higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T1490(**E**)(J31)T

NATIONAL CERTIFICATE

RADIO AND TELEVISION THEORY N3

(11040843)

31 July 2018 (X-Paper)
09:00–12:00

Nonprogrammable 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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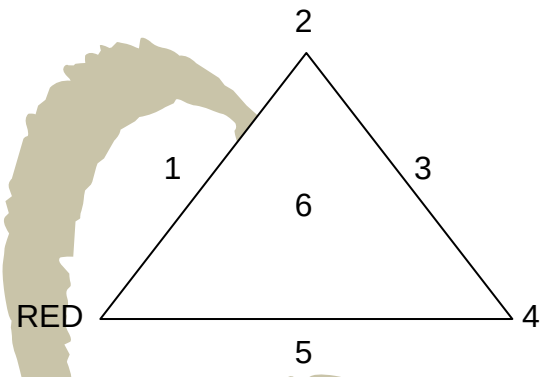
QUESTION 1

1.1 Redraw the triangle in the ANSWER BOOK and fill in the missing colours.



(6)

1.2 Calculate the following additive colour mixing in terms of voltages:

1.2.1 Blue + red + green (4)

1.2.2 Blue + green (2)

[12]

QUESTION 2

Define each of the following television receiver stages:

2.1 Colour killer (2)

2.2 AGC (2)

2.3 Y-delay line (2)

2.4 Colour burst (5)

[11]

QUESTION 3

Draw and explain the construction and operation of electron guns as used in the *delta* and *in-line* tubes of a colour television receiver. (6 + 6) **[12]**

QUESTION 4

Draw a labelled sketch of the composite video signal for one line as used in a 625-line colour television. **[8]**

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QUESTION 5

5.1 Describe the term *convergence* as used in colour television receiver tubes. (4)

5.2 Name TWO types of convergence as used in colour television receiver tubes. (2)

5.3 List FIVE static-convergence adjustment procedures. (5)
[11]

QUESTION 6

Make a labelled sketch of the Vidicon camera tube. **[12]**

QUESTION 7

Define each of the following CRT components:

7.1 Electron gun

7.2 Control grid

7.3 Accelerating grid

7.4 Phosphor screen

7.5 Magnetic deflection

7.6 Shadow mask

(6 × 2) **[12]**

QUESTION 8

Draw a neat, labelled sketch of a LOG periodic antenna and name the advantages of this type of antenna. **[9]**

QUESTION 9

9.1 Draw a neat, labelled sketch to illustrate the concept of bandwidth. (3)

9.2 Draw a neat, labelled sketch to illustrate the concept of beam width. (3)

9.3 Define the term *gain* of an antenna. (3)
[9]

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QUESTION 10

Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (10.1–10.4) in the ANSWER BOOK.

10.1 The notch filter is only in operation during a colour transmission.

10.2 The luminance delay line is used in a monochrome television receiver.

10.3 The triad refers to arrangements of colours in the colour television tube.

10.4 Monochrome television has three electron guns.

(4 × 1) **[4]**

TOTAL: 100

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