



Complete, fold and seal
(see note 2 below)

Examination Answer Books

12 Pages

SURNAME: BARNARD

FORENAME(S): MATTHEW JAMES

Instructions to Candidates

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right, fold over and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiners can either ignore illegible script or have it typed and the expense of typing charged to the candidate.
4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.

1	Student Number	1702418
2	Title of Examination Paper	TRANSDUCERS AND SIGNAL <i>cond striking</i>
3	Module Code	ACDA5006
4	Date and Time of Examination	15/05/2019
5	Examination Venue	IQ310
6	Seat Number	G002
7	Number of Answer Books handed in	

List the numbers of the questions you have attempted	Office Use
1	2 1/2
2	4
3	1 1/2
4	4
5	4
6	1
Total	17

40.5%

40.5%

① Accuracy - Is how close to the actual number estimated you are and can be affected by how the user looks at the readings or the tolerances ~~and~~ of the components.

② Precision - Is how depending on if the machines used for measurement are calibrated and a precise number will not be given.

2 1/2
2.5

③ See graph - ④

④ 21°C

$$\frac{3-2}{3-2} \cdot \frac{1}{1} = 1$$
$$1^2 + 1^2 = 2 \quad y = mx + c$$

Sensitivity = 1

$$c^2 = 2 \quad 0 = mx + c$$

⑤ 35°C

$$c = \sqrt{2} \quad 1 = m$$

$$\frac{\pm}{2.15} \quad c^2 = 2.15^2 + 1^2$$
$$c = \sqrt{2.15^2 + 1^2}$$

~~2.15~~ $2.15 \times 1 = 1.15$

$$c = 2.371$$

2.09

$$1.3 = mx + 1$$

⑥ zero drift: $\frac{4.6 - 0.2}{35} = \frac{4.4}{35}$

$$\frac{4600 - 200}{35} = 125.714 \mu m/^\circ C$$

⑥ sensitivity drift. = $\frac{(4800 - 200)}{100} / 35$

$$= \frac{44}{35}$$

$$= \underline{1.257 (\mu\text{m/kg})/^\circ\text{C}}$$

Q2 = 4

③
a)

$$\frac{4.292 + 4.295 + 4.296 + 4.293 + 4.292 + 4.294 + 4.293 + 4.290 + 4.294 + 4.291}{10}$$

$$= 4.293$$

$$\frac{4.293}{4.2733} = \underline{0.9083\text{m}}$$

$$\pm 0.003\text{m}$$

Agree

⑤

$$4.296 - 4.290 = \underline{0.006\text{m}}$$

⑥

$$4.429 - 4.424 = \underline{0.006\text{m}}$$

⑦ Calibrate the device so that any inaccuracies will not occur.

Q3 = 1 1/2

⑧ Random errors are errors that cannot be explained and can occur at any moment in time.

Systematic errors are errors that occur through either the software or hardware being used.

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a) See graph - (4)

(4)

$$\frac{12.41}{45.82} \times 100 = 27.054\%$$

c)

$$a^2 + b^2 = c^2$$

$$c^2 = 3.4^2 + 20^2$$

$$c = \sqrt{3.4^2 + 20^2}$$

$$c = 20.286$$

$$c = \underline{20.287}$$

6

a)

• what is the tyre pressure supposed to be at.

• How does it turn off once its done

• It'll measure the pressure already in tyre.

b)

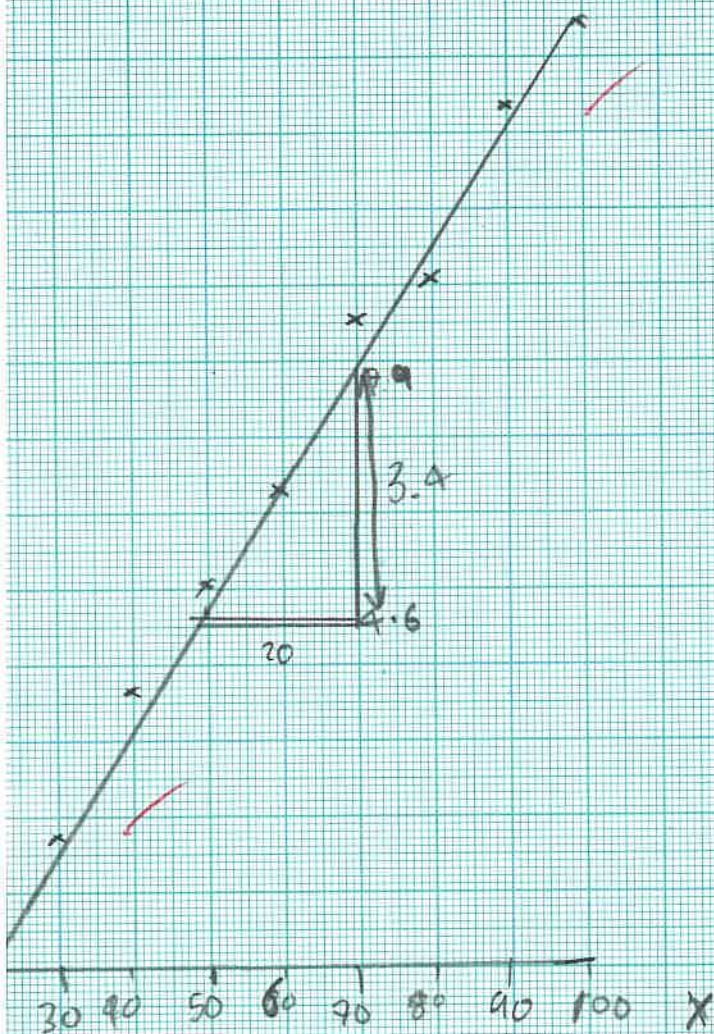
• Measure the current altitude.

• Does it match the altitude given by pilot

(1)

(1)

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