REPUBLIC OF KENYA

NATIONAL OCCUPATIONAL STANDARDS

FOR

CARPENTRY AND JOINERY CRAFTSPERSON

KNQF LEVEL 5

PROGRAMME CODE:0722 554B

TVET CDACC
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NAIROBI

APPLY SCIENCE

UNIT CODE: CON/OS/CAJ/CC/03/5/B

UNIT DESCRIPTION

This unit describes the competence in apply science. It involves applying units and measurements, applying force, work, energy and power, applying friction, applying light and sound, applying Linear motion, applying general chemistry, applying primary and secondary cells, applying thermal properties of matter and applying pressure in fluids

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA *(Bold and italicized terms are elaborated in the Range)*
1 Apply units and measurements	1.1 Selected appropriate units of measurements as per the given task 1.2 Converted units from one form to another as required by the task
2 Apply Force, work, energy and power	2.1 Defined force, work, energy and power 2.2 Described forms of energy (K.E &P. E) based on the state of the matter 2.3 Converted energy from one form to another according to scientific rules 2.4 Solved simple calculations on work, energy and power as per the task requirements 2.5 Identified examples of simple machines 2.6 Solved simple problems on moments of force
3 Apply Friction	3.1 Defined meaning of friction 3.2 Identified the advantages and disadvantages of friction 3.3 Solved simple problems on friction as per task requirements 3.4 Solved simple problems involving coefficient of friction
4 Apply Light and sound	4.1 Identified ***sources of light*** and sound 4.2 Applied laws of reflection and refraction 4.3 Identified types of images formed by plane and curved mirrors 4.4 Identified primary and secondary colours 4.5 Mixed two or more colours to form other colours 4.6 Solved simple calculations of location of images formed by plane and curved mirrors 4.7 Determined velocity of sound in air 4.8 Identified the properties of sound
5 Apply Linear motion	5.1 Defined and performed simple calculations on distance, displacement, speed, acceleration, velocity, scalar and vector

ELEMENT	PERFORMANCE CRITERIA *(Bold and italicized terms are elaborated in the Range)*
	5.2 Differentiated scalar and vector quantities 5.3 Applied newton's law of motion 5.4 Applied law of conservation of momentum 5.5 Performed simple calculations of motion
6 Apply General chemistry	6.1 Applied the knowledge of experimental techniques correctly and safely 6.2 Stated the ***classification of matter*** 6.3 Identified the structure of atoms 6.4 Identified properties of elements and compounds, acids and bases 6.5 Described how given alloys are made 6.6 Identified magnetic and non-magnetic materials 6.7 Identified ***sources of electricity*** and causes of electric currents
7 Apply primary and secondary cells	7.1 Defined terms used in electrolysis 7.2 Identified the process of electrolysis 7.3 Applied the electrolysis process
8 Apply thermal properties of matter	***8.1*** Identified ***sources of heat*** 8.2 Identified the effects of heat on matter 8.3 Identified applications of thermal expansion 8.4 Described ***methods of heat transfer*** 8.5 Identified the applications of good and bad conductors of heat
9 Apply pressure in fluids	9.1 Defined density and variation of pressure 9.2 Described laws of floatation 9.3 Performed simple calculations on pressure in liquids

RANGE

Variable	Range
1. Sources of light may include but is not limited to:	• Artificial • Natural

2. Classification of matter may include but is not limited to:	• Solid • Liquid • Gas
3. Sources of electricity may include but is not limited to:	• fossil fuels (coal, natural gas, and petroleum) • nuclear energy • renewable energy sources
4. Sources of heat may include but is not limited to:	• Solar • Biomass • Geothermal • Fossil fuel
5. Methods of heat transfer may include but is not limited to:	• Conduction • Convection • Radiation

REQUIRED KNOWLEDGE

- Construction materials
- Scientific knowlwdge in area of specialization
- Friction
- Basic electricity
- Force, work, energy and power
- Metals and alloys
- Moments of force
- Magnetism
- Elements and compounds

SKILLS

- Solving problems
- Scientific calculations
- General calculations

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Applied units and measurements correctly 1.2 Applied Force, work, energy and power accurately 1.3 Demonstrated knowledge of applying Friction 1.4 Applied Light and sound based on the concept 1.5 Applied Linear motion 1.6 Applied General chemistry 1.7 Applied primary and secondary cells 1.8 Applied thermal properties of matter 1.9 Applied pressure in fluids accurately
2. Resource Implications	The following resources should be provided: 2.1 Samples of construction materials 2.2 Material Testing Laboratories 2.3 Safety equipment 2.4 Computers 2.5 Calculators 2.6 Materials testing tools and equipment
3. Methods of Assessment	Competency may be assessed through: 3.1 Written text 3.2 Interview 3.3 Observation
4. Context of Assessment	Competency may be assessed 4.1 On job 4.2 Off job 4.3 During Industrial Attachment.
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.