C A R I B B E A N E X A M I N A T I O N S C O U N C I L

REPORT ON CANDIDATES' WORK IN THE SECONDARY EDUCATION CERTIFICATE EXAMINATION

MAY/JUNE 2011

BUILDING TECHNOLOGY
TECHNICAL PROFICIENCY EXAMINATION
OPTION I – WOODS

GENERAL COMMENTS

The number of candidates who entered for the Building Technology Option I – Woods examination was 2581. This was in excess candidates of the 2010 entry, by 220 or 9.3 per cent.

The number of candidates sitting the Technical Proficiency examination was 2184 with approximately 90.02 per cent of the candidates receiving Grades I–III. This is in contrast to 2010 when 1942 candidates wrote the examination and 1794 or 92.37 per cent obtained Grades I–III.

Candidates did quite well on the practical project of the School-Based Assessment (SBA) component but some were weak in the written project. Competencies requiring focused attention are Knowledge and Application, which are tested on Paper 01 (Multiple Choice) and Paper 02 (Essay/Structured Response/Problem-Solving Questions).

DETAILED COMMENTS

Paper 01 – Multiple Choice

Candidates' performance on this paper improved marginally above that of 2010. Based on the common selection of certain items, the need for greater coverage of the theoretical aspects of the unit cannot be overemphasized.

Paper 02 – Structured Response Essay Questions

This was a structured response paper with three sections: A, B and C.

Section A — This section had one compulsory question based on Module C, Drawing and Design — Introduction to Drawing. This question was worth 40 marks.

Section B — This section comprised five questions based on Modules C2, C3, C5, C6.1 — Materials and C2 — Ironmongery. Candidates were required to attempt three questions from this section.

Section C — This section had three questions based on Modules C4 — Upholstery, Modules 6.3 — Basic Cabinet Making and C6.7 — Household Furniture. Candidates were required to answer only one question from this section.

The mean score on this paper was... out of a total of 120 marks.

Section A

Question 1

This was a compulsory question based on Module C7 — Drawing and Design. The question required candidates to demonstrate drawing and design skills using either free hand or ruler-assisted sketches to produce pictorial geometry. It also required the analysis, design and/or selection of suitable materials and joints for furniture to be used in school or at home. This question was attempted by approximately 90 per cent of the candidates of which 80 per cent provided satisfactory responses.

Part (a) focused primarily on sub-modules C7.1:6–7 from Module C7 — Introduction to Drawing. Parts (c), (d) and (e) focused on sub-modules C7.2:1–3 and 5 from Module C7 — Introduction to Design. Candidates were presented with an incomplete front elevation of a storage cabinet of length 1850 mm, depth of 550 mm and height of 900 mm (Figure 1). The carcase of the cabinet should be made from 19 mm plywood. More specifically, the question required candidates to produce a neat pictorial sketch (either in oblique, isometric or perspective form) of the completed storage cabinet to show:

(i) the design of a timber framed door fitted with 3 mm glass for the section labelled **B**
(ii) three drawers for the sections labelled **C**, **D** and **E**
(iii) the given shelves

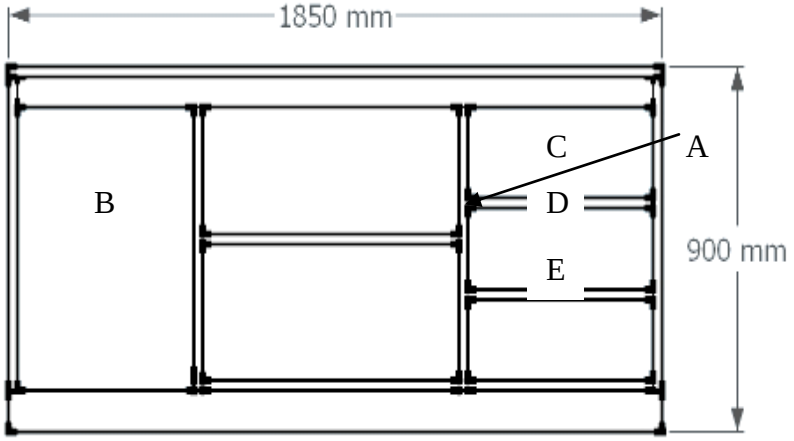


Figure 1. Elevation of an incomplete storage cabinet

Part (a) was generally well done by candidates. Conversely, weaker candidates encountered difficulty correctly interpreting the given drawing. Candidates should spend quality time to produce suitable sketches of pictorial and orthographic views of various woodwork components.

For Part (b), candidates were required to produce a neat rule-assisted sketch to show an exploded view of the joint shown as **A** in Figure 1. This part of the question was generally well done by candidates. Weaker candidates had difficulty scoring well in this area.

Part (c) required candidates to state four types of ironmongery that may be used for the door and three drawers of the cabinet. The responses provided by most candidates were satisfactory. Only about 20 per cent of candidates failed to acquire maximum marks for this part of the question.

In Part (d), candidates were asked to suggest two types of finishes that would be appropriate for the cupboard. This part of the question was attempted by 90 per cent of the candidates of which 70 per cent provided satisfactory responses. Some candidates provided partial responses to this question and this prevented them from acquiring maximum marks.

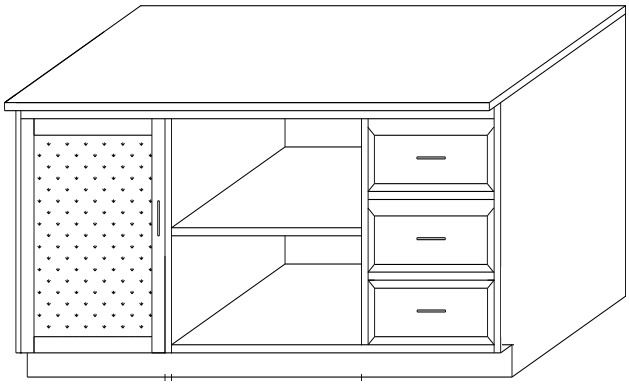
For Part (e), candidates were asked to name a suitable joint for each of the following situations in relation to the storage cabinet:

(i) The connection of the drawer front to the drawer sides
(ii) The connection of the drawer back to the drawer sides
(iii) The connection of the drawer bottom to the drawer front or sides
(iv) Connecting the top rail to the side panel
(v) Securing the top of the cabinet to the side panel
(vi) Where the drawer rail meets the side panel

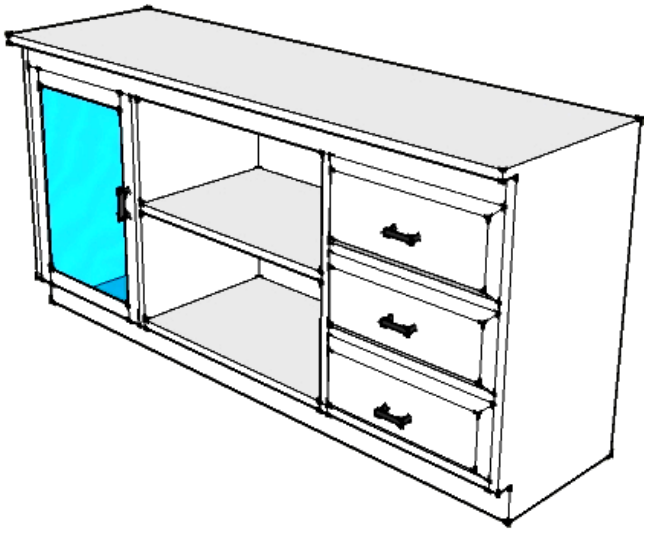
For this part of the question, 50 per cent of the candidates provided satisfactory responses. There remains some level of difficulty for candidates to both assess and correctly supply joints of desirable quality, functionality and durability. The use of appropriate models in either assembled or exploded forms should be kept on display in the shops to be used as teaching aids and also for reference purposes. In addition to the general project given for their SBA, students should be given a number of related small projects to sharpen their design and interpretation skills and improve their practical ability. Adequate time should also be provided to engage students in discussion on best practice in areas such as techniques of design, materials and construction, and elements of a good design (Module C7).

The expected responses to Question 1 (a – e) were as follows:

(a) Candidates had the option to use oblique, isometric or other suitable pictorial methods to produce the sketch of the completed cabinet showing three drawers, a framed glass door, front overhang and shelving.

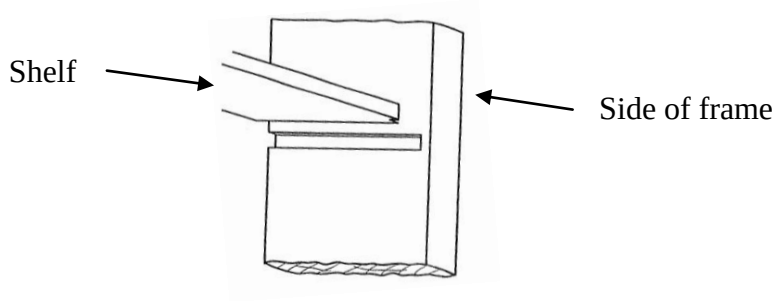


Oblique Drawing of the Completed Cabinet



Isometric Drawing of the Completed Cabinet

(b) Joint at B



Stopped Housing Joint

Other joints to be used are: through housing or dovetail housing.

(c) Suitable ironmongery for the three drawers and the door

Drawer: knob/handle, pull, drawer tracks/slides (mechanical drawer rails)
Door: catch (ball, spring, magnetic), cupboard lock, butt/concealed/decorative hinge, pull

(d) Suitable finishes include:

(i) Plastic laminate
(ii) Paint
(iii) Varnish/stain
(iv) Polish
(v) Lacquer

(e) Joints applicable for the storage cabinet are as follows:

(i) lapped dovetail joint, rebate joint
(ii) housed joint, dovetail joint, butt joint
(iii) grooved joint
(iv) barefaced mortice and tenon, rebate joint, lapped dovetail
(v) dowelled joint, housed joint
(vi) stopped housing joint, pinning joint

Section B

Candidates were required to answer three questions from this section of the paper.

Question 2

This question assessed candidates' knowledge and application of skills relating to Module C5 — Finishes. Specific focus was given to sub-modules C5.1 — Types of Finishes and C5.2 — Preparation of Finishes. This question was attempted by 80 per cent of the candidates of which 60 per cent provided satisfactory responses.

Part (a) required candidates to list six types of finishes that could be applied to indoor furniture. This part of the question was generally well done by candidates. Weaker candidates had difficulty differentiating between finishes and preparatory materials such as shellac and wood sanding sealer. A component such as pigment (used in the manufacture of paint) was also cited as a finish by some candidates. Based on the responses to this question, candidates need to spend quality time learning about various types of finishes applicable to furniture work.

Part (b) required candidates to briefly explain five steps that would be required to prepare a wooden surface to receive a natural finish. A number of candidates were not able to explain the steps satisfactorily. Some candidates failed to mention the final sanding or dusting which are generally required prior to the application of the natural finish. Candidates should be able to clearly distinguish between materials required to prepare surfaces for a desired finish as opposed to those to be applied following preparatory work.

For Part (c), candidates were required to provide four reasons why surface preparation was necessary prior to applying furniture finishes. Approximately 60 per cent of the candidates who attempted this part of the question were able to provide satisfactory responses. The responses from the remaining 40 per cent were inappropriate and seemed to suggest that they were limited in their knowledge and so could not provide an acceptable rationale in answering this part of the question. In general, students should be given more shop practice of the steps in the procedures required for the preparation and application of furniture finishes. This should include the reasons for preparing furniture surfaces for various applied finishes in keeping with the objectives and contents of Module C5.

The expected responses to this question were:

(a) Types of finishes:

(i) Paint
(ii) Varnish – polyurethane/spar
(iii) Wax
(iv) Clear lacquer
(v) Stain
(vi) French polish
(vii) Linseed oil

(b) Five steps in preparing wood surface for a natural finish:

(i) Remove loose knots and plug holes with wood pellets
(ii) Punch any nails below the surface of the furniture
(iii) Use wood filler to cover all indentations and blemishes
(iv) Treat all knots with knotting compound (Shellac) to prevent resin from bleeding
(v) Apply wood sanding sealer in preparation for finishing material
(vi) Sand properly using appropriate grade abrasive paper to produce a smooth finish
(vii) Dust furniture prior to applying finishing material

(c) Rationale for preparing furniture for applied finishes:

(i) To remove marks made by tools such as scratches
(ii) To remove indentations
(iii) To create a surface that would ensure adhesion of the finishing materials
(iv) To achieve uniformity when using different coloured timber

Question 3

This question was generated from sub-module C6.1 of Module C6 — Furniture Construction — and sub-module C2.4 of Module C2 — Hand Tools and Laying Out. The question was attempted by approximately 70 per cent of the candidates of which 40 per cent provided satisfactory responses. Candidates' knowledge and application of the principles to be applied to furniture manufacturing from timber selection to fabrication were tested. More specifically, the question required candidates to select appropriate adhesives and metal fasteners for use in the construction of timber components. For Parts (a) and (b), candidates were given a scenario relating to the construction of patio furniture (1 table and 4 chairs) for outdoor use.

Part (a) required candidates to state two suitable timbers to be used to construct the patio set. This part of the question also required that they provide one justification for each timber selected to construct the patio set. Most candidates who attempted this question provided satisfactory responses. However, the justifications for some of the timber types selected by candidates were generally weak.

Part (b) was divided into two parts: (i) and (ii). Part (b) (i) required candidates to name two suitable wood glues that may be used in the production of the patio set.

Some candidates had difficulty selecting glues that were waterproof. Candidates' responses suggested that they did not take into consideration the exposure that the furniture would have to the elements. A number of candidates could not decipher between waterproof adhesives as opposed to those that were not. Candidates need to be more familiar the conditions requiring the use of various types of glues.

Part (b) (ii) required candidates to name two types of materials that can be used to produce screws for exterior use. This part of the question also required candidates to provide one justification for each material named. This question was attempted by 70 per cent of the candidates who also provided satisfactory responses. Weaker candidates were not able to rationalize why these materials were suitable for outdoor furniture. The properties of the materials to be used as fasteners for the outdoor furniture would have to be considered here.

Part (c) was divided into three sections. This part of the question required candidates to produce graphical illustrations to show the application of selected fasteners to join timber components. This part of the question was difficult for most candidates. Part (c) (i) required candidates to use sketches to show four steps to be followed to insert a countersunk head screw into a lap joint created from hardwood timber. Most candidates had difficulty graphically illustrating the principles required to prepare the screw hole to accommodate the screw.

For Part (c) (ii) of the question, candidates were required to illustrate graphically, how dovetail nailing is used to connect the top of a wooden box to the sides. The responses from candidates for this part of the question were weak. Part (c) (iii) of the question required them to illustrate graphically, how parallel nailing is used to secure a bench top to a frame. Approximately 50 per cent of the candidates who attempted this part of the question responded satisfactorily. Given this apparent weakness, it is essential that students are given sufficient time to become familiar with, and apply various types of fasteners related to Module C2 of the syllabus. Content delivery should be so designed to enable students to develop proficiency in the knowledge and application of skills essential for this learning level.

Expected solutions for this question include but were not limited to the following:

(a) Two suitable timbers for the patio set:

(i) Purple heart, Cedar, mahogany,
(ii) Green heart, Treated pine, Oak

Reason for selection

The timbers are

(i) weather resistant
(ii) wear resistant
(iii) insect resistant

(b) (i) Suitable glues:

(i) Casein glue
(ii) Formaldehyde
(iii) Epoxy resin
(iv) Melamine resin
(v) Polyvinyl acetate (with waterproof additive)

(b) (ii) Materials for screws exposed to the elements:

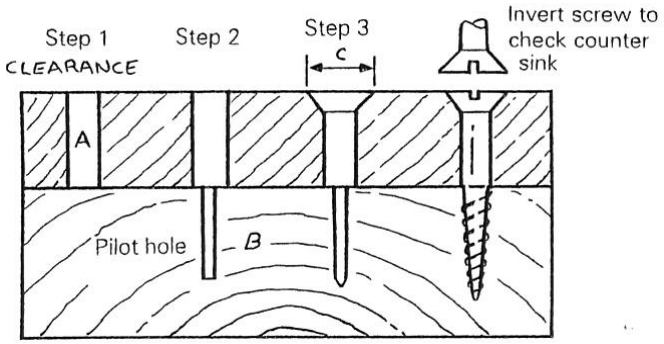
(i) Brass
(ii) Stainless steel
(iii) Aluminum
(iv) Copper

Reasons for material choice:

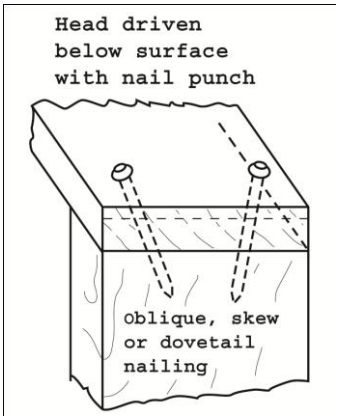
(i) Brass is corrosion resistant
(ii) Stainless steel is strong and corrosion resistant
(iii) Aluminum is corrosion and erosion resistant
(iv) Copper is also corrosion and erosion resistant

(c)

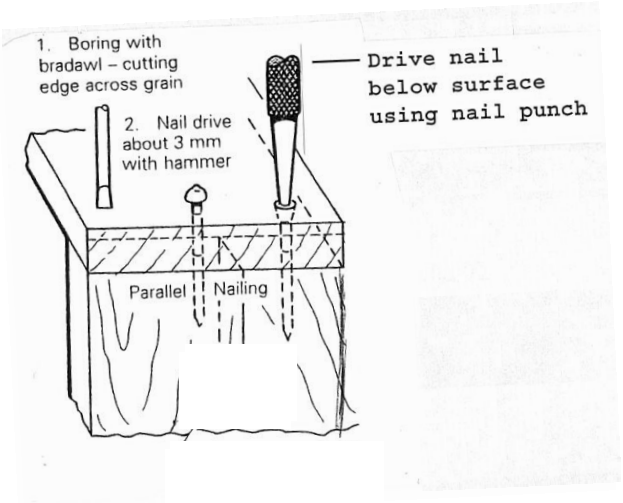
(i) Process to insert a Countersunk screw



(ii) Dovetail Nailing



(iii) Parallel Nailing



Question 4

This question assessed candidates' knowledge of sub-module C6.2 — Ironmongery — from Module C6 of the syllabus. It tested candidates' knowledge of various types of hinges and their applications. This question was only attempted by 40 per cent of the candidates. The question was divided into three sections: (a), (b) and (c). Part (a) required candidates to state the most appropriate use for ironmongery such as butt hinge, tee hinge, back flap hinge and the tower bolt. Most candidates provided appropriate uses for the butt and tee hinges respectively. However, the responses from some of the candidates regarding the use of the tower bolt were generally weak. Perhaps the most considerable challenge for most candidates was in stating the specific use of the back flap hinge. The weak responses to this part of the question underscore the need for candidates to acquire greater exposure to ironmongery in both theory and practice.

For Part (b), candidates were required to give two terms generally used to describe the cut made in wood to accommodate hinges. A number of candidates who responded to this part of the question gave varying terminologies in answer to this part of the question. Only 40 per cent of candidates who attempted this part of the question provided satisfactory responses. The weaker candidates may have had difficulty correctly interpreting this part of the question.

Part (c) required candidates to describe five major steps that should be followed to correctly fit a pair of butt hinge to a framed cabinet door. As much as 50 per cent of the candidates who responded to this part of the question demonstrated that they were familiar with the process.

A number of candidates encountered difficulty responding to this part of the question. Students should be given adequate instruction and shop practice in the principles and processes used to install various types of ironmongery to fully satisfy the requirements given in Module C6 of the syllabus. Content delivery should be so designed to enable students to develop proficiency in the knowledge and application of skills essential for this learning level.

The responses expected from candidates were:

(a) Appropriate uses of ironmongery:

(i) Butt hinges: these are used on Panel and Flush doors to secure them to their frames without the screws being exposed.

(ii) Tee hinges: these are mainly used for out-building doors such as barns, storage rooms and gates.

(iii) Backflap hinge: these are usually fixed or used on the front of a writing desk and on the leaves of drop-leaf tables.

(iv) Barrel Bolt: this device is used to hook one side of a pair of doors in position so that the other pair can be locked in place.

(b) Terms used to describe the indentation to seat a butt hinge:

(i) recess
(ii) gain
(iii) rebate
(iv) housing

(c) Five steps to be followed to fit a pair of butt hinges to a framed cabinet door:

(i) Position the hinges in line with the top and bottom rails.
(ii) Mark the hinge length on the hanging stile edge and on the front face of the carcase.
(iii) Gauge the hinge width and half its thickness between these lines. This defines the length, width and depth of the recess/gain desired.
(iv) Use a chisel and mallet to cut out the recess/gain in both the stile and the carcase.
(v) Fit the hinges to the stile and fix it in place with one screw each.
(vi) Position and fit the hinges to the face of the carcase with one screw each.
(vii) Test the fitting, make necessary adjustments then fix the remaining screws.

Question 5

This question was developed with reference to the objectives and contents of sub-module C3.1 — The Circular Saw — from Module C3 — Machine Operations. This question tested candidates' knowledge and skills concerning the safe operation of the Circular Saw. It was attempted by 90 per cent of the candidates of which 60 per cent provided satisfactory responses. This question was divided into two sections: (a) and (b). Part (a) (i) of the question required candidates to list five safety rules to be observed prior to using the table saw while Part (a) (ii) focused on the safety procedures to follow during the use of this machine. More than 60 per cent of the candidates who responded to these parts of the question were able to state appropriate safety rules to be adhered to prior to operating and during the use of the circular saw. However, weaker candidates gave general safety rules as opposed to specific ones to be adhered to during the use of the table saw.

Candidates need to become fully cognizant of the safety rules governing the use of the table saw. Instructors need to place greater emphasis on explaining the versatility of the table saw and the correct procedures to be followed to safely operate it. In addition, the instructional process must necessitate frequent demonstrations and regular supervised practice of the correct use of this and all other wood working machines.

Part (b) required candidates to explain five simple steps that should be followed to cut a piece of stock to length, using the circular saw. This part of the question was misinterpreted by a considerable number of candidates. This question stated specifically that the stock should be cut *on* the circular saw. The responses seemed to suggest that some candidates were either experiencing difficulty understanding the question or were not familiar with the use of this saw. A number of candidates were not able to distinguish among the compound mitre saw (chop saw), radial arm saw and the circular saw, while others had difficulty distinguishing between the table saw and the portable circular saw. Either way, candidates need to acquire competence in the knowledge and application of woodwork machines, their operations, and the safety principles related to their use. The use of instructional aids in the form of instructional videos of machine operations is an excellent teaching strategy to cover woodworking machines. These videos may also be used as supplementary material in cases where the wood workshop is poorly equipped with stationary tools.

Expected responses to this question included but were not limited to the following:

(a) (i) Before using the table/circular saw

(i) Before using the circular saw, you should be fully instructed on how it is operated.
(ii) Check that the machine is disconnected prior to performing setting up activities.
(iii) Check to ensure that the saw blade is in good working condition before use.
(iv) Ensure that the guard and fence are correctly set up and held securely in place.
(v) Make sure that push sticks, push blocks and other required safety devices are available for use.

(ii) During the use of table saw

(i) Never feed timber into the circular saw until the blade has reached maximum speed.
(ii) Avoid passing your hand over the blade during cutting activities.
(iii) Never make adjustments to the saw while it is in motion.
(iv) Assume an appropriate stance when engaged in cutting operations.
(v) Always use a push stick when ripping narrow pieces of boards.
(vi) Always use the mitre gauge when performing cross cutting operations.

(b) Five simple steps to be followed to cut a piece of stock to length on the circular saw

(i) Measure and mark off the length of the stock with a square.
(ii) Place the mitre gauge in the groove/slot on the table and adjust it to the correct angle.
(iii) Adjust the height of the saw blade 1.5 to 3 mm above the thickness of the stock.
(iv) Push the fence out of the way and position the stock on the table holding it firmly against the mitre gauge.
(v) Hold the stock firmly against the mitre gauge and slide it to the blade and align it to cut on the waste side.
(vi) Turn on the saw and slide the stock towards the blade to make the cut.

Question 6

This question assessed candidates' knowledge and application of sub-module C2.3 — Joint Construction — from Module C2, Hand Tools and Laying Out. It was attempted by approximately 60 per cent of the candidates of which 50 per cent provided satisfactory responses.

Part (a) required candidates to produce a neat sketch of the following wood joints:

(i) Tongue and Groove
(ii) Mitre
(iii) End lap
(iv) Rebate
(v) Bridle

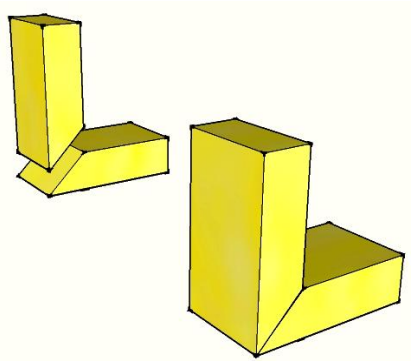
Of the number of candidates who attempted this part of the question, 60 per cent performed at a satisfactory level. However, most of these candidates were not able to produce appropriate sketches to represent the given joints. In some instances, graphical representations of the joints were partially done. As a result, some of the candidates were not able to achieve the maximum score. Time should be reserved during the teaching/learning process to enable students to become competent in both identifying and graphically producing common types of wood joints.

For Part (b), candidates were required to state two applications for each of the joints listed in Part (a). The general response to this part of the question was weak. Some candidates experienced difficulty expressing themselves fully in stating applications for the joints. The knowledge and application of woodworking joints is fundamental in the design and fabrication of furniture for production. There should be full coverage of all the objectives and contents of Module C2 of the syllabus. Classroom instruction should be so designed to enable students to become proficient in the knowledge and uses of woodworking joints commonly used for fabrication purposes. This will enable students to develop proficiency in the knowledge and application of skills essential for this learning level.

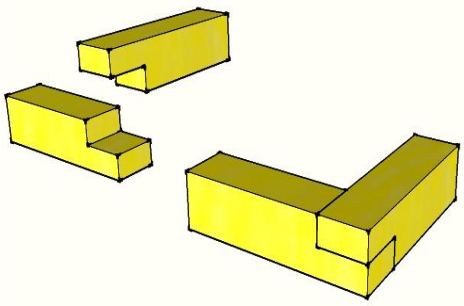
Typical examples of required joints in response to the question were:

(a) (i) Tongue and Groove joint

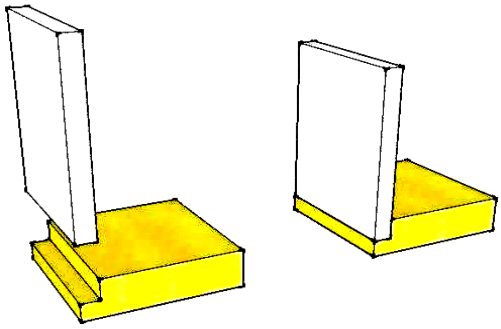
(ii) Mitre Joint



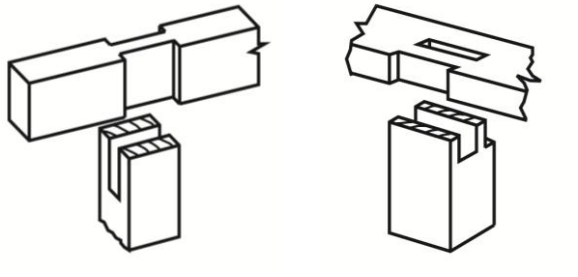
(iii) End Lap Joint



(iv) Rebate Joint



(v) Bridle Joint



(b) Any two of the following applications for joints were appropriate:

Tongue and Groove Joint

(i) Table top
(ii) Floor boards
(iii) Gates

Mitre Joint

(i) Picture frames
(ii) Plinth
(iii) Corner of boxes

End Lap Joint

(i) Joining corners
(ii) For light frame construction

Rebate Joint

(i) Used to provide recess on door jambs to accommodate doors
(ii) Used on the corners of boxes
(iii) Allow double doors to close flush
(iv) Used on floor boards for widening purposes
(v) Joining drawer sides to drawer face/front

Bridle Joint

(i) Used for corners
(ii) Applicable for frames
(iii) As framing — where table leg meets a rail away from the end

Section C

Candidates were required to answer one question from this section of the paper.

Question 7

This question assessed candidates' knowledge and application of Module C6 — Furniture Construction — with specific focus on sub-module C6.4, Household Furniture. This question was attempted by approximately 30 per cent of the candidates of which 40 per cent provided satisfactory responses.

This question was divided into four parts: (a), (b), (c) and (d). Part (a) asked candidates to state three advantages for using built-up timber/plywood over solid timber. Part (b) required candidates to produce a sketch showing a three-plywood with emphasis placed on the grain direction of each veneer. For Part (c), candidates were asked to state two reasons why edge treatment/lipping should be used when plywood edges are exposed.

Part (d) required the production of sketches to illustrate appropriate edge treatments to given situations.

Part (d) had two sub-sections. In Part (d) (i), candidates were asked to use sketches to show two methods required to apply lipping to a flush door while Part (d) (ii) required that they show two methods to be used to treat the edges of a counter or table top.

This question was not attempted by most candidates. Manufactured boards are used in the fabrication of furniture and other components by leading manufacturers and a number of woodwork shops. Candidates should become adequately exposed to the usage of, and care to be applied when using this material. Greater adherence should therefore be placed on the full coverage of the objectives and contents of Module C3 of the syllabus. Content delivery should be so designed to enable students to develop proficiency in the knowledge and application of skills essential for this learning level.

The responses expected for this question were:

(a) Three advantages of using manufactured boards over timber

(i) Built-up material is much stronger than the solid stock.
(ii) Built-up material is much wider than the solid stock.
(iii) There is little or no shrinkage problem in the built-up material.
(iv) Built-up material is resistant to splitting.

Rationale for advantages

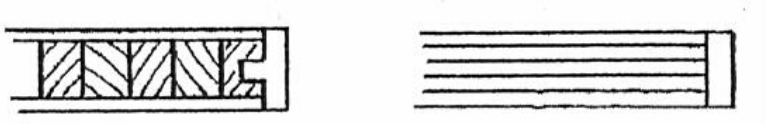
(i) The change of grain direction of each veneer/layer contributes to the added strength.
(ii) Because of the built-up techniques, by gluing-up a number of pieces together materials can be made wider or thicker.
(iii) The veneers or layers are placed at right angles and glued together, this technique eliminates movement and shrinkage.
(v) The gluing of layers to each other at right angles makes spitting impossible.

(b) Diagram of 3-plywood showing Veneer directions

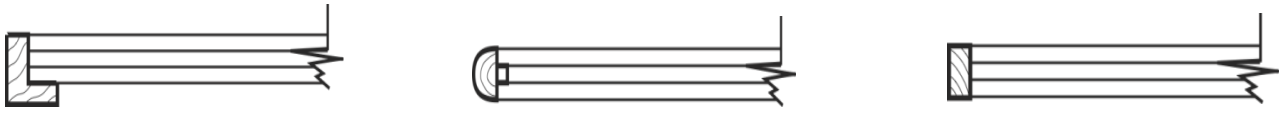
(c) Any two of the rationale below were appropriate

(i) Edge treatment such as lipping conceals unattractive and porous grains.
(ii) It protects plywood edges from peeling.
(iii) It improves the beauty of corners.
(iv) It is used to provide strength to plywood edges.

(d) (i) Edges of hollow core flush doors



(ii) Edge of counter or table top



corner guard half round flat strip

Question 8

This question was based on the objectives in sub-module C6.3 — Basic Cabinet Making — from Module C6, Furniture Construction. It was divided into three parts: (a), (b) and (c). Part (a) had two sub-sections while Part (c) had three sub-sections. Of the number of candidates who attempted this question, approximately 60 per cent of them provided satisfactory responses while 40 per cent provided weak responses.

For Part (a) (i), candidates were required to explain the difference between framed construction and carcase construction, while Part (a) (ii) required that they use suitable sketches to show each construction approach. For Part (a) (i), the responses from candidates who had some level of exposure to furniture construction were satisfactory. Weaker candidates encountered difficulty explaining the difference between the two construction approaches. Only 50 per cent of the candidates produced satisfactory responses for Part (a) (ii) of the question.

In Part (b), candidates were given an example of household furniture and asked to list four other types. This part of the question was generally well done. As was expected, candidates were quite familiar with various types of household furniture. For Part (c) (i), candidates were presented with the elevation of a wardrobe. They were required to state suitable joints to be used at the points labelled A and B on the given drawing. Candidates' responses to this part of the question were satisfactory. Part (c) (ii) required candidates to name two materials suitable to construct the wardrobe. This part of the question was generally well done by candidates. Part (c) (iii) asked candidates to state two suitable types of doors that could be used to enclose the wardrobe. This part of the question was attempted by 70 per cent of the candidates of which 65 per cent provided satisfactory responses.

Expected responses to this question included but were not limited to the following

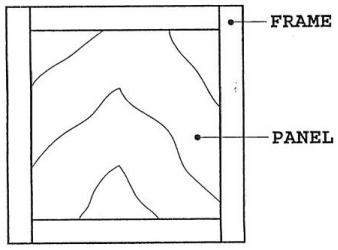
(a) (i) Frame construction (Panel-assembled Frame)

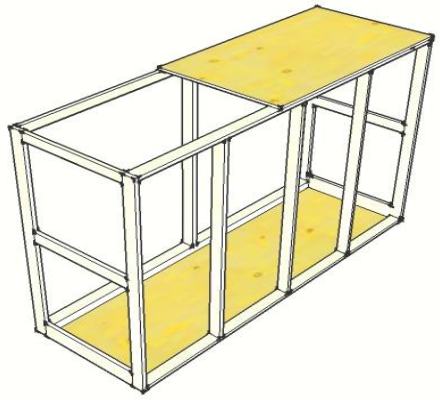
(i) The frame has four corner joints faced with hard wood/plywood to form a flush face
(ii) Inner edges may be rebated to form a picture frame
(iii) Ploughed grooves are used to enable solid wood panels to fit in the frame to form paneled doors

Carcase construction (Box-like Construction)

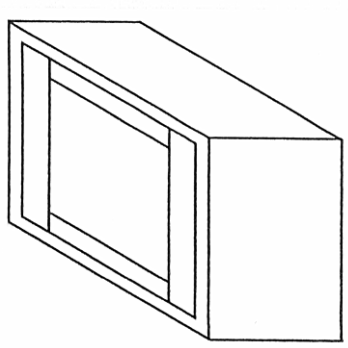
(i) It consists of sides a top, a base and a back lid.
(ii) The top is sometimes screwed to the top rails.
(iii) Housed joints may be used if shelves are needed.

(ii)





Sketch showing Framed Construction (Panel Assembled to a Frame)



Sketch showing Carcase Construction (Box-like Construction)

(b) The four types of household furniture included but were not limited to the following:

(i) Chest of drawers
(ii) Dresser
(ii) Dining set (chairs, table)
(iii) Coffee table
(iv) Bookshelf
(v) Entertainment centre

(c) (i) Suitable joints for A and B:

A – Lapped joint, butt joint
B – Butt joint, dowelled joint, dovetail joint, housing joint

(ii) Two materials for constructing the wardrobe included but were not limited to:

(i) Plywood
(ii) Medium density fibre board
(iii) Timber
(iv) Other materials such as metal and plastic.

(iii) Two types of doors to enclose the clothing compartment of the wardrobe included but were not limited to:

(i) Bi-fold door (jalousie type, panelled type)
(ii) Flush door
(iii) Sliding door

Question 9

This question required candidates to demonstrate their knowledge of Module C4 — Upholstery — with primary focus on sub-module C4.1, Tools and Materials. It was attempted by 65 per cent of the candidates 50 per cent of which gave satisfactory responses. This question contained three parts: (a), (b) and (c). It tested candidates' knowledge and application skills of upholstery materials, tools and fabrication processes. Candidates were given a pictorial drawing of an upholstered stool with sections removed to reveal the upholstery materials used in its construction. Selected members of the upholstery section of the stool were labelled A – E.

Part (a) required candidates to name the members labelled A – E in the drawing.

For Part (b), candidates were asked to list the names of five tools generally used for upholstery. This part of the question was generally well done.

In Part (c), candidates were asked to briefly explain five processes to be followed in applying the final covering material labelled B on the given drawing of the upholstered stool. Responses from 50 per cent of the candidates who attempted this part of the question were satisfactory. Weaker candidates had difficulty articulating the procedures required to apply the covering material and, in some cases, confused the processes. Field trips to upholstery furniture factories and workshops should be arranged by teachers to help students to concretize the theory and shop practice covered during classroom instruction. Teachers are referred to the objectives and contents of Module C4 of the syllabus.

The expected responses to this question were:

(a) Names of labelled members

(A) Loop button
(B) Fabric cover
(C) Foam — plastic or latex
(D) Welts, piping
(E) Burlap

(b) Five types of Upholstery tools

(i) Webbing stretcher
(ii) Ripping chisel
(iii) Pins and tacks
(iv) Electrical foam cutter
(v) Upholsterer's hammer
(vi) Stapling gun
(vii) Sewing machine
(viii) Cushion-filling machine
(ix) Hot melt adhesives
(x) Spring end-forming tool
(xi) Hot ring and hog ring pliers
(xii) Needle (regulator)
(xiii) Scissors
(xiv) Shears

(c) Five of the following processes may be followed in applying the covering material:

(i) List each piece of fabric needed. Record the width and length of each piece of fabric and the number of pieces that size.
(ii) Give each piece of fabric a name so that it is clearly identified.
(iii) Measure each piece of fabric in the order in which they appear on your list. This will help prevent missing a piece.
(iv) Using a tape measure, add four inches extra for parts to be pulled around a frame and tacked. Allow 2 inches for parts that will be pulled tight with fabric stretcher. Allow ½ inch for each seam required or for tacking to a wood frame.
(v) Pull the material tightly over the surface to be covered.
(vi) Measure the width first. The pattern in the fabric must run across the width.
(vii) Lay out the measurements of each part on paper. (This forms a pattern for each part.)
(viii) Cut these patterns to size bearing in mind those needing allowance.
(ix) Pin the patterns on the fabric. (Be certain to observe the direction the design in the fabric will run. Place the patterns so that the design runs in the direction desired. The nap of the fabric should be raised).

Paper 03 – School-Based Assessment (SBA)

Rationale

The SBA component of the Building Technology — Woods option measured the practical skills not tested on the multiple choice and free response papers (Papers 01 and 02).

The assignments set for the SBA were intended to deepen students' knowledge and help them achieve competency in skills required in the Building/Woodwork industry and which are within the competence of secondary school candidates.

By focusing on processes as well as product, the SBA component was designed to allow students to demonstrate improvement in skills over a period of time and for their teachers' involvement in the process.

Requirements

Each candidate was required to complete a practical and a written assignment, during terms four and five of the two-years' course (terms one and two of the examination year). The practical assignment is worth 90 marks and the written assignment is worth 30 marks.

Practical Assignment

For the practical assignment, students were required to construct a project designed to utilize the skills and knowledge covered in the syllabus. Students were given the option to choose one project from a list of three provided by CXC to meet preset requirements. All dimensions for the project were given in millimetres (mm) unless otherwise stated. The project was not to exceed the dimensions of 700 mm long x 400 mm wide x 400 mm deep. Dimensions omitted were left to the students' discretion.

Each student was expected to

(i) provide a plan sheet for the project which must include the following:

a) drawings and/or sketches
b) steps of procedure
c) a bill of materials
d) a list of tools and equipment to be used

(ii) construct a project

The particulars of the project had to be approved by the teacher prior to commencement.

Written Assignment

The written assignment took the form of a report of about 1000–1200 words based on the Common Module: Career Opportunities. Students were required to write on the topic set by CXC for each examination. The topic was based on the following themes in the module:

(i) Job Search
(ii) Career Choice
(iii) Industrial Visits
(iv) Profile of Engineer or Inventor

Students were assessed on accuracy of information, clarity of presentation, the use of technical language and knowledge of career opportunities in the building technology industry as outlined in the Common Module of the unit.

RECOMMENDATIONS TO TEACHERS

General recommendations to teachers for previous years are repeated here for those who are new and for those who may not have seen them before. However, all teachers are encouraged to pay attention to the suggestions which follow in an effort to improve students' overall performances in the examination.

1. Students must be encouraged to read the examination questions carefully and follow instructions precisely, as valuable time can be wasted in producing work that will not produce extra marks.

2. Students must be encouraged to take both aspects of the SBA (the written assignment and the practical project) very seriously as the SBA accounts for a very large portion of the overall marks in the Building Technology examination. For more information on the importance of this aspect of the examination see pages 8–9 of the amendment to the syllabus in Industrial Technology which is placed at the back of the Industrial Technology syllabuses of May/June 2002.

3. Students should be given opportunities to produce more detailed sectional sketches which will assist in improving their knowledge and understanding of vertical and horizontal sections of furniture components.

4. Details and construction processes require serious attention. In this regard, it is suggested that teaching aids (models, videos and charts) should be used in the laboratories/workshops where applicable to depict different approaches related to specific modules of the syllabus that have complex processes.

5. Where possible, field trips should be organized to furniture manufacturing plants and factories, which produce materials for furniture, to concretize the processes taught during classroom instruction.

6. Students must be constantly reminded that all sketches must be labelled where marks are awarded for labelling.

7. Particular attention should be paid to Question 1 in Paper 02. This question is worth 40 marks and usually requires students to produce a number of detailed sketches. Students who are not skilled at sketching are likely to find this question very challenging. Therefore, teachers are encouraged to provide students with opportunities/activities to help them develop their sketching skills. Note: *Always remind students that only Question 1 should be done on the drawing paper provided for the examination. All other questions must be done in the answer booklet*.

8. Since scale drawing is no longer required, students must note that well proportioned sketches should be produced. Additionally, students must acquire a good knowledge of furniture fabrication processes in order to perform well on the question.

9. Where sections of the syllabus prove to be beyond the delivery capabilities of the teacher, it is suggested that he/she solicit the help of subject experts. Note: *This is especially important when the section contain hands-on practical work which may not be applicable in the workshop*.