuously implement aligned improvements in quality, service and total cost, such that customer expectations are met or exceeded (Bellefeuille, 1993)**
- ▶ **The goal of TQM is to cultivate and sustain the culture of continuous improvement, while the ultimate target is perfect quality or often called zero defect**
- ▶ **In his book “Quality is Free” (1979), Philip Crosby states that we must define quality as conformance to requirements if we are going to manage it**
- ▶ **Seven (7) fundamental principles of TQM**
  - ❑ **Understand and answer the voice of the customer**
  - ❑ **All employees in an enterprise must be totally involved in quality improvement**
  - ❑ **Continuously strive for zero defect**
  - ❑ **Design and build quality into the product**
  - ❑ **Focus on the process**
  - ❑ **Suppliers are partners in quality**
  - ❑ **Quality is free**



# Question 2.5

**The TQM process start with the new product development process.**

- ▶ Quality must be built into the new product
- ▶ The prevention of future quality problems is the responsibility of the product development team.
- ▶ QFD- is a system for translating customer requirements into appropriate products and services at each stage, from research and product development, to engineering and manufacturing, to marketing/ sales and distribution.  
  
It is a formal method of transforming customer requirements into technical requirements.  
  
In QFD- the voice of the customer (VOC) expresses the real requirements of the customer
- ▶ In order for a process to be at Six Sigma it must have less than 3,4 defects per million opportunities.

# Question 2.6

## Process variation:

- ▶ Process variation is key to TQM
- ▶ Process variation is when the quality of the output produced by processes varies.
- ▶ Variation due to **chance** is called variation due to **common causes**.
- ▶ **Other** variations are due to **special causes**.
- ▶ A key objective of TQM is to identify special causes of variation so that it can be eliminated.
- ▶ This means that special-cause and common-cause variation must be separated.
- ▶ Special-cause variation can usually be traced to a specific source.

## Question 2.6 (Cont.)

- ▶ Differentiating between common and special causes of variation:

<b>Common causes</b>	<b>Special causes</b>
Variation due to chance	Can be linked to a specific cause. E.g. incorrect tool setting; operator not following procedures
Cannot easily be eliminated because it cannot be traced to a specific source.	Can be traced to a specific source and then eliminated.
To be addressed by employees in charge of the process.	Can be addressed by front-line workers
94% of all causes	6% of all causes

# Question 2.7

## Process variation:

- ▶ The ability of the process to produce acceptable quality characteristics is called process performance.
- ▶ The process is said to be in control when all special causes of variation have been removed.
- ▶ Quality improvement tools that can be used to improve processes.
  - ❖ Process chart
  - ❖ Pareto analysis
  - ❖ Ishikawa diagram
  - ❖ Histograms
  - ❖ Run diagrams and correlation diagrams
  - ❖ Control charts
  - ❖ Checklist

## Question 2.8

- ▶ “There is a cost attached to doing things wrong, this is called the cost of quality, or COQ. COQ can be thought of as the cost of achieving conformance to quality standards plus the cost of non-conformance. It is the cost of rework, scrap, inspection, warranty claims, testing and similar activities to ensure conformance to quality standards.
- ▶ Costs related to quality are usually separated into at least three areas:
  - ❖ Prevention costs. These costs are associated with all the activities that focus on preventing defects or non-conformance with quality standards. In many organisations this includes all the people in the quality department who inspect the product, as well as the cost of operators who do their own inspection. Also included in this group are activities to assure supplier conformance.
  - ❖ Appraisal costs. These costs are associated with measuring, evaluating or auditing products to assure conformance with quality standards and performance requirements.
  - ❖ Failure costs. These costs are associated with evaluating and either correcting or replacing defective products, components or materials that do not meet quality standards. Failure costs can be either internal failure costs that occur prior to the completion or delivery of a product or service; or external failure costs that occur after a product is delivered or a service is provided.
- ▶ The basic relationship between the three types of cost is that money invested in prevention and appraisal can substantially reduce failure costs. In addition to reducing expenses, the reduction in external failures results in fewer, dissatisfied customers resulting in fewer product returns, less customer complaints and greater customer loyalty. As a rule of thumb, in a well-managed enterprise, the cost of prevention and appraisal should be one third of the cost of failure. This leads to the conclusion that “quality is free. It’s not a gift, but it is free”.

## Question 2.9

- ▶ TQM is a company wide responsibility.
- ▶ Establishing of quality control department, recruiting a quality manager, increase quality standards, employing more inspector and implementing a rework in the industry will not improve quality on their own. All they will do is to increase the cost of quality.
- ▶ The cost of quality (COQ) can be thought of as the cost of achieving conformance to quality standards plus the cost of non-conformance.
- ▶ Small group called process improvement team (PIT) should be set at shop-floor level that improve processes and solve quality problems.

## Question 2.10

- ▶ A process is a repetitive set of interacting activities that uses resources to transform a defined set of inputs into outputs that are of value to a customer.
- ▶ Failure costs. These costs are associated with evaluating and either correcting or replacing defective products, components or materials that do not meet quality standards. Failure costs can be either internal failure costs that occur prior to the completion or delivery of a product or service; or external failure costs that occur after a product is delivered or a service is provided.
- ▶ Continuous improvement is often called Kaizen (which is a Japanese word meaning improvement)