



Test Answer Sheet

Surname:	Subject:
Name:	Date:
ID number:	Time:

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Q N 5:

Invigilated by:

@ $R_1 + R_2 + R_5$ are in series

$$R = 22 + 120 + 50 = 192 \Omega$$

$$R_3 + R_4 = 10 + 100 = 110 \Omega$$

Branches in parallel:

$$\frac{1}{R_T} = \frac{1}{110} + \frac{1}{192}$$

$$= 0,014299$$

$$R_T = 69,93 \Omega \approx 70 \Omega$$

⑥ V across R_2

using the voltage divider rule:

$$\frac{120}{192} \times 12 = 7,5V$$

Across R_4

$$\frac{100}{110} \times 12 = 10,91V$$

Across R_5

$$\frac{50}{192} \times 12 = 3,125V$$

Resistors:

- ③ limiting current
- dividing voltage
- creation of resistor/capacitor networks

④ Inductors:

- smoothing voltage in a power supply
- frequency filters
- radio tuning circuits
- in transformers

Do not write in this space, it is provided for marking

Qn 6.

③ Inverting Amplifier

$$\text{Gain} = -\frac{R_f}{R_{in}}$$

$$7.5 = \frac{R_f}{8.3 \times 10^3}$$

$$R_f = 62.25 \times 10^3 \\ = 62.25 \text{ k}\Omega$$

④ Inverting Summing Amplifier

$$\text{②} \quad -\left(\frac{R_1}{R_2}\right)V_{in} + -\left(\frac{R_1}{R_3}\right)V_{in2} = V_{out}$$

$$-\left(\frac{10}{1} \times 2\right) + -\left(\frac{10}{2} \times 5\right)$$

$$-20 - 25 = -45 \text{ V}$$

⑤ Infinite open loop gain
Infinite input impedance

Zero output impedance

Zero offset voltage

Infinite Bandwidth

Zero Noise Contribution