

TOPICS FOR COLLECTABLE MARKS FOR CIVIL AND ELECTRICAL TECHNOLOGY

CIVIL TECHNOLOGY

SPECIALISATION	TOPICS	CONTENT
Construction	The whole of Generic	<ul style="list-style-type: none"> • Application of the Occupational Health Safety Act pertaining to general health and safety in the workplace
	Specific: Quantity	<ul style="list-style-type: none"> • Calculation of the quantity for the subject specific areas. • Calculation of the quantity of materials for building
	Graphics	<ul style="list-style-type: none"> • Detailed scale of drawings;- <ul style="list-style-type: none"> - Open caves, closed caves, alternate plan courses of a one-and-a-half brick pier built in stretcher etc.
	Material especially terminology	<ul style="list-style-type: none"> • Application and uses of the ready mix concrete, high strength concrete, difference between mass and reinforce concrete, tests, admixtures, properties of ferrous and non-ferrous metals, properties and uses of glass bricks. • Purpose, material and methods of fixing cladding.
	Roofing	<ul style="list-style-type: none"> • Purpose of roof covering materials, characteristics, properties, advantages and disadvantages of slate and thatch
	Specific Joining	<ul style="list-style-type: none"> • Method of roof trusses to brickwork, wall plate to wall concrete base to steel sections
	Reinforced concrete	<ul style="list-style-type: none"> • Reinforcement for floors, beams, columns, cavity walls. • Defects that can occurs in concrete due to shuttering.
Woodworking	The whole of Generic	<ul style="list-style-type: none"> ○ Application of the Occupational Health and Safety Act pertaining to general health and Safety in the workplace. <ul style="list-style-type: none"> - Scaffolding - Handling of material - Floors and stairs with open sides. - Builders hoist - Ladders..
	Wall paneling and cupboards	<p>Working drawings of a frame with two doors to form a built-in cupboard between two walls showing the following;-</p> <ul style="list-style-type: none"> ➤ Front view with doors and frame. ➤ Vertical cross-section showing construction
	Doors	<p>External doors: application, drawing of front elevations, horizontal and vertical sections and constructional details of the following doors:-</p> <ul style="list-style-type: none"> ○ One panel door with flat panels. ○ Two panel door with flat panels with high and middle lock rail ○ Frame ledge, brace batten doors. ○ Ledge braced batten door.
	Ceiling	<p>The spacing of the brandering must be shown and ceiling boards depicted in broken lines.</p>
	Specific Joining	<p>Methods of joining the following items:</p> <ul style="list-style-type: none"> • Skirting to a wall. • Architrave to a door frame. • Door frame to a wall. • Cornice to a ceiling • Cupboard to a wall. • Shelf toto a wall a wall. • Mirror to a wall and frame • Handle to doors
Civil Services	The whole of Generic	<ul style="list-style-type: none"> ✓ Application of the Occupational Health and Safety Act pertaining to general health and Safety in the workplace. <ul style="list-style-type: none"> - Scaffolding - Handling of material - Floors and stairs with open sides. - Builders hoist - Ladders
	Hot and Cold water systems	<ul style="list-style-type: none"> ➤ Explain working principles, uses and installation of cold water.

		➤ Explain with appropriate sketches the working principles, installation, regulations, advantages and disadvantages of heating units for hot water supply.
	Specific Joining	Joining of pipes:-Explain and apply the various methods of cutting, joining and securing pipe connections for joining of;- <ul style="list-style-type: none"> ○ Copper pipes ○ Galvanized pipes ○ PVC pipes (Waste and soil pipes) Soft solder – Explanation and application of the process and use of apparatus Sheet Metal:- Drawing and application of stages of obtaining
	Specific Quantity	✓ Calculate from given drawings the quantities of bricks for a simple structure. - Volume of concrete for e.g. manhole, quantities of hot and cold water supply, fittings. - Waste water and soiled water drainage pipes for a small building - Volume of cylinders and cubes
	Specific Roof work	✓ Drawing development of corners, outlets and stop ends for rectangular gutters ✓ The methods of disposing large quantities of water from a dwelling to the municipal storm water system.

ELECTRICAL TECHNOLOGY

SPECIALISATION	TOPICS	CONTENT
Power Systems	Occupational Health safety (10marks)	<ul style="list-style-type: none"> ○ The consequences of the Occupational Health and Safety. ○ Compliances of safety acts in the workplace. ○ Consistency of practicing work ethics and safety rules. ○ Treat each work according to its safety rules and regulations. ○ Correct choose of tool for particular workl.
	Resistor, Inductor and Capacitor	The effect of Alternating quantity on the following circuits:- <ul style="list-style-type: none"> ● Series RLC Connection. ● Parallel RLC Connection
	Three Phase AC Generation and Transformers	<ul style="list-style-type: none"> ○ Power in three phase systems ○ Measurement and calculations ○ The principles of operation. ○ Calculation and applications
	Three Phase Motors and Starters	<ul style="list-style-type: none"> ➤ Principle of operation. ➤ Testing and commissioning and starters
	Programmable Logic Controllers (PLC)	✓ Motor Control using the PLC and Variable
Electronics	Occupational Health safety (10marks)	<ul style="list-style-type: none"> ○ The consequences of the Occupational Health and Safety. ○ Compliances of safety acts in the workplace. ○ Consistency of practicing work ethics and safety rules. ○ Treat each work according to its safety rules and regulations. ○ Correct choose of tool for particular workl.
	Resistor, Inductor and Capacitor	The effect of Alternating quantity on the following circuits:- <ul style="list-style-type: none"> ● Series RLC Connection. ● Parallel RLC Connection
	Semiconductors Devices (50marks)	<ul style="list-style-type: none"> ● Introduction to the Field effect Transistor (FET),Unijunction Transistor(UJT) and Darlington pair transistor ● The operation of 741 Op-amp. ● The connection of 741 Op-amp. ● The operation of 555 Timer ● The connection of 555 Timer in the circuit. ● Electronic switching Circuits using 741 Op-Amps and 555 Timer. ● Calculations on Op-Amps

	Amplifiers	<ul style="list-style-type: none"> ○ Principle of operation and application of discrete component amplifiers and oscillations
Digital Electronics	Devices and Sequential Circuit (50marks)	<ul style="list-style-type: none"> ➤ Application of decoders and encoders. ➤ Principles of combinational circuits without memory. ➤ Principles of memory elements. ➤ Counters and registers
	Semiconductors Devices (50marks)	<ul style="list-style-type: none"> ● The operation of 741 Op-amp. ● The connection of 741 Op-amp. ● The operation of 555 Timer ● The connection of 555 Timer in the circuit. ● Electronic switching Circuits using 741 Op-Amps and 555 Timer. ● Calculations on Op-Amps
	Occupational Health safety (10marks)	<ul style="list-style-type: none"> ○ The consequences of the Occupational Health and Safety. ○ Compliances of safety acts in the workplace. ○ Consistency of practicing work ethics and safety rules. ○ Treat each work according to its safety rules and regulations. ○ Correct choose of tool for particular workl.
	Microcontrollers (45marks)	<ul style="list-style-type: none"> ✓ Sensors and transducers as the interface between real world conditions. ✓ Electronics circuits. ✓ History of Microcontrollers ✓ Hardware, Software and PICAXE using Logicator as an approach to programmingPICS

EXAMPLE OF QUESTIONS IN AFRIKAANS VERSION AND ENGLISH VERSION ON THE FOLLOWING TOPICS

1. Generation of alternating quantity such as Voltage and Current
2. Programmable Logic Controller (PLC)
3. Single Phase Generator / Motor as revision to understand the following content.
4. Three Phase Generator/Motor