CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE®
EXAMINATION

23 MAY 2018 (a.m.)

M1801374020

FILL IN ALL THE INFORMATION REQUESTED CLEARLY IN CAPITAL LETTERS.

TEST CODE | 0 | 1 | 3 | 7 | 4 | 0 | 2 | 0 |

SUBJECT INDUSTRIAL TECHNOLOGY
OPTION C – BUILDING AND FURNITURE TECHNOLOGY – Paper 02

PROFICIENCY TECHNICAL

REGISTRATION NUMBER | | | | | | | | | | |

SCHOOL/CENTRE NUMBER					

NAME OF SCHOOL/CENTRE

CANDIDATE'S FULL NAME (FIRST, MIDDLE, LAST)

DATE OF BIRTH | | | | | | | | |

SIGNATURE _____

DO NOT
WRITE ON
THIS PAGE



0137402002



FORM TP 2018080

TEST CODE 01374020

MAY/JUNE 2018

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

INDUSTRIAL TECHNOLOGY

OPTION C – BUILDING AND FURNITURE TECHNOLOGY

Paper 02 – Technical Proficiency

2 hours 10 minutes

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

1. This paper consists of FIVE compulsory questions.
2. Use sketches where necessary to support your answers.
3. Write your answers in the spaces provided in this booklet.
4. Do NOT write in the margins.
5. You may use a silent, non-programmable calculator to answer questions.
6. This paper contains metric dimensions only. You should work your answers in the metric system.
7. If you need to rewrite any answer and there is not enough space to do so on the original page, you must use the extra lined page(s) provided at the back of this booklet. **Remember to draw a line through your original answer.**
8. **If you use the extra page(s) you MUST write the question number clearly in the box provided at the top of the extra page(s) and, where relevant, include the question part beside the answer.**

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.

Copyright © 2017 Caribbean Examinations Council
All rights reserved.

NOTHING HAS BEEN OMITTED.

GO ON TO THE NEXT PAGE

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

BUILDING AND FURNITURE TECHNOLOGY

Answer all questions.

This paper contains metric dimensions only. You should work your answers in the metric system.

1. (a) Use suitably labelled freehand sketches to differentiate among ANY THREE of the following timber defects:

(i) Bowing
(ii) Live knot
(iii) Split
(iv) Cup shake
(v) Twists

(6 marks)

DO NOT TURN OVER UNTIL TOLD TO DO SO

(b) Figure 1 shows the pictorial view of a chair made from solid timber and plywood. The chair is designed to be used in the eating area of an early childhood educational centre.

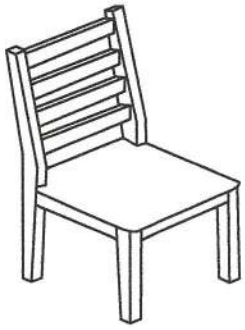


Figure 1. Pictorial view of a wooden chair

(i) Outline THREE sequential steps to be followed to spray the wooden chair with varnish.

.....

.....

.....

.....

.....

.....

.....

.....

(6 marks)

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

(ii) Suggest FOUR benefits to be derived from using stain as a finishing material on the wooden chair in Figure 1 **on page 6**, prior to applying varnish.

.....

.....

.....

.....

.....

.....

.....

.....

(4 marks)

(iii) If the wooden chair, in Figure 1 **on page 6**, is to receive an oil-based paint finish, describe how the following can be used as surface preparation materials:

Wood filler

.....

.....

.....

Shellac/knotting compound

.....

.....

.....

(2 marks)

Total 18 marks

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

2. Figure 2 shows the floor plan for a single-storey dwelling house. The roof is designed with gable and hipped ends as shown. The roof extends 300 mm beyond the external wall.

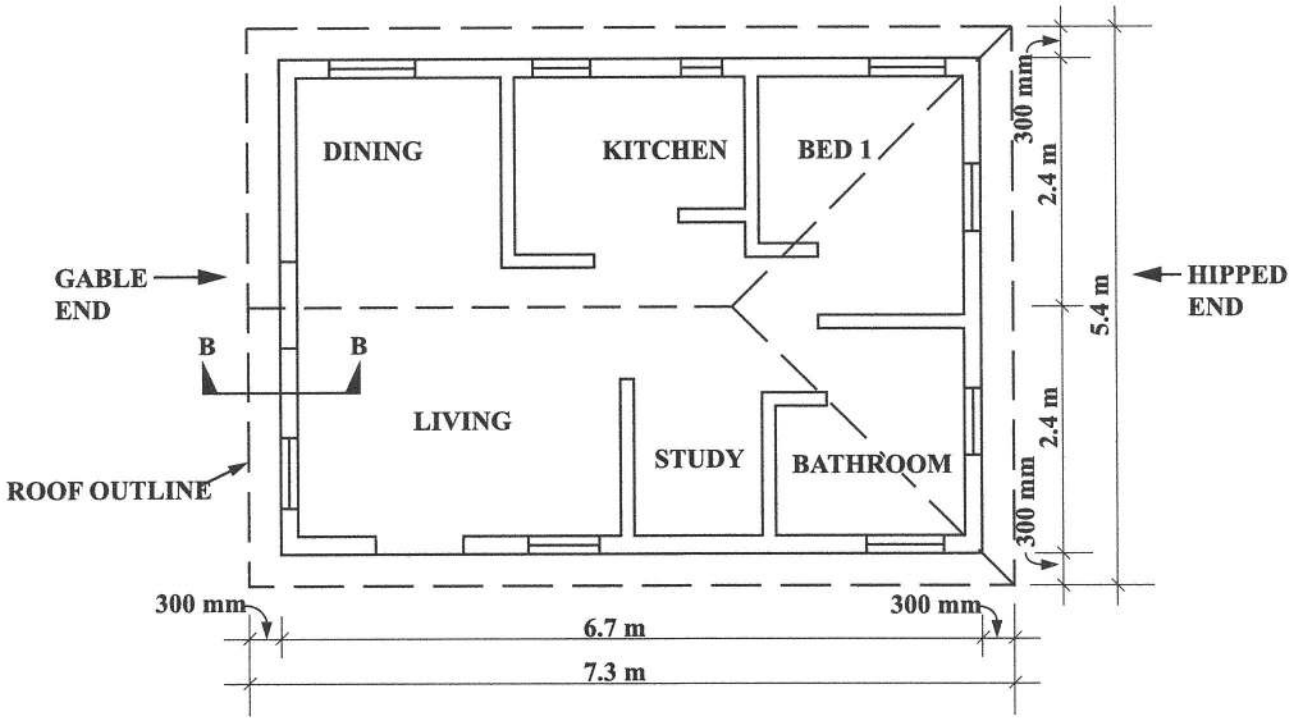


Figure 2. Floor plan of a single-storey dwelling

(a) **On page 9** produce, using a neat single line diagram, a roof framing plan of the hipped end of the roof in Figure 2 to show any FOUR of the following roof members:

(i) Hip rafter
(ii) Ridge board
(iii) Crown/principal rafter
(iv) Jack rafter
(v) Fascia board **(6 marks)**

Note: Only the outline of the external walls is required for this part of the question.

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

Space for diagram.

(b) (i) State the purpose of the ridge board in the design of the roof in Figure 2 **on page 8**.

.....

.....

(2 marks)

(ii) Name FOUR types of roof coverings that are suitable for the roof in Figure 2.

.....

.....

.....

.....

(4 marks)

GO ON TO THE NEXT PAGE

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

(iii) Use a suitably labelled sketch to show how a common rafter should be fixed to the wall plate.

(3 marks)

(c) If the total rise of the roof in Figure 2 is 1.5 m, calculate the actual length of the common rafter.

.....

.....

.....

.....

.....

.....

Note: You are required to list the formula and show your working. The overhang should not be included.

(3 marks)
Total 18 marks

GO ON TO THE NEXT PAGE

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

3. (a) (i) Define the term 'concrete'.

.....

.....

(2 marks)

(ii) List TWO manual tools that are used to prepare a batch of concrete.

.....

.....

.....

(2 marks)

(iii) Name TWO types of tests that are carried out on a concrete mix.

.....

.....

.....

(2 marks)

(b) Describe specific conditions that require the use of EACH of the following types of foundations:

(i) Raft

.....

.....

.....

(ii) Pad

.....

.....

.....

(iii) Short-bored pile

.....

.....

.....

(6 marks)

GO ON TO THE NEXT PAGE

(c) Figure 3 shows part of a masonry block wall which is built on a sloping plot of land. The wall is supported by a simple strip foundation at the substructure level.

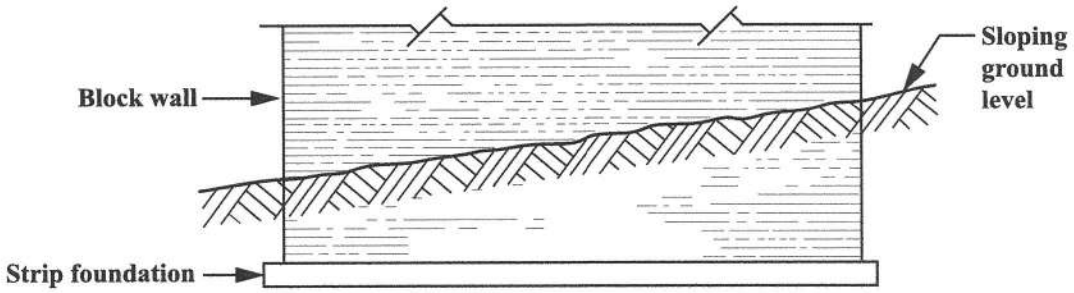


Figure 3. Block wall on sloping plot of land

(i) Briefly outline TWO practical benefits of using a stepped strip foundation as an alternative to the strip foundation shown on the plot of land in Figure 3.

.....

.....

.....

.....

.....

.....

(2 marks)

(ii) Use a suitably labelled sectional sketch to show how a stepped strip foundation would be designed to produce the benefits you outlined in (c) (i).

(4 marks)
Total 18 marks

GO ON TO THE NEXT PAGE

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

4. (a) Suggest TWO uses for EACH of the following types of wood joints in furniture construction:

(i) Dovetail joint

.....

.....

.....

.....

.....

(ii) Housing joint

.....

.....

.....

.....

.....

(iii) Rebated joint

.....

.....

.....

.....

.....

(6 marks)

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

(b) Figure 4 shows a pictorial view of a table constructed from solid timber material.

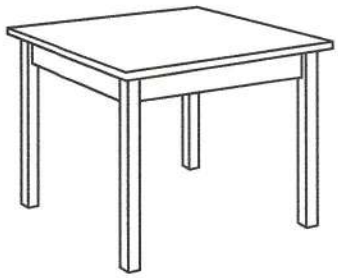


Figure 4. Pictorial view of a wooden table

(i) Use a neat labelled sketch to show a suitable method to join pieces of timber to achieve the width of the tabletop.

(3 marks)

GO ON TO THE NEXT PAGE

DO NOT EDITE IN THIS AREA DO NOT EDITE IN THIS AREA DO NOT EDITE IN THIS AREA

(ii) Suggest THREE ways to secure the tabletop to the frame.

.....

.....

.....

.....

(3 marks)

(iii) Outline THREE sequential steps to be followed to chop/dig out the mortise to fit the tenon joint in the table leg shown in Figure 4 **on page 14**.

.....

.....

.....

.....

.....

.....

(6 marks)

Total 18 marks

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

5. (a) A number of activities are generally considered when selecting and preparing a building site for construction purposes.

(i) State THREE factors to be considered when choosing a building site.

.....

.....

.....

.....

.....

.....

(3 marks)

(ii) Name THREE operations that should be carried out when clearing a building site.

.....

.....

.....

.....

.....

.....

(3 marks)

DO NOT EDITE IN THIS AREA DO NOT EDITE IN THIS AREA DO NOT EDITE IN THIS AREA

(b) Figure 5 shows an incomplete site layout plan with the location of the proposed building. Generally, these sites are organized to enable efficiency in construction activities.

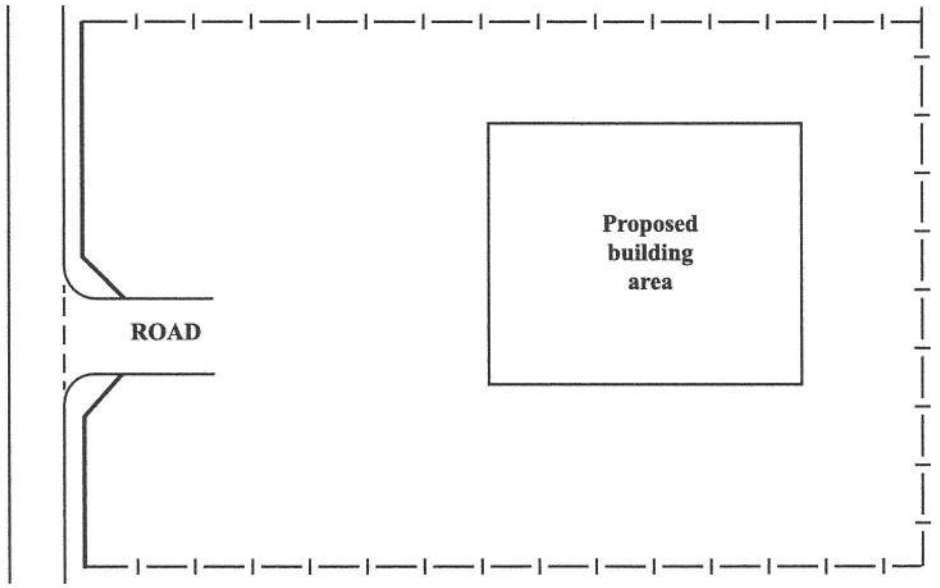


Figure 5. Site layout plan

(i) Use labelled single line boxes to show the location of EACH of the following facilities on the site layout plan in Figure 5:

- Storage area for cement, aggregates
- General material storage
- Security post/site office
- Sanitary facilities and mess room **(4 marks)**

(ii) Outline, briefly TWO benefits of hoarding on a building site.

.....

.....

.....

.....

(2 marks)

(c) Use a neat freehand sketch to reproduce the site layout plan given in Figure 5 **on page 17**. Include any FOUR of the following site plan symbols:

- Direction of North
- Property lines
- Location of the building/front setback
- Location of a proposed septic tank
- Location of a proposed water main/line
- Location of a proposed power line **(6 marks)**

Total 18 marks

END OF TEST

IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS TEST.

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

EXTRA SPACE

If you use this extra page, you MUST write the question number clearly in the box provided.

Question No. ☐

EXTRA SPACE

If you use this extra page, you MUST write the question number clearly in the box provided.

Question No. [ ]





EXTRA SPACE

If you use this extra page, you MUST write the question number clearly in the box provided.

Question No. ☐

EXTRA SPACE

If you use this extra page, you MUST write the question number clearly in the box provided.

Question No. [ ]

DO NOT WRITE ON THIS PAGE

CANDIDATE'S RECEIPT

INSTRUCTIONS TO CANDIDATE:

1. **Fill in all the information requested clearly in capital letters.**

TEST CODE: | 0 | 1 | 3 | 7 | 4 | 0 | 2 | 0 |

SUBJECT: INDUSTRIAL TECHNOLOGY
OPTION C – BUILDING AND FURNITURE TECHNOLOGY – Paper 02

PROFICIENCY: TECHNICAL

REGISTRATION NUMBER: | | | | | | | | | | |

FULL NAME: _____
(BLOCK LETTERS)

Signature: _____

Date: _____

2. **Ensure that this slip is detached by the Supervisor or Invigilator and given to you when you hand in this booklet.**

3. **Keep it in a safe place until you have received your results.**

INSTRUCTION TO SUPERVISOR/INVIGILATOR:

Sign the declaration below, detach this slip and hand it to the candidate as his/her receipt for this booklet collected by you.

I hereby acknowledge receipt of the candidate's booklet for the examination stated above.

Signature: _____
Supervisor/Invigilator

Date: _____

0137402024