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REPUBLIC OF SOUTH AFRICA

2021 ATP: Grade 12 – Term 1: Civil Technology (Civil Services)

TERM 1 (45 days)	**Week 1** 27-29 Jan (3 days)	**Week 2** 1-5 Feb (5 days)	**Week 3** 8-12 Feb (5 days)	**Week 4** 15-19 Feb (5 days)	**Week 5** 22-26 Feb (5 days)	**Week 6** 1-5 March (5 days)	**Week 7** 8-12 March (5 days)	**Week 8** 15-19 March (5 days)	**Week 9** 23-26 March (4 days)	**Week 10** 29-31 March (3 days)	01-12 April 2021 School holidays
CAPS Topics	**OCCUPATIONAL HEALTH AND SAFETY ACT 85 of 1993 (OHS) (Generic)**	**OCCUPATIONAL HEALTH AND SAFETY ACT 85 of 1993 (OHS) (Specific)**	**MATERIALS (Generic)**	**EQUIPMENT AND TOOLS (Generic)**	**EQUIPMENT AND TOOLS (Specific)**	**GRAPHICS AS MEANS OF COMMUNICATION (Generic)**	**GRAPHICS AS MEANS OF COMMUNICATION (Specific)**	**QUANTITIES (Specific)**	**QUANTITIES (Specific)**		
Topics /Concepts, Skills and Values	Application of the OHS Act pertaining to general health and safety in the workplace: • Scaffolding • Handling of material. • Floors and stairs with open sides. • Builder's hoist. • Ladders.	Safety risks associated with deep manholes e.g. fumes and gasses. Safeguarding of openings. The use of safety harnesses when working in high places.	Preservation and sustainability of materials: (As dealt with in Grades 10 and 11). • Painting • Curing • Electroplating • Powder coating • Galvanising **MATERIALS (Specific)** Explain the following reactions between materials: • Dezincification • Electrolytic reaction (Galvanic corrosion)	Identification, proper use and care of the following specialised tools: • Dumpy level • Laser level • Multi detector **Introduction to Phase 1 and Phase 2 of PAT.**	Identification, proper use and care of the following: Pumps: • Centrifugal pump Drain cleaning rods: • Drain cleaning rods Machine tools: • Pipe-thread cutting machine • Drain cleaning machine (Jetting machine) Testing tools: • Water pressure testing pump • Compressed-air tests apparatus	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 Pattern development: Parallel line method: • Round shaped (Cylindrical pipe elbow, cylindrical pipe offset)	Pattern development: Parallel line method: • Round shaped (Cylindrical pipe elbow, cylindrical pipe offset) Radial line method: • Pyramid • Square based truncated pyramid • Right cone • Frustum of a right cone • Frustum of a right cone where the top is not parallel to the base • Frustum of a cone with the base not at right angles to the axis (Vent pipe flashing)	Calculate from given drawings the quantities of bricks for a simple structure and volume of concrete for e.g. a manhole, quantities of hot and cold water supply, fittings, waste water and soiled water drainage pipes for a small building,	Quantities of hot and cold water supply, fittings, waste water and soiled water drainage pipes for a small building, volumes of cylinders and cubes (Use of SI units of measurements).	**COMPLETION OF ASSIGNMENT, PHASE 1 (Simulation) AND PHASE 2 (Planning) - PAT**	
Requisite pre-knowledge	Safe practices associated with working on site. Safety regarding storage of hazardous materials and chemicals.	Safe practices when working in elevated positions.	Chemical reactions between metals. Properties of materials – ferrous and non-ferrous metals.	Care of precision tools. Ability to accurately read device measurements.	Drainage pipelines; rodding eyes. GMS pipes and fittings. Flooding of trenches / sites.	Floor plans, SANS symbols of fixtures in the built environment. Development of cylinders and cones.	Development of cylinders and cones.	Formula for calculating Volume. Fittings for cold water and hot water supply. Soil and waste water pipes.	Formula for calculating Volume. Fittings for cold water and hot water supply. Soil and waste water pipes.		
Resources (other than textbook) **to enhance learning**	Documentaries; OHS Act 85 – document; Model of stairs with open sides; Ladder.	Safety harness; Respiratory mask; documentaries.	Examples of metals of the processes done; Examples of reactions on pipes; Documentaries.	Internet – YouTube showing how tools are used; practical demonstration of the tools in use.	Internet- YouTube. Smartphones.	Drawing equipment. Drawing exercises of site plans and symbols. Models of the cylindrical elbow and square elbow made from GMS.	Drawing equipment. Models of the cone and frustum of a cone.	Brickwork setup for a manhole wall. Dimension paper.	Geyser cylinder, Dimension paper, Cube made of GMS.		

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Assessment	**Informal Assessment:** Remediation	Worksheets. Test. Learners to inspect ladder to ensure conformity to the OHS act. General housekeeping in the workshop.	Worksheets. Demonstration - use of respiratory mask and harness.	Worksheets- identification and uses of powder coating, etc. Tests.	Demonstration on the use of the tools. Worksheet on care and uses.	Demonstration on use of equipment. Mini Practical test.	Drawing worksheet. Evaluation exercises on developments.	Drawing worksheet. Evaluation exercises on developments.	Graded exercises to calculate quantities.	Graded exercises to calculate quantities. Test.		
	SBA Formal Assessment	**ASSIGNMENT. PHASE 1 OF PAT – SIMULATION – ASSESSING PHASE 1. PHASE 2 OF PAT – PLANNING STAGES.**										

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2021 Post – Covid: National Revised ATP: Grade 12 – Term 2: Civil Technology (Civil Services)

TERM 2 (54 days)	Week 1 13-16 April (4 days)	Week 2 19-23 April (4 days)	Week 3 28-30 April (3 days)	Week 4 3-7 May (5 days)	Week 5 10-14 May (5 days)	Week 6 17-21 May (5 days)	Week 7 24-28 May (5 days)	Week 8 31 May-4 June (5 days)	Week 9 7-11 June (5 days)	Week 10 14-18 June (4 days)	Week11 21-25 June (5 days)	
CAPS Topics	**JOINING (Generic)**	**JOINING (Specific)**	**CONSTRUCTION ASSOCIATED WITH CIVIL SERVICES (SPECIFIC)**	**CONSTRUCTION ASSOCIATED WITH CIVIL SERVICES (SPECIFIC)**	**CONSTRUCTION ASSOCIATED WITH CIVIL SERVICES (SPECIFIC)**	**COLD WATER SUPPLY (SPECIFIC)**	**COLD WATER SUPPLY (SPECIFIC)**	**REVISION/ENRICHMENT**	**REVISION/ENRICHMENT**	**ASSIGNMENT**	**PAT PHASE 2 COMPLETION**	
Topics /Concepts, Skills and Values	Identify and explain the use – • Bolts and nuts • Rawl bolts • Plastic plugs • Rawl plugs **JOINING (Specific)** Joining of pipes Explain and apply the various methods of cutting, joining and securing pipe connections for joining of: • Copper pipes • Galvanised pipes • uPVC pipes (waste and soil pipes) Label and explain the different parts of the joints from sectional drawings. Soft solder: • Explanation and application of the process and use of apparatus • Types of solder • Properties of solder • Soldering irons • Tinning a soldering iron • Flux (types and purpose).	Regulations regarding the use of lead free solder for water installation. Explanation and application of the following fixing agents: • Chemical anchors • Sleeve anchors • Spring toggle fixing Sheet metal Drawing and application of stages of obtaining: • Grooved seamed joint • Overlap joints • Pop rivet joints • Solder joints Calculating sheet metal allowance for joints taking into account preparation and where used. The student should be able to mark out and cut sheet metal.	Brickwork - Drawings of front views, sectional views and consecutive layers as seen from above.	Explain, draw and demonstrate how to build a brick manhole; Explain, draw and demonstrate how to build a concrete ring manhole Setting out: • Set out levels using basic levelling devices.	Setting out: • Set out trenches Support excavations in accordance with Occupational Health and Safety regulations Back fill and compact trenches	Valves: Explain working principles, uses and installation of: • Water meter • Stop cock • Full way valve • Pillar tap • Bib cock, ball valve and non-return valve	Joints and fittings for: • uPVC pipes (Soil and waste water) • Steel pipes (including flanges) Water saving devices: • Taps • Showers • Toilets Explain and apply repairs and alterations to existing copper pipe work and galvanized mild steel (GMS) pipe work Copper pipe work and galvanized mild steel (GMS) pipe work					**26 June -12 July 2021 School Holidays**

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Requisite pre-knowledge		Types of pipes – GMS, Copper, uPVC. Joining of pipes and methods.	Explain regulations governing drainage. Identify and explain abbreviations and symbols used in drainage systems. Pipe arrangements. Basic site equipment; Bricklaying tools; Setting-out Tools; Brickwork; Setting out square angles. Concrete.	Installation and types of pipes used for cold water supply. Joints and fittings. Laying pipes.					
Resources (other than textbook) **to enhance learning**		Samples of joining fixtures – bolts, nuts, rawl bolts, etc. Pipe cutters, joining fittings, etc. for demonstration purposes.	Drawing equipment Equipment and materials needed for setting out. Shuttering boards for trenches.	Fittings and valves for cold water supply. Internet- YouTube. Smartphones					
Assessment	**Informal Assessment:** Remediation	Make use of materials and test learner's ability to identify and explain the use of the materials. Practical work on soldering can be done.	Drawing equipment Equipment and materials needed for setting out. Shuttering boards for trenches.	Fittings and valves for cold water supply. Internet- YouTube. Smartphones					
	SBA Formal Assessment	**COMPLETION OF TERM FACETS FOR PHASE 2 OF PAT AND ASSESSMENT OF FACETS.** **FORMAL CONTROLLED TEST / FORMAL PRACTICAL ASSESSMENT, etc.**							

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2021 Post – Covid: National Revised ATP: Grade 12 – Term 3: Civil Technology (Civil Services)

TERM 3 52 days)	Week 1 13 -16 July (4 days)	Week 2 19-23 July (5 days)	Week 3 26-30 July (5 days)	Week 4 2-6 Aug (5 days)	Week 5 10-13 Aug (4 days)	Week 6 16-20 Aug (5 days)	Week 7 23-27 Aug (5 days)	Week 8 30 Aug- 3 Sept (5 days)	Week 9 6-10 Sept (5 days)	Week 10 13-17 Sept (5 days)	Week 11 20-23 Sept (3 days)	
CAPS Topics	**HOT WATER SUPPLY (SPECIFIC)**	**HOT WATER SUPPLY (SPECIFIC)**	**ROOF WORK (SPECIFIC)**	**STORM WATER (SPECIFIC)**	**DRAINAGE (SEWERAGE) ABOVE AND BELOW GROUND (SPECIFIC)**	**DRAINAGE (SEWERAGE) ABOVE AND BELOW GROUND (SPECIFIC)**	**DRAINAGE (SEWERAGE) ABOVE AND BELOW GROUND (SPECIFIC)**	**SANITARY FITMENTS (SPECIFIC)**	**TRIAL EXAMINATIONS**			**24 Sept – 05 Oct School Holidays**
Topics /Concepts, Skills and Values	Abbreviations and symbols: Application of abbreviations and symbols used in hot water systems Explain with appropriate sketches the working principles, installation, regulations, advantages and disadvantages of heating units: • High pressure geyser • Solar geyser (low and high pressure)	Explain with appropriate sketches the working principles, installation, regulations, advantages and disadvantages of heating units: • Solar heating panel (latest technology e.g. evacuated tubes and flat plate collector solar system) • Heat pumps Faults in water systems: • Explain reasons for a very weak or no discharge from a hot-water tap • Causes • Prevention • Removal of Air locks • Water hammer	Gutters: Explain and apply the installation of rectangular gutter with rectangular and round down pipes to fascia and wall (GMS and PVC) Fabricate stop-ends for a box gutter Flashings: Frustum flashing for a ventilation pipe on a pitched roof. (Purpose and drawing showing part of the vent pipe, flashing and roof cover)	**ROOF WORK (SPECIFIC)** Develop and cut out GMS sheet metal for vent pipe flashing. Fabricate and fit GMS vent pipe flashing **STORM WATER (SPECIFIC)** The regulations and methods of disposing large quantities of water from a site to the municipal storm water system The safe disposal of storm water in the following ways: Roof gutters to water tanks, surface channels, hard surfaces, manholes, onto road kerbs, methods of channelling storm water to catchments areas. Responsibilities of municipalities with regard to storm water disposal. Regulations governing storm water disposal.	Pipes and fittings: Requirements for an efficient drainage system Identification and use of drain and soil pipe fittings, junctions and bends Description of methods of joining synthetic drain pipes uPVC Drainage ventilation: Waste pipes, vent valves and anti-siphon pipes Drainage fixtures: Identify and explain with sectional views the location, purpose, advantages and disadvantages of: • Gulley • Inspection eye • Rodding eye	Drainage fixtures: Identify and explain with sectional views the location, purpose, advantages and disadvantages of: • Inspection chamber • Manhole • Ramp Explain with sectional sketches the purpose and working principles of: • Septic tanks • Vacuum tanks • French drains Design and draw single-line plans of simple domestic drainage lay-outs, including the recognised standard abbreviations, colour codes and the applicable regulations. …cont.	Design and draw single-line plans of simple domestic drainage lay-outs, including the recognised standard abbreviations, colour codes and the applicable regulations. Inspection and testing of drains by means of the compressed-air tests only. Identify and label sketches of the testing apparatus with a suitable description of the application of the tests Explain how to remove blockages from soil waste and drain pipes A brief explanation of a typical sewerage treatment process	Identification and explanation of working parts, the working principles and labelling of sectional sketches, as well as the installation and uses of the following sanitary fitments and their connection with the discharge pipes Procedure, materials, regulations and methods of installing sanitary fitments Waste water appliances: • Wash hand basin • Bath • Shower • Sink Soil water appliances: • WC pans • Urinals (single stall)			

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Requisite pre-knowledge		Abbreviations and symbols used in a hot water system. High pressure geyser. Components – pressure control valve, vacuum valve, safety valve, etc.	Joints and fittings. Gutters; identification, fall, material and methods of fixing and supporting.	The methods of disposing large quantities of water from a dwelling to the municipal storm water system.	Pipe arrangements. Soil fixture. Flushing devices and water traps. Inspection and testing of drains by means of the compressed-air tests only.	Valves, flushing devices, waste water pipes and soil water pipes.		
Resources (other than textbook) **to enhance learning**		YouTube, wall charts, equipment - geyser, valves, pipes, etc.	YouTube, wall charts, equipment for eg. gutters, brackets, sheet metal, vent pipes, holder bats, downpipes, etc.	YouTube, wall charts and equipment for eg pipes -40, 50 and 110 mm, brackets, drawing equipment, holder bats, etc.	Equipment to do the test as in content, YouTube, work sheets. Wall charts and equipment for eg pipes -40, 50 and 110 mm, brackets, drawing equipment, holder bats, etc.	Sanitary fitments to demonstrate how they function.		
Assessment	**Informal Assessment:** Remediation	Drawings and sketches can be made. Emphasis on sketching. Informal tests and peer marking. Open book tests. Practical – installation of high pressure geyser.	Labelling can be done as well. Practical work – fabrication of the stopped ends.	Fabrication of vent flashing. Informal test – storm water.	Sketching and labelling and explanation of the working principles of the tanks. Short tests and peer marking.	Identification of the mechanisms and demonstration of how they function.		
	SBA Formal Assessment	**TRIAL EXAMINATIONS AND COMPLETION OF PHASE 2 OF PAT AND PAT ASSESSMENT.**						