Mixed timed exam practice

LEARNING INTENTION

We are learning to answer mixed electronics questions under time pressure.

SUCCESS CRITERIA — I CAN

- ☐ spend about 1 minute per mark
- ☐ pick out the command word and the marks
- ☐ show working with units in calculations
- ☐ check answers against the Short Circuit tips

How to use this lesson

This lesson is a timed paper. You have 24 minutes for 20 marks. Use the Data Booklet. Show your working.

WORKED EXAMPLE Time plan

1 GIVEN	2 FIND	3 FORMULA	4 SUBSTITUTE	5 ANSWER + UNIT
20 marks 24 minutes	time per question	about 1 min per mark + 4 min to check	2-mark question → 2 min 6-mark flowchart → 6 min	≈ 1 min per mark

If stuck, move on and come back.

SHORT CIRCUIT

× WHAT EXAMINERS SAW

Final answers were given without units, or rounded too early.

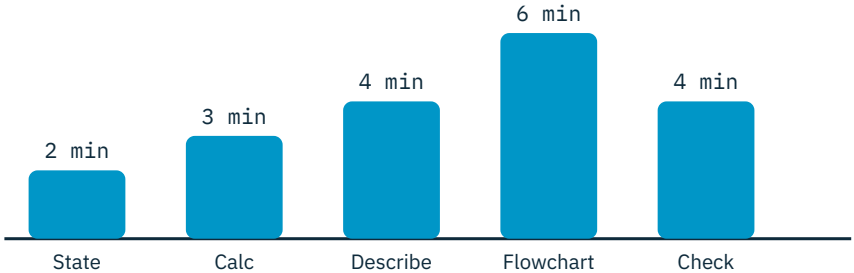
✓ THE FIX

Keep full values until the end. Give the unit with every final answer.

Course reports 2024–2026.

Read	Plan	Check
command word + marks	1 min per mark	units, pin numbers, labels

Timing and routine



Plan your time

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THE CALCULATION ROUTINE

1. Read: underline values and command word
2. Write the formula
3. Substitute with units
4. Answer + unit, then check

1 2 3 4

WORKED EXAMPLE Plan before you write

1 GIVEN	2 FIND	3 FORMULA	4 SUBSTITUTE	5 ANSWER + UNIT
Q: calculate the voltage across R_2 (10 kΩ top, 4.7 kΩ bottom, 6 V)	V_2	$V_2 = (R_2 / (R_1 + R_2)) \times V_s$	$V_2 = (4.7 / 14.7) \times 6$	**1.92 V**

Write the formula first: it often earns a mark.

WORKED EXAMPLE Energy from power and time

1 GIVEN	2 FIND	3 FORMULA	4 SUBSTITUTE	5 ANSWER + UNIT
12 V, 1.5 A, 2 min	energy	P = VI, E = Pt	P = 12 × 1.5 = 18 W t = 2 × 60 = 120 s E = 18 × 120	**2160 J**

Convert minutes to seconds.

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WRONG

$$E = 18 \times 2 = 36$$

Minutes used and no unit: marks lost.

RIGHT

$$E = Pt = 18 \times 120 = 2160\ J$$

Time in seconds, unit given.

PROBE · QUICK CHECKS

1. Minutes per mark? _____
2. What goes with every final answer? _____
3. Explain needs... _____

EXAM READY · 20 MARKS

1 Two resistors, 4.7 kΩ (R_1) and 2.2 kΩ (R_2), form a voltage divider across 9 V. **Calculate** the voltage across R_2. **[3]**

2 A 12 V pump draws 2.5 A for 30 s. **Calculate** the energy used. **[3]**

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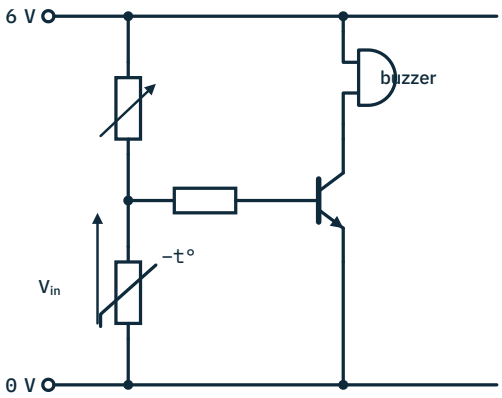
3 **Complete** the truth table for $Z = (A \bullet \overline{B}) + C$. **[2]**

A	B	C	Z
0	0	0	
0	0	1	
0	1	0	
0	1	1	
1	0	0	
1	0	1	
1	1	0	
1	1	1	

4 **Describe** the operation of this circuit as the temperature falls. **[4]**



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5 A lamp on pin 3 flashes 4 times (on 1 s, off 1 s) when a switch on pin 0 is pressed. **[6]**
Complete the flowchart.



6 **State** an emerging technology. **[1]**

7 **State** the type of engineer who designs the cable to an offshore turbine. **[1]**