

N6

Building Administration

Lecturer Guide

Sparrow Consulting
in collaboration with Nobuhle Jara

Additional resource material for this title includes:

- PowerPoint presentation
- Past exam papers
- Electronic Lecturer Guide

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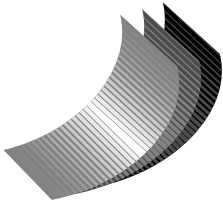
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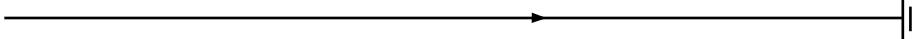
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BUILDING ADMINISTRATION

CONTENTS



Lecturer guidance	v
1. General aims	v
2. Specific aims	v
3. Prerequisites	v
4. Duration	v
5. Evaluation	v
6. Learning content	vi
7. Mark allocation and weighted value of modules	vi
8. Work schedule	vii
9. Lesson plan template	viii
Answers	1
Module 1: Tendering and contracts	1
Module 2: Pre-tendering and post-tendering	9
Module 3: Costing	16
Module 4: Management, welfare and personnel	21
Module 5: Work study and performance	31
Module 6: The Occupational Health and Safety Act	38
Module 7: Quality and ethics in construction	46
Module 8: Contract and labour laws	55
Glossary	61

Lecturer guidance

1. General aims

To develop student's ability to manage construction sites and adhere to safety standards and procedures.

2. Specific aims

The student should obtain a thorough background of administering a construction site.

3. Prerequisites

The student must have a National N5 certificate with Civil Engineering subjects.

4. Duration

Full-time: 7.5 hours per week. This instructional offering may also be offered part-time.

5. Evaluation

5.1 Evaluation is conducted continuously by means of two formal tests at college level. Learner must obtain a minimum ICASS mark of at least 40% in order to qualify to write the final examination and a mark will be calculated together in a ratio of 40:60 to derive the promotion mark. The learner must obtain at least 40% on the final examination.

The promotion mark will be calculated as follows:

Promotion Mark = 40% of (ICASS mark) + 60% of (Exam mark)

5.2 The examination in Building Administration N6 (Engineering Studies – Report 191) will be conducted as follows:

Modules 1 to 8

MARKS: 100

DURATION: 3 hours

CLOSED BOOK: Drawing instruments may be used

5.3 Weighting

The following weightings are consequently awarded to each category:

Knowledge and Understanding	Application	Analysing / Syntheses and Evaluating
25 – 30	30 – 40	30 – 40

6. Learning content

Theoretical background

It is essential that this subject should be illustrated and evaluated within the context of practical case studies.

Technical background

It is essential that this subject should be illustrated and evaluated within the context of technical skills and simulation of the practical environment.

7. Mark allocation and weighted value of modules

MODULES	WEIGHTING (%)
1. Tendering and contracts	10
2. Pre-tendering and post-tendering	10
3. Costing	15
4. Management, welfare and personnel	15
5. Work study and performance	10
6. The Occupational Health and Safety Act	15
7. Quality and ethics in construction	10
8. Contract and labour laws	15
TOTAL	100

8. Work schedule

Week	Topic	Content	Exercises	Hours
1	Module 1 Tendering and contracts	1.1 Tendering 1.2 Contracts	Exercise 1.1 Exercise 1.2 Summative assessment	10 hours
2	Module 2 Pre-tendering and post-tendering	2.1 Pre-tendering 2.2 Post-tender planning	Exercise 2.1 Exercise 2.2 Summative assessment	10 hours
3–4	Module 3 Costing	3.1 Costing	Group activity 3.1 Exercise 3.1 Summative assessment	15 hours
4–5	Module 4 Management, welfare and personnel	4.1 Management and welfare 4.2 Personnel management	Group activity 4.1 Exercise 4.1 Group activity 4.2 Exercise 4.2 Summative assessment	15 hours
6	Module 5 Work study and performance	5.1 Work study 5.2 Performance	Group activity 5.1 Exercise 5.1 Group activity 5.2 Exercise 5.2 Summative assessment	10 hours
7–8	Module 6 The Occupational Health and Safety Act	6.1 The Occupational Health and Safety Act (OHSA)	Exercise 6.1 Group activity 6.1 Summative assessment	15 hours
8–9	Module 7 Quality and ethics in construction	7.1 Quality in construction 7.2 Specifications 7.3 Ethics in construction	Exercise 7.1 Exercise 7.2 Exercise 7.3 Group activity 7.1 Summative assessment	10 hours
9	Module 8 Contract laws	8.1 Contract laws 8.2 Labour laws	Exercise 8.1 Group activity 8.1 Summative assessment	15 hours
TOTAL				100 hours

9. Lesson plan template

CAMPUS	
LECTURER	
SUBJECT AND LEVEL	N6 Building Administration
PRESCRIBED TEXTBOOK: TITLE AND AUTHOR	<i>N6 Building Administration</i> by Sparrow Consulting

LESSON	CONTENT/OUTCOMES TO BE COVERED THIS WEEK	LIST OF EXAMPLES TO BE DONE IN CLASS BY THE LECTURER TO EXPLAIN THE OUTCOME/CONCEPT	FACILITATION METHOD (PLEASE TICK)	TEACHING RESOURCES/AIDS (PLEASE TICK)	STUDENT ACTIVITY (EXERCISE IN TEXTBOOK/ADDITIONAL SUPPORTING TASK) TO BE DONE THIS WEEK
WEEK 1			Lecture	White board/ OHP	
			Group work	Models	
			Demonstration	Handouts	
			Simulation	Multimedia	
			INTRODUCTION TO LESSONS		
			RECAPPING/REINFORCEMENT		

LESSON	CONTENT/OUTCOMES TO BE COVERED THIS WEEK	LIST OF EXAMPLES TO BE DONE IN CLASS BY THE LECTURER TO EXPLAIN THE OUTCOME/CONCEPT	FACILITATION METHOD (PLEASE TICK)	TEACHING RESOURCES/AIDS (PLEASE TICK)	STUDENT ACTIVITY (EXERCISE IN TEXTBOOK/ADDITIONAL SUPPORTING TASK) TO BE DONE THIS WEEK
			Lecture	White board/ OHP	
			Group work	Models	
			Demonstration	Handouts	
			Simulation	Multimedia	
			INTRODUCTION TO LESSONS		
			RECAPPING/REINFORCEMENT		
WEEK 2					

LESSON	CONTENT/OUTCOMES TO BE COVERED THIS WEEK	LIST OF EXAMPLES TO BE DONE IN CLASS BY THE LECTURER TO EXPLAIN THE OUTCOME/CONCEPT	FACILITATION METHOD (PLEASE TICK)	TEACHING RESOURCES/AIDS (PLEASE TICK)	STUDENT ACTIVITY (EXERCISE IN TEXTBOOK/ADDITIONAL SUPPORTING TASK) TO BE DONE THIS WEEK
WEEK 3			Lecture	White board/ OHP	
			Group work	Models	
			Demonstration	Handouts	
			Simulation	Multimedia	
			INTRODUCTION TO LESSONS		
RECAPPING/REINFORCEMENT					

LESSON	CONTENT/OUTCOMES TO BE COVERED THIS WEEK	LIST OF EXAMPLES TO BE DONE IN CLASS BY THE LECTURER TO EXPLAIN THE OUTCOME/CONCEPT	FACILITATION METHOD (PLEASE TICK)	TEACHING RESOURCES/AIDS (PLEASE TICK)	STUDENT ACTIVITY (EXERCISE IN TEXTBOOK/ADDITIONAL SUPPORTING TASK) TO BE DONE THIS WEEK
WEEK 4			Lecture	White board/ OHP	
			Group work	Models	
			Demonstration	Handouts	
			Simulation	Multimedia	
			INTRODUCTION TO LESSONS		
RECAPPING/REINFORCEMENT					

LESSON	CONTENT/OUTCOMES TO BE COVERED THIS WEEK	LIST OF EXAMPLES TO BE DONE IN CLASS BY THE LECTURER TO EXPLAIN THE OUTCOME/CONCEPT	FACILITATION METHOD (PLEASE TICK)	TEACHING RESOURCES/AIDS (PLEASE TICK)	STUDENT ACTIVITY (EXERCISE IN TEXTBOOK/ADDITIONAL SUPPORTING TASK) TO BE DONE THIS WEEK
WEEK 5			Lecture	White board/ OHP	
			Group work	Models	
			Demonstration	Handouts	
			Simulation	Multimedia	
			INTRODUCTION TO LESSONS		
			RECAPPING/REINFORCEMENT		

LESSON	CONTENT/OUTCOMES TO BE COVERED THIS WEEK	LIST OF EXAMPLES TO BE DONE IN CLASS BY THE LECTURER TO EXPLAIN THE OUTCOME/CONCEPT	FACILITATION METHOD (PLEASE TICK)	TEACHING RESOURCES/AIDS (PLEASE TICK)	STUDENT ACTIVITY (EXERCISE IN TEXTBOOK/ADDITIONAL SUPPORTING TASK) TO BE DONE THIS WEEK
WEEK 6			Lecture	White board/ OHP	
			Group work	Models	
			Demonstration	Handouts	
			Simulation	Multimedia	
			INTRODUCTION TO LESSONS		
RECAPPING/REINFORCEMENT					

LESSON	CONTENT/OUTCOMES TO BE COVERED THIS WEEK	LIST OF EXAMPLES TO BE DONE IN CLASS BY THE LECTURER TO EXPLAIN THE OUTCOME/CONCEPT	FACILITATION METHOD (PLEASE TICK)	TEACHING RESOURCES/AIDS (PLEASE TICK)	STUDENT ACTIVITY (EXERCISE IN TEXTBOOK/ADDITIONAL SUPPORTING TASK) TO BE DONE THIS WEEK
			Lecture	White board/ OHP	
			Group work	Models	
			Demonstration	Handouts	
			Simulation	Multimedia	
			INTRODUCTION TO LESSONS		
			RECAPPING/REINFORCEMENT		
WEEK 7					

LESSON	CONTENT/OUTCOMES TO BE COVERED THIS WEEK	LIST OF EXAMPLES TO BE DONE IN CLASS BY THE LECTURER TO EXPLAIN THE OUTCOME/CONCEPT	FACILITATION METHOD (PLEASE TICK)	TEACHING RESOURCES/AIDS (PLEASE TICK)	STUDENT ACTIVITY (EXERCISE IN TEXTBOOK/ADDITIONAL SUPPORTING TASK) TO BE DONE THIS WEEK
			Lecture	White board/ OHP	
			Group work	Models	
			Demonstration	Handouts	
			Simulation	Multimedia	
			INTRODUCTION TO LESSONS		
			RECAPPING/REINFORCEMENT		
WEEK 8					

LESSON	CONTENT/OUTCOMES TO BE COVERED THIS WEEK	LIST OF EXAMPLES TO BE DONE IN CLASS BY THE LECTURER TO EXPLAIN THE OUTCOME/CONCEPT	FACILITATION METHOD (PLEASE TICK)	TEACHING RESOURCES/AIDS (PLEASE TICK)	STUDENT ACTIVITY (EXERCISE IN TEXTBOOK/ADDITIONAL SUPPORTING TASK) TO BE DONE THIS WEEK
			Lecture	White board/ OHP	
			Group work	Models	
			Demonstration	Handouts	
			Simulation	Multimedia	
			INTRODUCTION TO LESSONS		
RECAPPING/REINFORCEMENT					

WEEK 9

LESSON	CONTENT/OUTCOMES TO BE COVERED THIS WEEK	LIST OF EXAMPLES TO BE DONE IN CLASS BY THE LECTURER TO EXPLAIN THE OUTCOME/CONCEPT	FACILITATION METHOD (PLEASE TICK)	TEACHING RESOURCES/AIDS (PLEASE TICK)	STUDENT ACTIVITY (EXERCISE IN TEXTBOOK/ADDITIONAL SUPPORTING TASK) TO BE DONE THIS WEEK
			Lecture	White board/ OHP	
			Group work	Models	
			Demonstration	Handouts	
			Simulation	Multimedia	
			INTRODUCTION TO LESSONS		
			RECAPPING/REINFORCEMENT		
WEEK 10					

1 *Tendering and contracts*



By the end of this module, students should be able to:

- explain the process and procedures of tendering with regard to:
 - tender types
 - invitations to tender
 - tender documents
 - preparation for a tenders
 - tender bylaws; and
- explain the various types of contracts, contract supporting documents and bond guarantees.

In this module students learnt about the tender process and procedures regarding the different types of tenders, tender documents and how to prepare for this process. They also learnt about different types of contracts, the relevant documentation and which contract is best suited for a situation.

Exercise 1.1

SB page 9

- 1.1 False. In order to reduce wasted time during an open tender the RFQ used is very precise in listing detailed requirements.
 - 1.2 True
 - 1.3 False. The ITT is a formal procurement document issued to prospective suppliers.
 - 1.4 True
 - 1.5 False. A feasibility is a study that is conducted to determine whether a project is viable. (5 x 2)
-
- 2.1 Tendering is the process an organisation follows to select a suitable supplier which will provide the goods or services it requires. (2)
 - 2.2 By-laws are laws that are passed by the city council in order to regulate the affairs and service the municipality provides in its service area. (2)

3. Any six of the following:
- Schedule
 - Expectations
 - Concerns
 - Technical specifications
 - Surveys
 - Drawings
 - Designs
 - Pre-construction information (6)
- 4.
- Floor plans
 - Elevations
 - Sections
 - Detail drawings
 - Trade drawings (5)

Total: 25 marks

Exercise 1.2

SB page 19

- 1.1 Cost-reimbursement
- 1.2 General conditions
- 1.3 Lump sum
- 1.4 Guarantee
- 1.5 Time

- 2.1 A GMP contract puts a limit on the total contract price. All material and labour costs that exceeds the limit are covered by the contractor. Although a GMP can be a standalone contract, GMP clauses are often included in other contract types. GMP contracts are best suited for projects that have a lot of unknowns.

Advantages

- The maximum price helps to speed up the bidding process and makes financing the project easier.
- The limit acts as an incentive for contractors to reduce costs and finish ahead of schedule.

Disadvantages

- The risk is placed on the contractor to cover cost if the maximum price is exceeded, albeit due to externals out of their control.

- The negotiation process can be slower due to the contractor having to make sure that the maximum limit is reasonable. Often times contractors will try and increase the maximum price which prolongs the negotiation process. (8)
- 2.2 A unit price contract works on the basis of dividing the total project work into separate units. The contractor then quotes separately on each unit as opposed to a total price. Commonly unit price contracts are used for projects that are greatly dependent on material costs, consist of a lot of repetitive work without knowing exactly how much work is required to complete it.

Advantages

- The invoicing process is simpler and leads to greater transparency, with each cost directly linked to the relevant project component. This helps to limit the occurrence of disputes when it comes to payment.
- The cost of extra work required is added as another separate unit, thereby keeping the profit margin fixed. This helps to make the inclusion of change orders easier.

Disadvantages

- Employers tend to pay more than expected, mainly due to the exact number of units needed to complete the project not being known immediately.
- The employer’s ability to compare the price of each unit with the total cost of the project tends to slow the payment process down. (8)

3.

- Performance guarantees
- Advance payment guarantees
- Retention guarantees
- Bid bonds (4)

Total: 25 marks

Summative assessment

SB page 24

- 1.1 B. Open
- 1.2 B. ITT
- 1.3 D. Preliminary
- 1.4 B. Design drawing
- 1.5 D. All of the above
- 1.6 B. Change order
- 1.7 D. Concept drawings
- 1.8 C. General conditions: Termination and suspension
- 1.9 A. BoQ
- 1.10 C. T&M (10 x 1)

Contract type	Advantages	Disadvantages
2.1.1 Cost-plus	The contracts are flexible allowing employers to make design changes throughout the project, with the contractors assured of payment for any extra work or materials required.	It requires contractors to justify costs incurred, which is sometimes hard to do for indirect costs incurred. This may lead to a payment dispute with the employer.
	Due to the contract flexibility, any miscalculations in the initial contract are not as critical as they are in other contract types such as lump sum contracts.	The materials reimbursement aspect may hinder contractors if certain materials are more expensive than initially calculated.
2.1.2 T&M	As the contractor's labour is paid per hour and he/she is reimbursed for the materials procured, any unexpected delays or changes to the scope of work is covered.	Keeping record of each material cost can become an administrative nightmare and any cost that is forgotten may lead to less profit being made or even a loss.
	The negotiation process is simple as only the hourly rates and the type of materials must be agreed upon.	Hourly paid labour provides no incentive to finish early, making T&M contracts less efficient.
2.1.3 Lump sum	One total price simplifies the bidding and selection process by making it easier to compare bids.	The total price is the final amount, which means any error in calculating the lump sum will cut into your profit margin.
	The total price is the final amount so finishing the job under the final amount means that extra profit is made.	Any delays during the project come directly from the lump sum price and reduce profit margins. The construction process thus has to run very smooth without any errors, making larger projects more likely to result in a loss.

(4 x 3)

2.2 It explains the structure of the full contract price and payments as well as any arrangements that affect payment, which include:

- Whether there will be progress payments or a lump sum
- How progress payments are scheduled
- What the payment application entails
- What happens if the employer finds the work defective

(6)

- 3.1 – Cover everything: If pre-qualification documents have been provided, make sure to cover everything asked for which includes references and testimonials.
- Executive summary: Make sure to include an executive summary of your tender bid at the beginning of the document.
 - Illustrations and graphics: If possible, make sure to include illustrations and graphics in your tender bid. This will increase the readability of the proposal as a picture is worth a thousand words.
 - Detailed costing: Make sure to include a detailed breakdown of the project costing and add explanations as to how the work will be carried out.
 - Tender execution team: Make sure to include the member details of the project team, including things such as credentials, relevant experience and how they are best suited for the job at hand.
 - Non-disclosure agreement (NDA): Make sure to include an NDA in the tender proposal. This way your intellectual property is protected. (12)
- 3.2 The PQQ is used to determine if the applicant has the relevant experience, financial stability etc. which is then used to filter the candidates. (2)
- 3.3 Drawings that have been developed from the concept drawings after they have been approved.
- Any three of the following:
- Dimensions and main components
 - Overall layout
 - Road and landscape layouts
 - Operational flow
 - Building dimensions
 - Elevations (4)
- 3.4 It is a document that provides a breakdown of the prospective supplier/ contractor's price, used by the employer to easier compare tenders. It also serves as an unofficial bill of quantities during the tendering stage and is often used as a basis for calculating payments as the work progresses. (4)

Total: 50 marks

Module summary

In this module, students learnt the following:

- Tendering is the process that an organisation uses to select a suitable supplier for goods or services.
- The three main types of tenders are:
 - Open tenders
 - Selective tenders
 - Negotiated tenders

- Open tenders are open to anyone that wants to bid.
- Open tenders are often advertised on any media platform such as:
 - Newspapers
 - Magazines
 - Government gazette
 - Social media
- Open tenders provide a variety of choice regarding tenderers but, may result in poorly researched proposals that are inaccurate.
- Open tenders require a detailed RFP along with background checks to sift through submissions.
- Selective tenders invite specific tenderers only, where the tenderers have to provide information regarding their:
 - Experience
 - Financials
 - Skills
 - Resources
- Selective tenders result in better researched proposals, but the tenderers' circumstances might change after their submissions.
- In a negotiated tender only one specific tenderer is invited to bid.
- Private companies commonly use negotiated tendering.
- The tender process is supported by various documents, with the amount of detail captured influenced by the project size and type.
- Typical tender documents include:
 - Invitation to tender: The formal document that is used to invite tenderers to bid, consisting of:
 - » A letter of invitation
 - » Scope of works
 - » Tender process details
 - » Selection criteria
 - Tender submission form: The formal document that is filled out by tenderers, consisting of:
 - » Latest return date and time
 - » Date, name and address
 - » Tender reference number
 - » The total price for the work to be done, with reference to any documents that describe the change in price should the scope change
 - » The period for which the price will remain valid
 - » The completion date for the works or the duration thereof

- » Acceptance of terms and conditions
- » Confirmation of the country's law that is applicable to the contract
- » References to other documents that contain relevant information
- » Any relevant qualifications
- » Who will be responsible for the cost of preparing the tender
- » Alternative proposals to the scope of work or reference to documents that provide the information
- » Confirmation that the tender is legitimate
- » Signature and other personal details of the prospective supplier or tenderer
- Preliminary documents: Documents that relate to pre-construction information, consisting of:
 - » Ground conditions
 - » Service locations
 - » Health and safety information
 - » Designs
 - » Potential hazards
 - » Order of construction
- Contracts and contract conditions: The construction contract that consists of:
 - » The Initial agreement
 - » Drawings of the proposed project
 - » Specifications of the proposed project
 - » Other support documents
- Contract sum analysis: The document that provides a breakdown of the tenderer's bid price and serves as an unofficial bill of quantities during the tendering stage.
- Design drawings and project specifications: The drawings are used to communicate the developing design and can be categorised as:
 - » Feasibility studies
 - » Option appraisals
 - » Concept drawings
 - » Developed drawings
- Tender return slip: The document that is attached to the tender document package when it is submitted, consisting of:
 - » Title of the contract
 - » Return address
 - » Tender checklist
 - » Instructions

- Properly preparing for a tender requires that you:
 - Determine the client's needs
 - Cover the basics
 - Enhance the bid
- Bylaws are laws that are passed by the city council in order to regulate the affairs and service the municipality provides in its service area.
- A construction contract is a legally binding document that outlines the rights and responsibilities for all parties involved.
- The different types of construction contracts are:
 - Lump sum contracts
 - Time and materials (T&M) contracts
 - Cost-plus contracts
 - Unit price contracts
 - Guaranteed maximum price (GMP) contracts
- A well written construction contract includes the following documents:
 - The construction agreement
 - General conditions
 - Special conditions
 - Scope of work
 - Drawings
 - Specifications
 - Bill of quantities
 - Construction schedule
- Bonds and guarantees help to ensure that the end product of a construction project is completed.
- Bonds and guarantees are different from a legal perspective, as guarantees rely on contract conditions and bonds do not.
- The different types of guarantees used in construction include:
 - Performance guarantees
 - Advance payment guarantees
 - Retentions guarantees
- The different types of bonds used in construction include:
 - Performance bond
 - Advance payment bond
 - Off-site materials bond
 - Bid bonds
 - Retention bond

2 *Pre-tendering and post-tendering*



By the end of this module, students should be able to:

- explain the pre-tender process in terms of:
 - pre-tender planning
 - pre-tender meetings
 - site investigation
 - the master plan; and
- explain the post-tender process in terms of:
 - contract planning
 - capital availability
 - site organisation
 - the site organogram.

In this module students learnt about the pre-tender process that covers the planning, meetings and site investigation. They also learnt about the post-tender activities which include contract site organisation and the site organogram.

Exercise 2.1

SB page 32

- 1.1 C. Internal pre-tender meeting
 - 1.2 D. Uniformity of the subsoil
 - 1.3 E. Pre-tendering plan
 - 1.4 B. Site investigation
 - 1.5 A. Master plan
-
2. – Closely examining the specifications and drawings of the project to identify the scope of work.
 - Identifying and estimating the different work items as well as the time and resources required to complete them.
 - Carrying out a site investigation and checking with the suppliers in the surrounding project area for the required materials and services.
 - Identifying the most efficient methods of carrying out the work.
 - Drawing up a construction schedule taking into account the required deadlines.

- Adding the overhead costs as well as a viable profit margin and finalise the tender price. (12)
 - 3. – That milestones are included
 - For any errors
 - If it contains any unrealistic demands from the client
 - If the completion date will be achieved (4)
 - 4. – Meet the client or their buying team
 - View the site
 - Ask questions regarding the tender and its specifications
 - See who the competitors are
- (4)
- Total: 25 marks**

Exercise 2.2

SB page 39

-
- 1.1 Post-tender meeting
 - 1.2 Cause and effect diagram or Fishbone diagram
 - 1.3 Drainage system
 - 1.4 Gantt chart
 - 1.5 Site preparation activities
2. – Step 1: Identify the required site facilities
 - Step 2: Determine the sizes of the required facilities
 - Step 3: Establishing the inter-relationships between facilities
 - Step 4: Optimising the layout of the facilities on site.
 - Step 5: Draw the site layout plan
- (5)
3. – Determining how every activity will be carried out
 - The duration of each activity
 - What resources will be required, such as:
 - » Materials
 - » Equipment
 - » Labour
 - » Sub-contractors
 - The lead times for acquiring the required resources
 - Determining if the project site is readily accessible to receive material deliveries
 - Determining if the capital available will cover the initial costs (10)

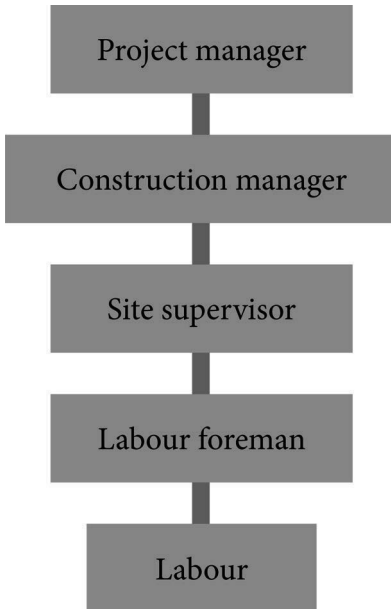
Summative assessment

SB page 44

- 1.1 D. All of the above
- 1.2 C. Preliminary investigation
- 1.3 B. Critical path analysis
- 1.4 A. Site clearance
- 1.5 C. Master program
- 1.6 B. Internal pre-tender meeting
- 1.7 D. i, iii
- 1.8 C. Supplementary investigation and construction control
- 1.9 A. Brainstorming session
- 1.10 B. If it will have a negative effect on the foundation structures

2.1 A diagram that shows the organisational structure of the personnel on site, how the various positions relate to each other as well as who holds each position. (3)

2.2



(5)

- 2.3 – Electricity (5)
- Water
- Sewerage
- Telephone/Internet (4)
- 2.4 The number of access roads to the site is limited which improves site access control and prevents unauthorised persons from entering the site. (2)
- 2.5 – Perimeter security
- Signage
- Lighting
- CCTV

- OANs and tracking equipment

(5)

2.6 By asking yourself the following questions:

- Do you have time to submit a tender?
- Do you have the capacity to take on another project?
- Do you have the required capital available?
- Do you have the required resources available, such as labour and equipment?
- Do you possess the necessary skills and experience to complete the project?

(6)

Total: 35 marks

Module summary

In this module, students learnt the following:

- Properly planning for a tender will not only help you to carry out an efficient tender process, but also reduce future contract modifications.
- The complexity and the required detail of the tender process are largely determined by the type and size of project.
- The pre-tender planning process consists of the following tasks:
 - Closely examining the project specifications and drawings
 - Carrying out a site investigation
 - Identifying the most efficient methods of carrying out the work
 - Drawing up a construction schedule
 - Finalise the tender price
- In order to determine if you are able to handle the contract, you need to consider the following:
 - Do you have time to submit a tender?
 - Do you have the capacity to take on another project?
 - Do you have the required capital available?
 - Do you have the required resources available, such as labour and equipment?
 - Do you possess the necessary skills and experience to complete the project?
- Pre-tender meetings provide contractors get a chance to:
 - Meet the client or their buying team
 - View the site
 - Ask questions regarding the tender and its specifications
 - See who the competitors are

- Another pre-tender meeting is the internal meeting.
- An internal meeting is used to discuss and plan the tasks as stipulated in the tender documents in order to develop an accurate estimate.
- Personnel that typically attend internal meetings include:
 - General manager
 - Project manager
 - Contracts manager
 - Buyer
 - Any other relevant personnel
- A site investigation is the process of collecting information, assessing the information and reporting any potential risks related to the site.
- A typical site investigation aims to determine:
 - What types of soil layers are present
 - What ground water conditions present
 - What the physical properties of the soil types are
 - What the mechanical properties of the soil are for example, how compressible the soil is
 - What types of foundations have been used by neighbouring structures and the chemical composition of the groundwater
- Information needed before a site investigation can be conducted include:
 - The type of structure and what it will be used for.
 - Characteristics of the structure
 - Starting date of the project
 - Construction methods to be used
 - The approximate time the construction works will take
 - The probable soil condition on site
 - What the condition is of the adjacent structures
- The three stages of a site investigation are:
 - Preliminary investigation
 - Detailed investigation
 - Supplementary investigation and construction control
- The master plan is a project management tool that provides information on the sequence of the tasks to be carried out in order to complete the project in time.
- The amount of detail required from the master plan is normally specified in the contract documents.
- The master program is examined by the client's contract administrator that checks:
 - That milestones are included
 - For any errors

- If it contains any unrealistic demands from the client
 - If the completion date will be achieved
- The master program is used as a basis for requesting time extensions.
- After the tender has been awarded, all bidders are notified and a post-tender meeting is scheduled.
- Post-tender meetings are used for contract finalisations and negotiations on:
 - Terms of payment
 - Bonds and guarantees
 - Completion dates
 - Maintenance levels and repairs
- Contract planning uses the master program and fills it out with as much detail as possible.
- Contract planning techniques include:
 - Brainstorming sessions
 - Cause and effect diagrams
 - Critical path analysis
 - Gantt charts
- Fleshing out the master program requires:
 - Determining how every activity will be carried out
 - The duration of each activity
 - What resources will be required, such as:
 - » Materials
 - » Equipment
 - » Labour
 - » Sub-contractors
 - The lead times for acquiring the required resources
 - Determining if the project site is readily accessible to receive material deliveries
 - Determining if the capital available will cover the initial costs
- Site organisation forms part of the pre-construction phase and ensures that a project runs smoothly and efficiently.
- The site organisation process consists of two main parts:
 - Site preparation
 - Plant layout
- Site preparation activities aims to transform the site into an acceptable state for construction to start.

- Common site preparation activities include:
 - Access roads
 - Security
 - Site clearance
 - Drainage
 - Utilities
- A site layout helps to find the best possible locations for materials, equipment and worker movement routes.
- To create a site layout plan you must complete the following five steps:
 - Step 1: Identify the required site facilities
 - Step 2: Determine the sizes of the required facilities
 - Step 3: Establishing the inter-relationships between facilities
 - Step 4: Optimising the layout of the facilities on site.
 - Step 5: Draw the site layout plan
- A site organogram shows the structure for the personnel on site.

3 Costing



By the end of this module, students should be able to:

- explain the different aspects of costing in terms of:
 - objectives
 - types
 - methods; and
- calculate the costing of the following:
 - costs
 - equipment hiring costs
 - duration activities
 - number of workers required.

In this module students learnt about the different aspects of costing, focusing on its objectives, the different types of costing and the methods used. They also learnt how to calculate costs, equipment hiring costs, costs related to duration activities and how to determine the number of workers required for a specific job.

Group activity 3.1

SB page 58

Direct cost:

Project direct cost = (material + wages) × number of houses

Project direct cost = (R28 750 + R15 000) × 1 200

Project direct cost = R52 500 000

Indirect cost:

Factory overhead = R15 000 × $\frac{50}{100}$

Factory overhead = R7 500

Office admin overhead = R7 500 × $\frac{15}{100}$

Office admin overhead = R1 125

Distribution overhead = R7 500 × $\frac{25}{100}$

Distribution overhead = R1 875

Project indirect cost = (factory + office + distribution) × number of houses

Project indirect cost = (R7 500 + R1 125 + R1 875) × 1200

Project indirect cost = (R10 500) × 1 200

Project indirect cost = R1 260 000

Project total cost = direct cost + indirect cost

Project total cost = R52 500 000 + R1 260 000

Project total cost = R53 760 000

Exercise 3.1

SB page 59

- 1.1 True.
 - 1.2 False. Direct costs can be precisely assigned to specific activities of a project.
 - 1.3 False. The Life cycle costing or LCC method is normally put into action the design phase of a project, taking inflation into account when determining the cost of a project.
 - 1.4 True.
 - 1.5 True (5 x 2)
2. – The ABC method consists of identifying the resources involved with each activity and determining the cost of each resource using purchase orders and receipts. The information is used to calculate a cost per unit rate for the material. The rate is then multiplied by the amount of material each activity will use to give a total cost of materials. The cost of direct labour and overhead expenses are added to calculate the total cost of the activity.
 - The job costing method consists of tracking the costs incurred and the revenue generated on a job. For the duration of the job all costs involved are recorded in a ledger in terms of materials and labour. Purchase orders and receipts are used to track the costs of materials, direct and indirect, and employee time cards are used to track labour hours. The overheads for each job have to be calculated and are normally based on labour hours that directly contributed to the associated job. (5 x 2)
3. Cost of purchase = $\frac{R640\,000}{2\,000}$
 Cost of purchase = R320 per motor hour

 Added cost = $\frac{R2\,200}{2\,000}$
 Added cost = R1,10 per motor hour

 Fuel cost = 22 litres per hour × R16 per litre
 Fuel cost = R352 per motor hour

 Overhaul cost = $\frac{R112\,000}{8\,000\text{ hours}}$
 Overhaul cost = R14 per motor hour

ERR = cost of purchase + added cost + fuel cost + overhaul cost + maintenance cost

$$\text{ERR} = 320 + 1,10 + 352 + 14 + 32$$

$$\text{ERR} = \text{R}719,10$$

The cost of owning the excavator is thus R719,10 per motor hour. Comparing this to the rental rate, it would be more cost effective to rent the bulldozer. (15)

Total: 35 marks

Summative assessment

SB page 61

- 1.1 D. All of the above
- 1.2 C. Job
- 1.3 D. All of the above
- 1.4 A. Unit productivity rate
- 1.5 C. ABC
- 1.6 B. Indirect costs
- 1.7 D. All of the above
- 1.8 B. Categorising the activities of a project according to overhead, labour and materials.
- 1.9 A. LCC
- 1.10 B. Project profitability (10 x 1)

$$2.1 \quad P = \frac{1}{DN}$$

$$P = \frac{12\,000 \times 6}{150 \times 32}$$

$$P = \frac{72\,000\text{m}^2}{4\,800 \text{ days}}$$

$$P = 30 \text{ m}^2 \text{ per day} \quad (4)$$

$$2.2 \quad \text{ERR} = \text{cost of purchase} + \text{fuel cost} + \text{overhaul cost} + \text{maintenance cost}$$

$$\text{R}1\,150 = \text{R} \frac{640\,000}{1\,000} + \text{R}300 + \text{R} \frac{100\,000}{8\,000} + \text{maintenance cost}$$

$$\text{R}1\,150 = \text{R}640 + \text{R}300 + \text{R}12,50 + \text{maintenance cost}$$

$$\text{R}1\,150 = \text{R}952,50 + \text{maintenance cost}$$

$$\text{R}1\,150 - \text{R}952,50 = \text{maintenance cost}$$

$$\text{Maintenance cost} = \text{R}197,50 \text{ per motor hour} \quad (5)$$

$$2.3 \quad D = \frac{A}{PN}$$

$$D = \frac{(3 \times 7) + [(7 - 3) \times 3] + (5 \times 9)}{5 \times 2}$$

$$D = \frac{21 + 12 + 45}{10}$$

$$D = \frac{78}{10}$$

$$D = 7,8 \text{ hours} \quad (7)$$

- 3.1 – **Labour:** Labour is calculated by determining what the cost of labour for a specific task per day will be and then multiplying it by the expected

duration of that task. The costs for the labour should include hourly wages, overtime pay and any other relevant costs.

- **Materials:** Materials include the costs of direct materials such as concrete, steel and wood and indirect costs such as nails, screws and other fasteners. Other costs included in materials are equipment hire, the charge for material delivery and the percentage of material wasted during the project.
- **Overhead:** Overheads are the indirect costs of a project, meaning that they cannot be directly tied to the project. Indirect costs include items like office rent, wages for administrative staff or equipment maintenance costs which are largely operational costs and allow the company to run a business.

(3 x 3)

Total: 35 marks

Module summary

In this module, students learnt the following:

- Costing is an accounting system used by organisations to evaluate the total production cost by looking at variable and fixed costs related to each step in the production process.
- Costing data is used internally to achieve various objectives.
- The main purpose of cost accounting is to take a project and break it down into smaller specific tasks and allocate the costs related to each of these tasks.
- Breaking a project down requires listing the activities required to complete a specific phase of the project and dividing them into one of the following three categories:
 - Labour
 - Materials
 - Overhead
- The information provided by the project breakdown in turn influences the decision-making process on things like materials, equipment and project profitability.
- The three costing methods commonly used in construction project management are:
 - Job costing
 - Activity based costing
 - Life cycle costing
- Costs can be classified as either direct or indirect.
- Overhead costs are not always equally distributed over multiple projects.
- A common method used in the construction industry is to have a fixed overhead percentage added to project costs.

- Equipment hire is sometimes used to overcome the big capital investment in buying equipment and machinery.
- The Effective Rental Rate (ERR) can be used to compare costs of hiring to costs of owning equipment and machinery.
- The costing of duration activities is largely based on similar projects completed in the past.
- Productivity rates are used to determine the duration of an activity and its estimated cost.
- The number of workers required on a construction project are influenced by various factors including:
 - The number of equipment and tools available
 - The size of the available workspace
 - The phase of the project

4 *Management, welfare and personnel*



By the end of this module, students should be able to:

- describe the following aspects of management:
 - leadership
 - motivation
 - incentives
 - competition
 - co-operation
 - working condition
 - welfare; and
- describe the following aspects of personnel management:
 - the personnel policy of a company
 - staff recruitment
 - training
 - the value of training
 - social needs
 - Maslow's hierarchy of needs

In this module students learnt about the various aspects of management such as leadership, motivation, competition and work conditions. They also learnt about personnel management, what role needs play in employee motivation, how training is beneficial to staff and the methods of recruiting new personnel.

Exercise 4.1

SB page 76

- 1.1 Manager
- 1.2 Motivation
- 1.3 Voluntary
- 1.4 Leader
- 1.5 Co-operation (5 x 1)
2.
 - Desire for money
 - Success
 - Recognition
 - Job-satisfaction (4 x 1)

- 3. – Compensation
 - » Any two of the following:
 - Bonuses
 - Extra leave
 - Tuition reimbursement
 - Team retreats
 - Flexible work schedule
 - Activities
 - » Any two of the following:
 - Professional development opportunities
 - Personal fitness classes
 - Volunteer time
 - Office happy hour
 - Perks
 - » Any two of the following:
 - Gift cards
 - Subscriptions
 - Catered lunches
 - Entertainment (9)
- 4.1 Natural light is one of the most important aspects of working conditions. Poor lighting may lead to eye strain, fatigue and ultimately reduced productivity. (2)
- 4.2 The technology available to workers must be sufficient as to avoid employee frustration. With employee frustration comes decreased productivity and if it is ignored it may even lead to dissatisfaction and ultimately loss of employees. (3)
- 5. Business competition is the rivalry of companies that are competing for business in the same market. (2)

Total: 25 marks

Exercise 4.2

SB page 85

- 1.1 C
- 1.2 E
- 1.3 F
- 1.4 G
- 1.5 I (5)
- 2. Lists the steps in the recruitment process. (7)
 - Step 1: Identify the hiring needs
 - Step 2: Prepare the job descriptions

- Step 3: Develop a recruitment strategy
- Step 4: Sift through candidates and create a shortlist
- Step 5: Conduct interviews
- Step 6: Make an offer
- Step 7: Employ the candidate (7)

3. Employee training and development aims to help employees improve their performance in their current roles as well as help them grow to realise their full potential. (2)

4.1 A substance abuse policy is a set of guidelines that describes an organisation's procedure regarding substances abuse in the workplace. It addresses issues relating to prescribed medication, illegal drugs and alcohol abuse. (2)

4.2 A data protection policy describes how a company uses manages and secures their data. It provides guidelines on how the internal company data is collected, stored, processed and what constitutes as a breach in security. (2)

5. Any TWO of the following:

- Self-fulfilment
- Pursue talent
- Personal growth
- Creativity (2)

Summative assessment

SB page 90

- 1.1 C. Autonomy
- 1.2 B. Business competition
- 1.3 D. All of the above
- 1.4 A. Poor working conditions
- 1.5 D. All of the above
- 1.6 B. Data protection policy
- 1.7 C. Hiring
- 1.8 D. Disciplinary code and procedure policy
- 1.9 C. Perk incentive
- 1.10 D. All of the above. (10 x1)

2.1

Leadership	Management
Leaders provide direction by developing a vision, communicating it to subordinates and inspiring them to accomplish it.	Managers lay down the law and delegates responsibilities to subordinates.
Leaders focus on listening, building relationships, motivating and inspiring.	Managers focus on planning, organising and controlling.
Leaders get their authority from their followers.	Managers get their authority due to the position.
Leaders follow their own instinct.	Managers follow the policies of the organisation.
Leadership is more of an art.	Management is more of a science.
Leadership deals with the people of the organisation.	Management deals with the technical aspects of the organisation or the specific job at hand.
Leaders look at the people as individuals and evaluate them on aspect that cannot be physically measured, such as potential.	Managers evaluate people on their records and their current performance.
Leadership is heavily based on verbal communication.	Management is heavily based on written communication.

(16)

2.2 Business competition can be divided into three different types, namely:

- **Direct competition:** Direct competition refers to businesses that sell the same type of product or service to the same customer base. For example, KFC and Chicken Licken. Both companies are in the fast food market, both have chicken as their main product and both are targeting the same potential customer.
- **Indirect competition:** Indirect competition refers to businesses that sell a different product or service to the same customer base. For example, KFC and Roman's Pizza both do business in the fast food market, but offer different products.
- **Replacement competition:** Replacement competition refers to a scenario where one business' product replaces another business' product. This type of situation is common in the field of technology. For example, as the quality of cell phone cameras increased, they replaced digital cameras. (6)

2.3 – Increases the quality of product or service on offer

- Forces companies to be innovative
- Provides the customer with options
- Lead to competitive pricing (4)

3.1 Co-operation in management is the process of arranging efforts in order to achieve a common objective. (1)

3.2 Any THREE of the following:

- **Reduces internal competition:** Internal competition is not always a good thing. Employees that compete against each other instead of working towards a common goal.
- **Enhances knowledge sharing:** When employees work in a co-operative environment it not only leads to the work effort multiplying, but it also creates an opportunity for sharing knowledge. A workforce that is more knowledgeable is stronger and in turn empowers the organisation.
- **Enhances communication:** Cooperation enhances the communication between employees throughout every level of an organisation. Good communication reduces misunderstandings that may cause delays and conflicts.
- **Establishes trust:** Once internal competition is reduced and knowledge is shared through good communication, trust can be established between employees. When employees and team members trust each other ideas tend to flow freely.
- **Easier achievement of goals:** With all the abovementioned benefits as a result of co-operation, the main responsibility of management is to create teams with members that work well together. Although this is no easy task, if done successfully the achievement of organisational goals is only a matter of time.

(6)

4.1



(6)

4.2 The fourth level consists of needs of self-worth and advances the need for a higher position within the group and to take pride in the work being done.

Any THREE of the following:

- Self-confidence
- Achievement

- Recognition
 - Status
 - Respect (4)
- 4.3 False. Employee welfare in the business environment refers to an employee's happiness, health and all factors apart from remuneration. (2)

Total: 55 marks

Module summary

In this module, students learnt the following:

- Management is the act of running an organisation using organising, leading and controlling functions.
- Leadership is having the potential to influence and steer a group's efforts to accomplish certain goals.
- Leadership and management are often used interchangeably when in actual fact leadership is an essential part of management.
- Motivation is what drives a person to accomplish certain goals.
- Factors that motivate people in the work environment include:
 - Desire for money
 - Success
 - Recognition
 - Job-satisfaction
- The process of motivation in a person consists of three stages:
 - A experienced want
 - A motivation that changes the “want” into a “need”
 - The accomplishment of satisfying the need
- Motivation is an internal reason for someone to do something.
- The four factors that influence employee motivation are:
 - Autonomy
 - Creativity
 - Value
 - Growth
- An incentive can either be either positive or negative.
- Incentives are external.
- the most commonly types of incentives used include:
 - Compensation
 - » Bonuses
 - » Extra leave
 - » Tuition reimbursement

- » Team retreats
- » Flexible work schedule
- Activities
 - » Professional development opportunities
 - » Personal fitness classes
 - » Volunteer time
 - » Office happy hour
- Perks
 - » Gift cards
 - » Subscriptions
 - » Catered lunches
 - » Entertainment
- Business competition is the rivalry of companies that are competing for business in the same market.
- Three different types of business competition are:
 - Direct competition
 - Indirect competition
 - Replacement competition
- Benefits of business competition include:
 - Increasing the quality of a product or service on offer
 - Forcing companies to be innovative
 - Providing the customer with options
 - Competitive pricing
- Co-operation in management is the process arranging efforts in order to achieve a common objective by involving every employee in the decision-making process.
- Properly implemented co-operation leads to:
 - Reduced internal competition
 - Enhanced knowledge sharing
 - Enhanced communication
 - Establishment of trust
 - Easier achievement of goals
- Working conditions is a collective term that covers aspects such as:
 - Work hours
 - Remuneration
 - Physical environment

- As poor working conditions hurt productivity, close attention must be paid to the following factors:
 - Space utilisation
 - Workplace technology
 - Lighting
 - Workplace processes
 - Flexibility and balance
 - Environment conditions
 - Company culture
- Welfare is concerned with the state of a person's happiness, health, success and their overall wellbeing.
- Factors that form part of welfare include:
 - Services
 - Facilities
 - Housing
 - Health insurance
 - Transportation
 - Food provision
 - Periodical allowance
- Employee welfare can be divided into two main groups namely, statutory and voluntary.
- Statutory welfare is based on the local law that apply with the aim of safeguarding the employee's interest, which include:
 - Limiting working hours
 - Providing a first aid facility
 - Providing a safe space for a break
 - Providing clean drinking water and a sanitation facility
- Voluntary welfare is voluntarily provided to employees by company management, and may include:
 - Recreation facilities
 - Education facilities
 - Transport facilities
 - Free meal facilities
- Personnel management focuses on planning, leading and organising the organisation's human resources, which includes:
 - Function of employment
 - Development
 - Compensation

- A widely accepted theory of human motivation is that the actions of people are motivated by certain needs.
- Maslow's hierarchy of needs suggests that people are motivated to fulfil basic needs of each level before moving to the next level of more advanced needs.
- The five levels of Maslow's hierarchy are as follows:
 - Physiological needs
 - Safety needs
 - Social belonging
 - Esteem
 - Self actualisation
- The personnel policy of an organisation is a list of rules that describe predetermined courses of action, used to guide work performance so that the organisation's goals can be achieved.
- Six of the most common policies used in the South African business environment are:
 - Disciplinary code and procedure policy
 - Sexual harassment policy
 - Substance abuse policy
 - Leave policy
 - Data protection policy
 - Recruitment and selection policy
- Recruitment is the process where the organisation searches for a specifically skilled and experienced candidate and offer them a long term position in the company.
- In the recruitment process candidates are divided into two groups, passive and active.
- Passive candidates are candidates that are satisfied with their current job and not actively searching for a new job.
- Active candidates on the other hand are actively seeking for new career opportunities.
- The steps in the recruitment process are:
 - Step 1: Identify the hiring needs
 - Step 2: Prepare the job descriptions
 - Step 3: Develop a recruitment strategy
 - Step 4: Sift through candidates and create a shortlist
 - Step 5: Conduct interviews
 - Step 6: Make an offer
 - Step 7: Employ the candidate

- Employee training and development aims to help employees improve their performance in their current roles as well as help them grow to realise their full potential.
- In South Africa there is a legislative framework for training called the Skills Development Act.
- The benefits to provide training opportunities to your employees include:
 - Improving skills and knowledge
 - Satisfies recommendations
 - Prepares employees
 - Motivates employees
 - Tests efficiency
- Some of the most common types of training used develop employees include:
 - Management training
 - Sales training
 - On-the-job training
 - Mentoring scheme

5 *Work study and performance*



By the end of this module, students should be able to:

- explain the concept of work study and its uses in terms of:
 - types of work programmes
 - the flow of work
 - work measurement
 - time study
 - techniques of method study
 - work content and standard time; and
- evaluate the performance of the following site aspects:
 - performance standards
 - performance measurements
 - performance evaluation
 - corrective actions.

In this module students learnt what work study is and how it can be used to work more cost effectively. They also learnt how to manage the performance of employees and contractors, what role performance standards and measures play in an organisation and how to take corrective action when performance is poor.

Exercise 5.1

SB page 103

- 1.1 Time study
 - 1.2 Method study
 - 1.3 Workflow
 - 1.4 Work measurement
 - 1.5 Work study (5)
-
2. – Increase productivity
 - Improve on the existing method of work and thus lowering its costs
 - Set a standard of performance
 - Increase the efficient usage of plant and human resources
 - Reduce wasted time and materials (5)

3. – Analytical estimating: A work measurement method used to determine the time values of tasks that are not repetitive and that have a long duration. (3)
- Predetermined Motion Time System (PMTS): The PMTS work measurement method is an improved version of motion study, where basic times are set for basic worker motions. The time values are used to calculate the time required to complete a specific job. (4)
4. – It is only suitable for repetitive jobs
- More suitable for manual labour jobs
- The human factor of the worker and the person doing the study may influence the standards that are based on the study (3)

Total: 20 marks**Exercise 5.2****SB page 110**

- 1.1 True.
- 1.2 True.
- 1.3 False. The performance standards communicate how a job must be done.
- 1.4 False. Finding the cause of performance issues and attempting to solve it is commonly referred to as corrective action.
- 1.5 True. (5 x 2)
2. performance = ability × motivation (2)
3. – Average revenue for every working hour
- Percentage of equipment downtime
- Waste created per job
- Percentage of labour downtime (4)
4. Accidents cause delays which causes workers to be unproductive resulting in increased costs. An increase in costs negatively affects an organisation's performance and hurts its reputation in the industry. (4)

Total: 20 marks**Summative assessment****SB page 114**

- 1.1 D. All of the above
- 1.2 B. Outline process chart
- 1.3 C. Worker satisfaction
- 1.4 A. The period of assessment that applies
- 1.5 D. Combined activities
- 1.6 B. Performance assistance
- 1.7 D. Client satisfaction

- 1.8 D. All of the above
- 1.9 C.
- 1.10 B. Motivation (10 x 1)
- 2.1 – **Step 1: Choose a data recording method**
 Normally a worker is directly observed and times as they perform the specific job. This may however influence worker performance and thus the results. Using video to capture the worker performing the job will be a less invasive manner and will allow you to carefully analyse the process.
- **Step 2: Perform the study**
 Now that you have the raw data, like the video, you can start to analyse it by completing these steps:
- » Set up a spreadsheet with columns for “job description” and “time”.
 - » Divide the job into tasks and each task into elements
 - » Time each element
- **Step 3: Analyse the results and make the changes**
 Now that you have the times for each element or multiple times for each element you must:
- » Find the average time for each element by adding the times for a single element together and dividing by the number of times.
 - » Find the average for the task by adding the averages together.
 - » Assign a high or low value to each task in order to prioritise them.
 - » Reduce the low-value-high-time tasks. These tasks are the ones that take a long time to do, but only add a little value to the process.
 - » Try to make high-value-high-time more efficient by reducing the time needed to do them.
 - » Look for any inefficiency and try to reduce them. (15)
- 2.2 – What must be done?
 – When must it be done?
 – Where must it be done?
 – Who must do it?
 – How must it be done? (5)
- 2.3 Performance standards is a management tool used to communicate the requirements and expectations that must be met at a specific level of performance. (1)
- 3.1 – Evaluation can be used for future projects. It establishes a performance record that can be referenced during the decision-making process of using them for a specific job.
- Evaluating employees keeps them accountable. People that are aware that they will be evaluated tend to perform better in order to avoid the consequences of a poor performance.

- Good performance evaluations build reputation in the industry. A good reputation leads to more work, which creates a community standard to perform at a high quality standard and is beneficial for all involved. (6)

3.2 Any FOUR of the following:

- **Resupply:** Supply the employee with the required resources so that they can perform.
- **Retrain:** If the employee does not have the skills or is a bit rusty, provide them with additional training opportunities to sharpen them up.
- **Refit:** Adjusting the job to the person such as reassigning certain responsibilities and adding others.
- **Reassign:** Reassign the employee to another position which matches their level of knowledge, ability and skill.
- **Release:** After all other options were tried with no noticeable improvement, it might be time to let the person go. (4 x 2)

Total: 45 marks

Module summary

In this module, students learnt the following:

- The sequence of steps that is followed to complete a job is called workflow.
- Work study is a term used to describe the techniques used to study work measurement implemented to ensure the most efficient use of human and material resources while carrying out specific activities.
- The main objectives of a work study is to:
 - Increase productivity
 - Improve on the existing method of work and thus lowering its costs
 - Set a standard of performance
 - Increase the efficient usage of plant and human resources
 - Reduce wasted time and materials
- The two types of work study are:
 - Method study
 - Work measurement
- A method study is implemented to simplify the working methods used in order to increase productivity.
- A method study focuses on:
 - How efficient the current method is in terms of making use of the available resources
 - What physical affect the method has on the production output
 - The quality of the end product
- A method study can also determine what the end cost and quality of the product will be.

- Indicators that might suggest that a method study must be conducted are:
 - Bottlenecks in the construction process
 - Resources that are underutilised
 - Poor quality
- The steps of a method study are:
 - Step 1: Select the job
 - Step 2: Collect and record the necessary information
 - Step 3: Examine existing method
 - Step 4: Develop the improved method
 - Step 5: Implement the improved method
 - Step 6: Maintain the new method
- Work measurement is the process of determining what the work content of a particular task is, using various techniques to measure the time required, for a qualified worker to perform the job at a predetermined performance level.
- Work measurement is commonly used to:
 - Compare two methods of completing a task
 - Evaluate worker performance
 - Develop labour standards used in planning and controlling operations
- Techniques commonly used in the work measurement process include:
 - Synthesis method
 - Analytical estimating
 - Predetermined Motion Time System (PMTS)
 - Work sampling or ratio delay method
 - Time study
- A time study is another business efficiency technique that consists of determining the amount of time required to perform a specific unit of work.
- The main goal of conducting a time study is to establish a standard time within which an average worker, while working at a normal pace, should complete the unit of work using a specified method.
- Information gathered from a time study can then be used to determine:
 - Standard costs
 - Operating effectiveness
 - The best methods for doing a specific job
 - Suitable completion schedules
- Benefits to conducting a time study include:
 - Easy calculation of standard labour cost per unit
 - Times standards can be used to guide managerial decisions
 - Chance for further improvement of working methods

- Limitations of a time study are:
 - It is only suitable for repetitive jobs
 - More suitable for manual labour jobs
 - The human factor of the worker and the person doing the study may influence the standards that are based on the study
- The steps to conducting a time study are:
 - Step 1: Choose a data recording method
 - Step 2: Perform the study
 - Step 3: Analyse the results and make the changes
- Business performance relates to how many of the objectives or targets that are set by management were reached during a predetermined period of time.
- Performance standards tell employees how well a job must be done.
- Performance standards is a management tool used to communicate the requirements and expectations that must be met at a specific level of performance.
- When setting performance standards, the following must be kept in mind:
 - Objective
 - Measurable
 - Realistic
 - Stated in clear writing
- Performance standards of a construction project forms part of the construction contract and may include:
 - The expected time for completion
 - What quality of materials must be used
 - The project budget
- Performance measures include:
 - Labour productivity
 - Quality
 - Safety
 - Client satisfaction
 - Time and cost
 - Employees
- Performance evaluation is the standardised and objective assessment of a contractor or employee's performance on a specific project or job.
- Evaluating performance is important for the following reasons:
 - Evaluation can and should be used for future projects
 - By evaluating employees or contractors keeps them accountable
 - Getting a good performance evaluation builds reputation

- Performance indicators that can be included in the evaluation of contractors may include:
 - Project commencement
 - Project management
 - Traffic management
 - Quality and environment
 - Safety
 - Commercial and contract management
- Corrective action consists of finding the root cause of the performance issue and solving it.
- Poor performance can be attributed to a lack of ability or a lack of motivation.
- Lack of ability may be associated with:
 - Tasks that are extremely difficult
 - Low employee skill and knowledge levels
 - Proof of employee effort despite poor performance
 - Little or no performance improvement over time
- Methods that can be to correct performance issues related to lack of ability are:
 - Resupply
 - Retrain
 - Refit
 - Reassign
 - Release
- Performance issues might also stem from the lack of motivation.
- Key interventions that may improve employee motivation include:
 - Setting performance goals
 - Providing performance assistance
 - Providing performance feedback

6 *The Occupational Health and Safety Act*



By the end of this module, students should be able to:

- explain the safety regulations on a construction site as related to:
 - the advisory council
 - the duties of employer and employees in safety
 - health and safety representative
 - health and safety committee
 - the safety inspector and functions
 - compliance at site
 - the safety manual
 - common causes of accidents
 - the cost of accidents
 - safety signs
 - unsafe acts
 - unsafe conditions.

In this module students learnt about the laws that govern South Africa's health and safety framework, the duties and responsibilities of various role players and stakeholders such as employers, employees and authorities. They also learnt about the difference between unsafe acts and unsafe conditions, matters relating to issues of site compliance, the causes, cost and mitigating measures of accidents.

Exercise 6.1

SB page 133

- 1.1 Chief inspector
- 1.2 Authorised person
- 1.3 Safety representative
- 1.4 Safety inspector
- 1.5 Safety manual
- 1.6 Safety file
- 1.7 Direct cost
- 1.8 Indirect costs
- 1.9 Prohibition signs
- 1.10 An unsafe act.

(10 x 1)

2. Give 1 mark for the cause and 2 marks for the description, in which at least two facts or examples must be described.
- Housekeeping (✓) including slips, trips and falls (✓). Good housekeeping involves keeping the construction site clean (✓). Sharp objects must be stored away safely especially in areas where people are walking more frequently (✓). Oil spillages must be attended to urgently as these may contribute to falls and slips causing major hazards (✓). Construction waste must be disposed of properly (✓) and proper supervision must be maintained at all times. A cluttered and untidy construction site is difficult to work on and can cause accidents (✓).
 - Fall from height (✓). Fall from height includes fall of persons (✓) and fall of objects such as debris or materials (✓). Falls are generally as a result of the workers unawareness (✓). Edges of buildings must be properly barricaded (✓) and proper access must be used to climb up scaffolds (✓). Falling is one of the major causes of work-related injuries and death in the construction industry and the best way to prevent a fall is to inspect the work area (✓) and ensure that all fall exposures are adequately protected (✓).
 - Vehicle accidents (✓). Dangerous site vehicles include forklifts, graders, excavators and dump trucks (✓). Large trucks often back up and hit pedestrians (✓). A common forklift accident occurs when the vehicle turns with a raised load (✓). Falling from a vehicle is also another hazard (✓) or a vehicle hitting an object (✓) or scaffolding (✓) and a worker falls from height as a result of the vehicle.
 - Excavations/collapsing trenches (✓). Open excavations pose a threat due to possible risk of collapse of the sides (✓). All excavated areas must be barricaded (✓) and have visible warning signs (✓).
 - Electrical safety (✓). The hazard includes burns, electric shocks, fire and explosions (✓). The dangers are increased where electrical equipment is used in poor conditions such as wet or damp areas (✓). Accidents can be prevented by proper practices, sufficient training and supervision. (5 x 3)
3. Students must list these three categories (1 mark per category mentioned) and must list any FIVE of the following consequences from each category (1 mark per consequence). (18)

<p>Immediate</p> <ul style="list-style-type: none"> • death • injury • pain • disease • damage • loss • fear
--

<p>Short term</p> <ul style="list-style-type: none"> • medical treatment • production loss • replacement • low morale • increased costs from repairs
--

<p>Long term</p> <ul style="list-style-type: none"> • income loss • disability • missed targets • insurance • compensation • mistrust • profitability

4. Any TWO of the following:

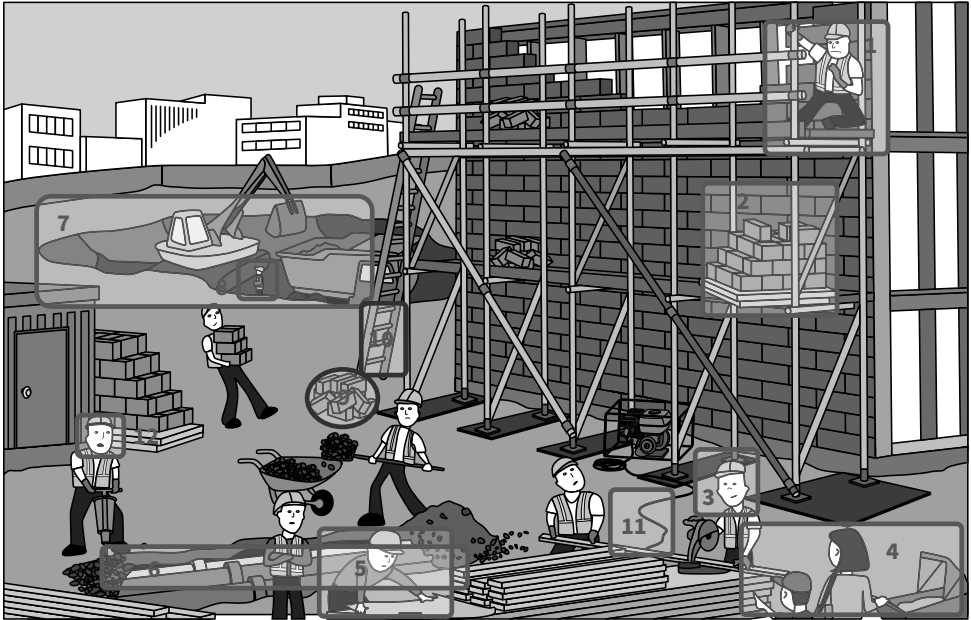
<p>4.1 Prohibition signs</p>  <p>NO ENTRY AUTHORISED PERSONS ONLY</p>	<p>4.2 Warning signs</p>  <p>SLIPPERY WHEN WET</p>	<p>4.3 Danger signs</p>  <p>DANGER</p> <p>DO NOT ENTER</p>
<p>4.4 Fire</p>  <p>LOCATION OF FIRE HOSE</p> 	<p>4.5 Mandatory</p>  <p>HEAD PROTECTION MANDATORY</p>	<p>4.6 Emergency</p>  <p>EMERGENCY ASSEMBLY POINT</p>

(2)

Total: 45 marks

Group activity 6.1

SB page 135



Construction site hazards 1-12

No	Hazard	Correct action	Unsafe condition or act
1	Fall from height. The worker can fall from the scaffold.	The person must wear a harness when working on heights.	Act
2	Fall from height. The pallet with bricks is badly placed and too heavy. It can fall on someone's head	The bricks must be taken off the pallet and packed neatly on the scaffold.	Condition
3	Failure to use PPE: The worker does not wear any ear or face protection while working with power saw. Small pieces of wood (splinters) can damage his eyes.	The worker must wear ear and face protection.	Act
4	Unauthorised people on site can get hurt	The building site must be cordoned off and no unauthorized people allowed on site	Condition
5	Failure to use PPE. The worker is not wearing a protective jacket	Workers must wear the correct PPE when on site	Act

No	Hazard	Correct action	Unsafe condition or act
6	Open excavations pose a threat due to possible risk of collapse of the sides	All excavated areas must be barricaded and have visible warning signs	Condition
7	Open excavations pose a threat due to possible risk of collapse of the sides	All excavated areas must be barricaded and have visible warning signs	Condition
8	Standing underneath load. The load can fall on the worker	The worker must move away from underneath the excavator	Act
9	Tripping and falling. The worker is going to trip over the bricks on the ground	The construction site must be kept clean	Condition
10	Using defective equipment. Two of the ladder's steps are missing. This may cause a worker to fall off the ladder	No defective or broken equipment must be used	Condition
11	Tripping hazard. The cable can cause workers to trip and fall	The work must be done in such a place that the cable does not cause a safety hazard.	
12	Failure to use PPE. The worker does not wear ear or face protection. Small pieces of gravel can fly into his face and he can suffer from loss of hearing.	The worker must wear ear and face protection.	

Summative assessment

SB page 137

- 1.1 Cost of accidents
- 1.2 National Building Regulations
- 1.3 Occupational Health and Safety Act
- 1.4 Department of Labour
- 1.5 Personal protective equipment
- 1.6 Health and safety. (6 x 2)

2.

1. C
2. E
3. A
4. B
5. D

(5 x 1)

- 3.1 – An inspector may in writing ban or disallow the employer from performing an act or use of plant and machinery that is likely to threaten the health and safety of any person.
 - In the event the threat has been removed, the inspector may at any time reverse the ban. (6)
- 3.2 – An unsafe act is an act of doing something that has potential to cause injury loss or serious injury
 - Unsafe condition (Any of the following)
 - » An unsafe condition refers to physical layout of the work location
 - » Unsafe conditions are not related to the individuals but rather to the site itself. (4)
- 4. CoA to the victim (Any TWO) (4)
 - Victims suffer from injuries and pain
 - Additional expenses as a result of loss of income
 - Overall negative effects on the quality of life of the victim and the family.
 CoA to the organisation (Any TWO) (4)
 - Employers may lose earnings and profit
 - pay for legal fees
 - pay for compensation
 - pay for repairs to damaged equipment and materials
 - pay for insurance premium penalties.
- 5.1 False. The employer must ensure that adequate supervision is provided by a suitably qualified person where work of a dangerous nature occurs.
- 5.2 False. An accident is an unplanned event that happens unexpectedly which may result to property damage or injury to persons or both.
- 5.3 True.
- 5.4 False. A danger sign warns people about potentially life-threatening hazards or hazardous conditions.
- 5.5 False. Fall from height is only relevant to falls of persons and fall of objects such as debris or materials. (5 x 2)
- 6. Protection of the public:
 - Geotechnical site and environmental conditions:
 - Preparation of site.
 - Demolishing or stopping work
 - Sanitary facilities (5 x 1)

Total: 50 marks

Module summary

In this module, students learnt the following:

- The purpose and function of the advisory council are to advise the Minister on all matters of policy, conduct research and make decision on administrative matters.
- The council consists of 20 members .
 - The duties of employers to their employees are to protect and ensure a safe working environment, provide training and adequate supervision
 - The employees must take responsibility for their own health and safety and that of others
 - A health and safety representative is a person who is appointed to ensure that all risks and hazards are identified in the workplace.
 - The functions of the health and safety representative are:
 - » examine the effectiveness of health and safety measures
 - » identify dangers in the workplace;
 - » investigate the causes of incidents at the workplace;
 - » look into any health and safety complaints by employees
 - » visit the site of an incident
- The council establishes the health and safety committee, who may, in an attempt to resolve matters affecting the health and safety of employees, make recommendations to the employer.
- A safety inspector is any person that may be appointed by the Minister from the Department of Labour (DoL) to perform functions as allocated.
- The functions of the safety inspector include
 - Accessing the premises of an employer
 - conduct investigations and obtain answers to any questions
 - examining records
 - be accompanied by an official where required
- Site activities must follow a legal process from inception to completion
- A safety manual is a collection of information, instructions, policies, and procedures intended for safe conduct in the workplace.
- A health and safety file is a legal requirement and must be kept on site
- An accident is an unplanned event that happens unexpectedly which may result to property damage or injury to persons or both
- A few common causes of accidents are:
 - Housekeeping including slips, trips and falls
 - Fall from height

- Vehicle accidents
- Excavations/collapsing trenches
- Electrical safety
- Accidents are preventable
- Direct costs of accidents are associated with the treatment and payment for injuries
- Indirect costs of accidents are not visible
- The cost of accidents has a negative impact on the following
 - Victims and dependents
 - Supervisors
 - Organisation
 - Nation
- Accidents have immediate, short-term and long-term consequences
- Safety signs can be categorised as follows:
 - prohibition
 - warning
 - danger
 - fire
 - mandatory and
 - emergency signs
- Unsafe acts are actions of employees and can cause serious injury or loss
- An unsafe condition is related to the site and its physical layout.

7 *Quality and ethics in construction*



By the end of this module, students should be able to:

- explain how to maintain quality at a site in terms of:
 - quality control
 - quality systems
 - factors affecting quality
 - compliance with the bill of quantities and specifications
 - quality as per the standard building regulations;
- judge the quality of project through:
 - review
 - inspection
 - sampling
 - checking defects
 - assessing quality levels;
- explain the importance of the following specifications:
 - technical
 - performance
 - functional
 - tolerance
 - zero defects; and
- summarise the ethics all parties on a construction site must follow, namely:
 - individuals
 - organisations
 - suppliers
 - employers
 - employees.

Quality management systems (QMS) have many applications in the construction industry and can be implemented at either a company or project level. Quality in the construction industry is linked to client satisfaction. Project quality is often taken for granted and not enough attention has been given to it. Subsequently, the absence of effective quality management procedures results in considerable time and resources being wasted every year.

Ethics is a tool that helps us create the difference between a good decision and a bad one. Ethics asks the basic question of what *should* be done. The quality of that decision-making process involves the matters that shape our choices and speaks to aspects of everyday life, such as values, beliefs, principles and norms.

Exercise 7.1

SB page 153

- 1.1 Bill of quantities
- 1.2 Defect
- 1.3 Scope creep
- 1.4 Project review or project management review Gantt chart
- 1.5 Excavations (5 x 2)

2. Any FOUR of the following:
 - Hazard identification
 - Improved construction quality
 - Improved communication.
 - Better task focus
 - Greener construction. (4)

- 3.1 A firm BoQ is one that has been measured and built precisely from the drawings and specifications. This means it can be priced accurately. (3)
- 3.2 An approximate BoQ, also called a provisional BoQ, is subject to remeasurement as the information available is not complete at the time of tendering. (3)

4. Briefly discuss the following regulations (15)
 - 4.1 **Part F: Site Operations**

This part covers all aspects of how the public and property belonging to the local authority must be safeguarded. Other issues that are addressed under site operations are, but not limited to: environmental conditions, site preparation, soil poisoning, dust and noise control on site, demolition work, waste material on building sites, housekeeping, sanitary facilities and builders' sheds. (5)

4.2 Part S: Facilities for disabled people

Section 24 of the bill of rights states that 'everyone has the right to an environment that is not harmful to their health or well-being'. The essential requirements for facilities to be provided for people with disabilities are that:

- » people with disabilities should be able to safely enter a building and make use of its facilities – especially toilets;
- » there must be suitable means of access;
- » in case of an emergency, there must be suitable means of exiting the building;

- » Lifts must be able to serve the needs of people with disabilities and there must be no obstacles from them accessing these facilities; and
- » buildings with halls and auditoriums for public use must have reasonable space for people with wheelchairs. (5)

4.3 Part T: Fire protection

All buildings need to be designed, constructed and equipped with fire protection so that should a fire occur:

- » people in the building will be protected;
- » spread of the fire to adjacent or adjoining buildings will be minimised;
- » a multi-storey building will be stable;
- » the spread of smoke will be minimised;
- » adequate means of fire-fighting equipment is provided. (5)

Total: 35 marks

Exercise 7.2

SB page 158

1. – Technical
– Performance
– Functional (3)
2. *Advantages:*
Any TWO of the following:
 - waste and cost reduction
 - improved customer loyalty and satisfaction
 - higher profits*Disadvantages:*
 - striving for a process that cannot be met
 - time and resources dedicated to zero defects may impact staff morale and performance in the absence of results (8)
3. Any FOUR relevant facts:
A tolerance in the construction industry is an allowable variation (✓) in something that can be measured (✓). It usually refers to a variation in a dimension, quantity, practice, construction limit, or physical characteristic of a material (✓). It is also often related to the function of the material (✓) or the finished work (✓) and commonly accepted industry standards (✓). To limit these variations, tolerances are used (✓). (4)
4. – Design drawings, which set design information and procedures for the works.
– Bill of quantities, which are itemised quantities of materials for bidding purposes.

- Material specifications, such as the type and grade of materials and methodologies.
- Material testing, such as frequency of testing or the number of tests required.
- Construction and installation methods. (10)

Total: 25 marks

Exercise 7.3

SB page 163

1. Any THREE of the following:
 - regulate areas that are not covered by legally enforceable duties;
 - maximise profits in the long term. For example, contractors who submit very low bids, just to get the project for it to collapse at a later stage, would be discouraged;
 - revive fair ethical judgement in construction activities such as tendering and dispute resolution and
 - to bring back faith and credibility to the construction industry. (3 x 2)

2. Any THREE of the following:
 - Conflict of interest
 - » consultants using their positions for financial gain
 - » clients awarding contracts to companies in which they hold interest in shares
 - » awarding of contracts to former employees and friends
 - Confidentiality issues
 - » improper information flow, internally and externally
 - » revealing tendering information
 - » revealing employer's details to outsiders
 - Breach of environmental ethics
 - » unsolicited clearing of vegetation
 - » illegal dumping of building debris
 - Collusive tendering
 - » occurs when organisations making tenders secretly share information or make arrangements among themselves to control the end result.
 - Bribery
 - » the offering of benefits to an appropriate person for the purpose of securing favourable consideration of one's product or corporate project. The benefit can be in a form of cash, entertainment, or favours.

- Fraud
 - » intentionally covering up poor workmanship and materials quality during inspections
 - » over ordering of materials
 - » tempering with signed contract documents
 - » altering construction documents
- Negligence
 - » it is a failure to exercise due care over something. The main sources of negligence are
 - design negligence,
 - design defect,
 - work defect,
 - poor quality documents and
 - inadequate safety standards.
- Dishonesty/unfairness
 - » It can take place within:
 - Public sector. The project should not automatically be awarded to the lowest bidder. A quality-based assessment should be conducted to ensure the bidder has both the technical competence and financial stability to complete the project.
 - Private clients. Bias in tendering evaluation to favour major contractors must be avoided.
 - Consultants. Consultants withholding information from the client resulting in variations; denying the contractor's rights under the contract to serve the employing clients. Consultants should always be loyal to the profession and not their clients and be impartial and objective at all times.
 - Contractors. Tenderers overstating their experience and capabilities. Many contracts provide prices that are much below the project cost.

(15)

3. Any FOUR of the following:

- Honesty
- Fairness
- Fair reward
- Reliability
- Integrity
- Objectivity
- Accountability.

(4)

Total: 25 marks

Summative assessment**SB page 166**

- 1.1 These ethics includes obeying the company's rules, effective communication, taking responsibility, accountability, professionalism, trust and mutual respect for their colleagues at work.
A. C. Employee ethics
- 1.2 A. Zero defects
- 1.3 C. Bill of quantities
- 1.4 B. Quality control
- 1.5 A. Tolerance
- 1.6 D. Supplier ethics
- 1.7 D. Failure to document changes and practices
- 1.8 B. Site operations
- 1.9 A. Project management review
- 1.10 D. All of the above (10 x1)

2.1 Any 10 relevant facts:

A tolerance in the construction industry is an allowable variation (✓) in something that can be measured (✓). It usually refers to a variation in a dimension, quantity, practice, construction limit, or physical characteristic of a material (✓). It is also often related to the function of the material (✓) or the finished work (✓) and commonly accepted industry standards (✓). To limit these variations, tolerances are used (✓). Although these tolerances are accepted in the construction industry, they must be small enough to ensure that modular units such as windows and doors can be assembled safely and correctly and without excessive cutting or trimming. (✓)

Tolerances are important because it is impossible to build a perfect building (✓) due to, for example, deviations in the manufacturing process, material stresses, human error or bad workmanship and environmental conditions (✓). (10)

- 2.2 Briefly explain each of the following parts of the building regulations. (10)
 - a) **Structural design:** This part outlines the structural design requirements of how a building should be constructed. The structure must be designed in such a manner that it provides enough strength, stability and able to withstand pressure without compromising the quality and function of the building.
 - b) **Dimension:** This part deals with floor plan size dimensions, roof heights and the overall floor areas to ensure that the structure to be constructed is fit for purpose.
 - c) **Walls:** Walls must be strong, stable, fireproof and water resistant as they form one of the fundamental structures of a building which supports the roof and other loads.
 - d) **Roofs:** Roofs need to be long-lasting, withstand strong wind and should not allow any rainwater or other surface water to penetrate to its interior.

- e) **Public safety:** This part deals with the responsibility of property owners on areas that pose a danger to the public such as ramps and swimming pools. (5 x 2)
- 2.3 Zero defects in quality management relates to a state where waste is eliminated (✓), defects are reduced (✓) and the highest standards are maintained (✓) in projects. (3)
- 2.4 Any relevant answer:
 These two concepts are closely connected as ethics has ultimately to do with relationships and the behaviour among people in organisations. The main difference is that the expectation is that the employer should be held to a higher standard than the employee.
 The employer sets the tone for ethical behaviour within its company, consisting of a set of values, moral principles, and standards that must be followed by both employers and employees in the workplace. It expects from the employer to take responsibility for the company and its employees, to be accountable, professional, trustworthy and show respect for their colleagues and employees at work.
 Ethical behaviour of employees consists mostly of following the established rules, procedures, and policies that are in place at the company. It also includes effective communication, taking responsibility for their own work and respecting their colleagues. (10)
- 3.
1. E
 2. D
 3. B
 4. G
 5. C
 6. A
 7. F.

(7)

Total: 50 marks

Module summary

In this module, students learnt the following:

- Construction quality control is a management system of planning and organising
- Quality can be related to:
 - Fitness for purpose
 - Conformance to a specification
 - Meeting or exceeding customer needs
 - Value for money
 - Consistency
- Quality is one of the critical factors in the success of construction projects

- Ten factors that affect quality of construction
 - Supplier and vendor failures
 - Damaged and low-quality materials
 - Sub-contractor mishandling
 - Failure to document changes
 - Last minute changes
 - Miscommunication between teams
 - Complexity of design
 - Poor project management systems
 - Ignored audits and testing
 - Scope creep
- A bill of quantities is drawn up by the quantity surveyor, using construction information such as tender documentation and drawings provided by the design team
- A firm BoQ is one that has been measured and built precisely from the drawings and specifications. This means it can be priced accurately.
- An approximate BoQ, also called a provisional BoQ, is subject to remeasurement as the information available is not complete at the time of tendering
- The primary purpose of a BoQ is to make sure that all tenderers are provided with a standardised document to price and submit a fair and accurate tender. It also has the potential to save money on the contract price.
- Each part of the national building regulations
- A project management review is an exercise undertaken at the end of each project phase to identify the current status of the project
- Routine inspections are a crucial part of every construction project
- Defects are aspects of the works that are not in accordance with the contract
- Project quality levels and how quality is measured in construction projects
- Specifications are written documents that describe and specify the types of materials to be used, the work to be carried out and the workmanship required for the successful execution of a project
- Ethics generally has three pillars that represent a system of moral principles, the rules of conduct in respect to human actions and individual moral principles.
- There are various ethical issues relevant to the construction industry as listed below:
 - Conflict of interest
 - Confidentiality issues
 - Breach of environmental ethics
 - Collusive tendering

- Bribery
 - Fraud
 - Negligence
 - Dishonesty/unfairness
- Individual ethics: Individual ethics tend to be a product of personal beliefs and values and are mainly influenced by upbringing, culture, education and experience.
 - Organisational ethics: An organisation's ethics must be instilled by its culture and leadership. Unethical behaviours undermine businesses in the long term.
 - Supplier ethics: Supporting an ethical supply chain means that companies will incorporate social and human rights and environmental considerations into how they do business across the world.
 - Employer ethics: The employer sets the tone for ethical behaviour within its company, consisting of a set of values, moral principles, and standards that must be followed by both employers and employees in the workplace.
 - Employee ethics: Ethical behaviour of employees consists of obeying the established rules, procedures, and policies that are in place at the company. It also includes effective communication, taking responsibility for their own work and respect for their colleagues.

8

Contract laws and labour laws



By the end of this module, students should be able to:

- explain the impact of various laws regarding the following contracts:
 - lawful contracts
 - contract formalities to be completed
 - void and voidable contracts
 - misrepresentation
 - oral contracts
 - breaches of contract
 - the termination of contracts
 - arbitration
 - insurances; and
- explain the various labour laws pertaining to the construction industry, including:
 - organisational rights
 - closed shop agreements
 - collective agreements
 - bargaining councils
 - statutory councils
 - dismissal procedures
 - unfair dismissals
 - dispute procedures
 - strikes and procedures.

In this module students learnt about what constitutes a legal contract, how contracts are formed, the different types of contracts, what it means to be in breach of contract and the legal basis for terminating contracts. They also learnt about the South African labour laws, the relationship between employers, employees, bargaining councils and trade unions.

Exercise 8.1**SB page 189**

- 1.1 False. An agreement refers to when two parties agree on something. The making of the offer by one party with the corresponding acceptance by the other party constitutes an agreement.
- 1.2 True.
- 1.3 False. Repudiation is a form of a breach of contract.
- 1.4 False. In a lump-sum contract or fixed contract all risks are carried by the contractor.
- 1.5 True. (5 x 2)
- 2.1 A contract is an agreement entered into between two or more people with the intention of creating legally enforceable obligations. (4)
- 2.2 Any ONE of the following:
- Force majeure refers to an exceptional event or circumstance that could not have been reasonably foreseen; or
 - is beyond the control of the parties; or
 - could not reasonably have been avoided or overcome. (2)
- 2.3 A breach of contract is a violation of any of the agreed-upon terms and conditions of a binding contract. (4)
- 3.
1. **Fraudulent misrepresentation.** It is a lie used to mislead someone into an agreement that harms them. Misrepresentations can be written, spoken, gestured or made through silence.
Example: a jeweller sells you a diamond ring but you later discover it is crystal, that is fraudulent misrepresentation.
They make a contract invalid. A person or company can make a fraudulent misrepresentation without knowing the statement is false. Merely being reckless or exaggerating to get someone to do something is a fraudulent misrepresentation. (5)
 2. **Negligent misrepresentation.** Negligent misrepresentation when someone makes a statement without considering the true facts. The failure to convey the true facts must result in harm.
Example: Party A tells Party B that a mobile phone is new when in fact it has been used for a long period, that is negligent misrepresentation. (5)
 3. **Innocent misrepresentation.** Innocent misrepresentation occurs when there is no intention to tell a mistrust. It carries the least moral consequences as there is no deliberate misrepresentation. The innocent party may rescind (cancel) the contract.
Example: a seller unknowingly offering a defective television. (5)

Total: 35 marks

Summative assessment**SB page 201**

- 1.1 True.
 - 1.2 False. The trade union must be registered.
 - 1.3 False. All risk insurance.
 - 1.4 True.
 - 1.5 False. Remedy period. (5 x 2)
- 2.1 Collective agreement
 - 2.2 Arbitration
 - 2.3 Fraudulent misrepresentation
 - 2.4 Natural person
 - 2.5 Statutory councils
- 3.1 Notice period. Intended as a preparatory period allowing the parties to bring operations to a close.
 - 3.2 Collective agreement. A written contract negotiated through collective bargaining between the employer and a union.
 - 3.3 Mediation. A mediation clause suggests the inclusion of a neutral third party in the dispute situation to help mediate the process of resolving the dispute.
 - 3.4 Oral contract. An oral contract is outlined and agreed to when spoken words are rendered valid and legally enforceable in a court of law.
 - 3.5 Voidable contracts. A voidable contract provides an option for the parties to enforce the terms even though an element is missing or some other issue exists with the terms of the contract. (5 x 1)
- 4.1 B. Public liability insurance
 - 4.2 A. Cost plus contracts
 - 4.3 D. Innocent misrepresentation
 - 4.4 D. All of the above
 - 4.5 A. Mora debitoris
 - 4.6 C. Legislation and common law
 - 4.7 D. None of the above
 - 4.8 A. Workers compensation insurance
 - 4.9 B. An artificial person created by law to enter into contracts on behalf of their corporations.
 - 4.10 C. Expert determination. (10 x 1)
- 5.1 A construction contract is an agreement between an employer and a contractor to construct, repair, modify, renovate or even demolish something in an agreed time frame, for an agreed price and to agreed standards. The contract is signed by both parties. Once the construction contract is signed, both parties must follow and comply with the terms of the contract. (10)
 - 5.2 A breach of contract is a violation of any of the agreed-upon terms and conditions of a binding contract. (4)

- 5.3 A closed shop agreement is a type of collective agreement that requires non-union workers to be members of the trade union or face dismissal. A closed shop agreement is legally binding only if:
- a ballot has been held of the employees to be covered by the agreement;
 - two thirds of the workers have voted in favour of the agreement;
 - workers are not required to be trade union members prior to employment; and
 - subscriptions and levies are only used to advance or protect the socio-economic interests of workers

(6)

Total: 50 marks

Module summary

In this module, students learnt the following:

- A contract is a binding agreement between two or more people that is enforceable by law
- A breach of contract is an act of breaking the terms and conditions of a contract
- The most important elements of a contract are offer and acceptance
- The three types of construction contracts are:
 - Lump-sum contracts
 - Unit price contracts
 - Cost plus contracts
- Characteristics of a legal contract are
 - Legal purpose
 - Mutual agreement
 - Consideration
 - Capacity to contract
 - Undue influence and duress
- A void contract has one or missing elements and therefore not a valid contract
- A voidable contract provides an option for the parties to enforce the terms even though an element is missing or some other issue exists with the terms of the contract
- Misrepresentations take place under false pretences and a party to this agreement can withdraw
- The three main types of misrepresentations are
 - Fraudulent misrepresentation
 - Negligent misrepresentation
 - Innocent misrepresentation

- An oral contract is enforceable in a court of law
- A breach of contract is a violation of any of the agreed-upon terms and conditions of a binding contract
- The five forms of contract are:
 - Mora debitoris
 - Mora creditoris
 - Positive malperformance
 - Repudiation
 - Rendering performance impossible
- The termination clause is one of the provisions of a construction contract and it is acceptable in law
- Force majeure is an unforeseen event or circumstance usually caused by an act of nature
- Arbitration is an alternative dispute resolution method
- The role of insurance is to reduce risk or transfer risk to another party
- The relationship between employers and employees is regulated by the South African labour laws
- The most commonly sought rights by unions are listed below:
 - Access to workplace
 - Deductions of union subscriptions and levies
 - Appointment of shop stewards
 - Leave for trade union activities
 - Access to information
- A closed shop agreement requires non-union workers to be members
- A collective agreement is a written contract negotiated through collective bargaining between the employer and a union
- Bargaining council representation is 50% for both the employers and employees
- Disputes arise as a result of:
 - lack of understanding of the conditions of the contract;
 - delays on a contract;
 - failure to administer the contract; and
 - unsubstantiated or incomplete claims being made by the parties involved.
- Dismissals have procedural requirements
- Dispute resolution methods include
 - Negotiations
 - Mediation
 - Expert determination

- Adjudication
- Arbitration
- Litigation
- Employers right to strike
- Compliance requirements for a protected strike

Glossary

A

Alleged – accused but not proven

Ambiguity – open to more than one interpretation

Amicable – behaviour that is pleasant and friendly

Appeal – apply to a higher court for a reversal of a decision

Appraisal – a formal assessment

Audit – an official inspection of a company's accounts by an independent body

Authorised person – a person officially permitted or empowered to do certain work

B

Ban – to legally forbid

Bespoke contract – specially drafted and customised to cater to the parties' specific needs

Binding – something enforceable or involving obligations

Breach of the contract – an act of breaking the terms and conditions determined by the contract

C

Coerce – to persuade an unwilling person through force or threats

Company culture – the shared behaviours and values which determine the dynamic amongst colleagues in the work environment

Contingencies – potential events, circumstances and expenses that are not specifically accounted for

Cost accounting – an accounting system used to evaluate the total cost of production by assessing costs related to each step in the production process

Court order – legal direction or action required by a court

Critical path method – a technique that requires mapping out of every key task that is necessary to complete a project

D

Damages – the losses involved when a party breaches an agreement

Deductibles – an amount of money that you must pay towards an insured loss before the insurance company will pay for some or all your claims

Defaults – to fail to fulfil a contract

Deliverables – goods or services which are the end result of a project

Deviation – the difference between the actual size or position and the specified size or position

E

Enforce – to compel compliance with the rule of law

Enforceable – to make sure that people obey the law

Ethics – moral principles that govern a person's behaviour

Excess – extra or more than required

F

Flue – a duct for smoke or waste gases produced by fires

Front loading – costs that are disproportionately applied

H

Hazard – something which has the potential to cause an accident or injury

Hearth – the base of a furnace or fireplace

Hierarchy – a structure which ranks items according to their level of importance

Human resources – a department in an organisation dedicated to managing personnel recruitment and retention, training and development and compensation

Hydrographical data – information related to physical features of bodies of water and land adjacent thereto

I

Impartial – not influenced; treating all parties equally

Intellectual property – the ownership of an idea, design or creation

J

Jurisdiction – the official power to make legal decisions and judgements

L

Latent defects – existing but undetectable or developing defects

Liability – legal responsibility for one's acts or omissions thereof

Lock out – when an employer refuses worker access to the workplace

M

Master plan – also known as the master programme; a project management tool that provides information on the sequence of the tasks to be executed to achieve timeous delivery

Mitigate – to make something less harsh

N

Negligence – refers to when a professional person does not do what they are supposed to do according to a required standard

P

Parameter – a limit or boundary which defines the scope of a particular process or activity

Patent defects – easily detectable defects

Performance standards – a management tool which establishes and assesses how well a job should be done

Professional misconduct – when a professional person misbehaves; for example, offensive behaviour, damage and theft, unsafe behaviour and general policy violations

Protocol – a set of rules

Public policy – policies that are made by the government for the welfare of the common people

R

Recourse – an action that can be taken to remedy a legal issue

Regulations – rules

Repudiating party – one of the parties admits that they are unwilling or unable to perform their obligations under the contract

S

Schedule of values – a construction project document that lists and divides the values and costs of billable work along the timeline during which said work will be completed

Scope creep – unplanned changes or expansion in a project

Standard form contract – sets standard terms for the execution of works, including a termination clause

T

Test borings – borehole drilling for the purposes of preliminary investigations of soil conditions

Tolerance – the limits within which a deviation may be allowed

U

Unconscionable – not right or reasonable

V

Void contracts – an invalid contract due to missing elements or requirements

Voidable contracts – contracts entered to despite an acknowledged missing element

W

Work study – the techniques used to study work measurement

