

Grade 12 Civil Technology (Specialization) Learner

It is extremely important that you practise your drawings throughout the year and do plenty of freehand sketches to understand the various components of civil drawings. Practical work is of outmost importance to link the theory to it.

Subject Requirements

Three fields of specialisation are offered in this field:

- ➔ Civil Services
- ➔ Construction
- ➔ Woodworking.

Content Checklist

Below is a checklist you should use to ensure that you have covered the Grade 12 content of Civil Technology in full.

NB: Remember that a Generic part as well as a Specific part will be covered.

Generic Section for Construction and Woodworking (Technology Subjects):

- ➔ **OCCUPATIONAL HEALTH AND SAFETY ACT 85 OF 1993 (OHSA)** - Application of the OHS Act pertaining to general health and safety in the workplace:
 - Scaffolding
 - Handling of material
 - Floors and stairs with open sides
 - Builders hoist
 - Ladders
- ➔ **MATERIALS**
Preservation and sustainability of materials:
 - Painting
 - Curing
 - Electroplating
 - Powder coating
 - Galvanising
- ➔ **TOOLS AND EQUIPMENT**
Identification, proper use and care of the following specialised tools:
 - Dumpy level
 - Laser level
 - Multi detector
- ➔ **JOINING (Omitted)**
Identify and explain the uses of:
 - Bolts and nuts
 - Rawl bolts
 - Plastic plugs
 - Rawl plugs
- ➔ **GRAPHICS AS MEANS OF COMMUNICATION (GENERIC)**
Interpretation of advanced drawings:
 - Site plan, floor plan and elevation of multi storey buildings
 - Basic drawing symbols relating to the built environment in accordance with the SANS for building drawings

The table below indicates the main topics in Civil Technology according to the area of specialisation.

CIVIL SERVICES:

Occupational Health and Safety Act 85 Of 1993 (OHS)
Safeguarding of openings and the use of safety harness.

Materials

Explain chemical -reactions between dissimilar materials

Equipment and Tools

pumps, drain cleaning tools, machine tools and testing tools

Graphics as means of communication

Pattern development

- ➔ Quantities
Calculate quantities of bricks, volume of concrete, etc
- ➔ Joining

Identify and explain the uses of fixing agents
Methods of cutting, joining and securing pipe connections.

Subject Specific Content For Civil Services

- ➔ Construction Associated With Civil Services
Brick and concrete ring manholes. Setting out levels and trenches
- ➔ Cold Water Supply
Uses and installation of valves, joints and fittings for pipes, water saving devices and repairs and alterations to existing pipe work
- ➔ Storm Water
Methods of disposing large quantities of water.
- ➔ Hot Water Supply
Working principles, installation, regulations, advantages and disadvantages of heating units and faults in water systems
- ➔ Roof Work
Installation of rectangular gutters
- ➔ Drainage (Sewarage) Above And Below Ground
Drainage system. Septic tanks, vacuum tanks and French drains.
- ➔ Sanitary Fitments
Working parts, working principles, labelling of sectional sketches.

CONSTRUCTION:

Occupational Health and Safety Act 85 Of 1993 (OHS)-
General health and safety in the workplace, scaffolding, handling of material, floors and stairs with open sides, builders hoist, ladder

Materials

Application and uses of concrete, properties of ferrous and non-ferrous metals, cladding, glass

Equipment And Tools

Safe handling, application and care of construction machinery

Graphics As Means Of Communication

Detailed scale of drawings

- ➔ Quantities
Calculation of the quantity of materials for a building.
- ➔ Joining
Identify and explain the uses of bolts and nuts.
Roof trusses to brickwork, wall plate to wall, concrete to steel.
- ➔ Excavations
Safety factors and regulations. Shuttering for shallow trenches
- ➔ Foundations
Pile foundations
- ➔ Brickwork
Cavity walls, Arches, semi-circle, flat arch. Beam filling, cladding, arches and paving.
- ➔ Concrete
Concrete floors and reinforcement in concrete floors
- ➔ Formwork
Properties of materials, The use of wedges in formwork
- ➔ Steel
Gusset plates, Concrete beams, cantilever beams and columns.
- ➔ Cavity Walls
Waterproofing and sealing.
- ➔ Staircase
Vertical cross- through a straight flight of concrete staircase.
- ➔ Roof Covering
Materials, characteristics, properties, advantages, disadvantages
- ➔ Construction Roofs
- ➔ Construction Plaster + Screed

CIVIL TECHNOLOGY

- ➔ Rib and Block Floor
Sketches, advantages, installation method and precautions.
- ➔ Reinforcement
Floors, beams, columns, cavity walls and defect due to shuttering.
- ➔ Plaster and Screed
Application, skimming, admixtures, finishes bagging.
Screed: preparation, application, purpose and admixtures.

WOODWORKING:

Materials

The procedure, properties tested and the advantages of grading timber. Methods of applying various types of preservatives on timber. Factors to be considered in the selection of timber

Equipment And Tools

Safe handling and care of portable and fixed woodworking machines.

Graphics as Means of Communication (Specific)

Scale drawing of exploded and assembled isometric view of woodworking joints. Sketches of line diagrams of roof trusses

- ➔ **Quantities**
Calculation of material required for a small building. Development of a cutting list for a bedroom cupboard from floor to ceiling.
- ➔ **Joining**
Identify and explain the uses of fixing agents
Methods of joining woodworking items to structures.
Application, uses and drawings of woodworking (joints (exploded and assembled views)
- SUBJECT SPECIFIC CONTENT FOR WOODWORKING**
- ➔ **Casement**
Sketch of the vertical section through the transom and adjacent members. Identification and drawing of the external elevation of a double casement with fanlights within a frame
- ➔ **Doors**
Drawing of front elevations, horizontal and vertical sections and constructional details of purpose made external doors.
- ➔ **Wall Panelling and Cupboards**
Front elevation, horizontal section and vertical section of wall panelling up to ceiling. Joining of strip boards.
Working drawings of a built-in and free standing cupboard up to ceiling height
- ➔ **Centering**
Sketches, methods of construction and erection of centres for flat and semi-circular arches with maximum 1 200 mm span
- ➔ **Formwork**
Properties of materials used for formwork.
Drawing of formwork and methods of erecting and supporting horizontal and vertical concrete structures.
Wedges in formwork
- ➔ **Shoring**
Single line diagrams showing the components of the shoring for a three storey building
- ➔ **Ironmongery**
Identification and use of door and cupboard locks used in woodworking
- ➔ **Suspended Timber Floor**
Sketch of a plan and the vertical section through a suspended timber floor
- ➔ **Ceiling**
Constructional details around the trap door of a ceiling
- ➔ **Staircase**
Line diagram with details of a straight flight of stairs with a landing and a staircase well with a half landing

➔ Roofs

Regulations, purpose and methods of installation of roofs with coverings. Roof underlay. Methods of joining smaller trusses to full trusses. Identification and uses.

Assessment

School based assessment (25%) 100 marks

ASSESSMENT TASK	MARK ALLOCATION	WEIGHTING FOR TERM	WEIGHTING FOR YEAR	TERM 1	TERM 2	TERM 3	TERM 4
ASSIGNMENT	Minimum 50	TERM 1 - 100%	10%	1			
MID-YEAR EXAMINATION	200	TERM 2 - 100%	7.5%		1		
PREPARATORY EXAMINATION	200	TERM 3 - 100%	7.5%			1	
FINAL EXAMINATION	200	TERM 4 - EXAMINATION - 100%	50%				1
PAT PHASE ONE = 20 MARKS	100	PAT TERM 4 - 25%	25%				1
100 PAT PHASE TWO = 80 MARKS							

Practical Assessment Task (PAT) (25%): 100 marks

External Examination: (50%) 3 hours 200 marks



Complete construction of RCC-DESIGN

https://www.youtube.com/watch?v=_A7_tfv0UY



Basic Wood Joints

https://www.youtube.com/watch?v=i-F7tTNRH_04