higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T1490**(E)**(A5)T

NATIONAL CERTIFICATE

RADIO AND TELEVISION THEORY N3

(11040843)

5 April 2019 (X-Paper)
09:00–12:00

Scientific calculators may be used.

This question paper consists of 5 pages.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
RADIO AND TELEVISION THEORY N3
TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Keep subsections of questions together.
5. Sketches must be neat.
6. Write neatly and legibly.

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QUESTION 1

1.1 Draw a neat fully labelled additive colour-mixing triangle. (7)

1.2 Give the additive colour-mixing equation for the triangle in QUESTION 1.1. (7)
[14]

QUESTION 2

Choose an item from COLUMN B that matches a description in COLUMN A. Write only the letter (A–K) next to the question number (2.1–2.10) in the ANSWER BOOK.

COLUMN A		COLUMN B	
2.1	Heterodyne	A	ionosphere
2.2	Demagnetising	B	dipole
2.3	Vertical oscillator	C	CRT
2.4	LOPT	D	voltage regulator
2.5	Antenna	E	degaussing
2.6	Indicator	F	hue
2.7	Zener diode	G	LED
2.8	Shadow mask	H	EHT generator
2.9	Colour intensity	I	alternating current
2.10	Refraction of waves	J	50 Hz scanning
		K	mixer

(10 × 1) **[10]**

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QUESTION 3

Explain each of the following colour TV receiver terms:

3.1 Sync separator

3.2 Field oscillator circuit

3.3 Flywheel sync

3.4 Line oscillator

3.5 EHT generation

(5 × 4) **[20]**

QUESTION 4

Explain the steps to take when doing purity adjustment. **[7]**

QUESTION 5

5.1 Draw a neat fully labelled circuit diagram of an autodegaussing circuit and the current waveform of a colour receiver. (8)

5.2 Discuss how automatic degaussing is obtained in a colour receiver set. (7)

5.3 Describe TWO important factors to consider when designing IF amplifiers. (4)

[19]

QUESTION 6

Draw a neat fully labelled sketch of a simple resistive matrix circuit to form a G-Y signal. **[5]**

QUESTION 7

Draw a neat fully labelled sketch of a chopper power supply. **[7]**

QUESTION 8

List SEVEN advantages of a digital multimeter. (7 × 2) **[14]**

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QUESTION 9

Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (9.1–9.4) in the ANSWER BOOK.

9.1 The centre impedance of a folded dipole is 75 Ω.

9.2 Transistors are normally used as amplifiers in colour TV receivers.

9.3 RGB drives refer to colour amplifiers in monochrome TVs.

9.4 Pincushion distortion refers to deformation of a picture.

(4 × 1) **[4]**

TOTAL: 100

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