

Candidates answer on the Question Paper.

No Additional Materials are required.

## To be taken together with Paper 1 in one session of 2 hours 15 minutes.

## READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.Write in dark blue or black pen.You may use a soft pencil for any diagrams or graphs.Do not use staples, paper clips, highlighters, glue or correction fluid.DO **NOT** WRITE IN ANY BARCODES.

Section A Answer all questions. Section B Answer one question.

You may use a calculator.

At the end of the examination, fasten all your work securely together. The number of marks is given in brackets [] at the end of each question or part question.

For Examiner's Use		
Section A		
Section B		
Total		

This document consists of 14 printed pages and 2 blank pages.





Name	Diagraffi	036
Pear cam and flat follower		Valve operation
		Bicycle transmission



Complete the table below. 6

Complete the table below.	4	www.papaca	For Examiner's Use
Name	Diagram	Use	Se .
Honeycomb cells		[1]	S.COM
[1		[1]	
'I' Section beam	[2]	Steel framed buildings	

Identify the logic gate shown in the diagram below. 7



		[1]
8	(a) State the purpose of an LDR transducer.	
		[1]
	(b) Give one example of the use of an LDR.	
		[1]
9	Give <b>one</b> example of the use of a strain gauge.	
		[1]
10	Name <b>two</b> methods of reinforcing a square framed structure.	
		[2]



(iii)	6 Give one reason for the top driven gear wheel nearest the handle.	Cambric Cambric
(c) Exp	plain why the handle is cranked.	[2]
 	e driver wheel has 60 teeth and the driven wheels have 12 teeth each.	[3]
(i)	Calculate the gear ratio for this mechanism.	
(ii)	If the driver wheel is turned at 60 rpm, calculate the speed of the drill chuck.	[3]

	4	
	34	1
	202	For Examiner's
<b>(e)</b>	Fig. 2 shows a toothed belt drive arrangement.	Use
	pulley A contraction of pulley B drive belt Fig. 2	Tidge.com
	(i) Give <b>one</b> benefit of using this type of belt drive.	
	[1]	
(	II) Explain one drawback of using this type of belt drive.	
	[2]	
/:	ii) Cive and eventile of the use of this type of helt drive	
(I	nj Give one example of the use of this type of beit drive.	
	[1]	
(i	v) Explain how you would calculate the Velocity Ratio of this belt drive.	
	[3]	
(f)	Give <b>one</b> other type of pulley drive belt and give <b>one</b> use.	
·		
	[2]	



	*	
	52	
	9	For Examiner's
(c)	Explain the following functions of a structure.	Use
	Support:	Sr.
		Se
		·CON
	[2]	
	Span:	
		-
	[2]	
	Contain:	
	[2]	
(d)	Structures can be subjected to static and dynamic forces.	
	Explain, using examples, the difference between static and dynamic forces.	
	[3]	



1	 [1]
2	 [1]
3	 [1]

(ii) Part 4 is a strut.

Use sketches and notes to explain the type of load experienced by a strut.





	(iv)	13 Explain the purpose of component <b>C</b> .	For Examiner's Use
		[	3]
	(v)	State the purpose of the resistor E.	
(c)	The	pair of 10 kΩ resistors labelled <b>D</b> are known as a potential divider.	1]
(-)	Exp	plain the term potential divider.	
		[	 3]
(d)	Exp bea	plain how the circuit shown in Fig. 5 could be simply modified to count when the lig Im is shining on component <b>A</b> .	ht
		[	3]

www.papacambridge.com (e) Logic gates could be used to control a counter. Fig. 6 shows a pressure pad circ is used to trigger a counter when a person steps on pad P and, at the same presses the push button **Q**.



(i) Complete the truth table below for this logic circuit.

Pad P On/Off	Pad Q On/Off	Counter state On/Off
Off	Off	Off
Off	On	
On	Off	
		On
		[4]

(ii) Identify the type of logic circuit shown.

[1] .....



**BLANK PAGE** 



**BLANK PAGE** 

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

University of Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of