higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

RADIO AND TELEVISION THEORY N3

(11040843)

23 November 2022 (X-paper)
09:00–12:00

Drawing instruments and scientific calculators may be used.

This question paper consists of 5 pages.

169Q1E2223

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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. Start each section on a new page.
5. Use only a black or a blue pen.
6. Write neatly and legibly.

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QUESTION 1

Discuss the THREE properties of colour visible on a TV. **[6]**

QUESTION 2

Explain the following colour TV stages:

2.1 Contrast

2.2 FM detector

2.3 Phosphor

2.4 Tuner

2.5 Inter-carrier sound

(5 × 2) **[10]**

QUESTION 3

List the stages and faults that are linked to line and fields stages. **[8]**

QUESTION 4

4.1 Explain what is meant by *auto-degaussing*. (3)

4.2 Draw a neat fully labelled circuit diagram of an auto-degaussing circuit and the current waveform of a colour receiver. Also show the input waveform. (8)

[11]

QUESTION 5

Explain in EIGHT steps how purity adjustment can be carried out. (8 × 2) **[16]**

QUESTION 6

Draw a labelled diagram of a switch mode (chopper) power supply. **[7]**

QUESTION 7

With the aid of a labelled graph, fully describe how Gamma correction is applied. **[14]**

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QUESTION 8

With the aid of labelled sketches, describe how a triad is formed in a delta form by a shadow mask tube. **[10]**

QUESTION 9

Choose an item from COLUMN B that matches a description in COLUMN A. Write only the letter (A–I) next to the question number (9.1–9.7) in the ANSWER BOOK.

COLUMN A		COLUMN B	
9.1	Deformation of the picture	A	dynamic convergence
9.2	Rejects signals at the chrominance IF frequency.	B	degaussing
9.3	Can be done by using a cross-hatch pattern.	C	clamping
9.4	Demagnetisation of the screen	D	R-Y
9.5	Restores the DC component of the colour difference drives	E	video detector
9.6	Colour difference signal	F	decolouring
9.7	A non-linear device	G	notch filter
		H	pincushion distortion
		I	Y-R

(7 × 1) **[7]**

QUESTION 10

Define the following camera tube terms:

10.1 Dark current

10.2 Resolution

10.3 Aspect ratio

(3 × 2) **[6]**

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QUESTION 11

11.1 Give the frequencies in I.F. amplifiers for the following I.F. signals:

11.1.1 Sound I.F.

11.1.2 Chrominance I.F.

11.1.3 Luminance I.F.

(3 × 1) (3)

11.2 Name TWO types of tuners used in television receivers. (2)

[5]

TOTAL: 100

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