



# 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 2018 (X-Paper)**  
**09:00–12:00**

**Scientific calculators may be used.**

**This question paper consists of 4 pages.**

**DEPARTMENT OF HIGHER EDUCATION AND TRAINING**  
**REPUBLIC OF SOUTH AFRICA**  
NATIONAL CERTIFICATE  
RADIO AND TELEVISION THEORY N3  
TIME: 3 HOURS  
MARKS: 100

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**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. Subsections of questions may NOT be separated.
  5. Write neatly and legibly.
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**QUESTION 1**

- 1.1 Illustrate by means of a triangle the process of additive colour-mixing as used in a television. (7)
- 1.2 Complete the following colour additive equation by inserting the respective voltages: (3)
- $$E_y = \text{_____} E_r + \text{_____} E_g + \text{_____} E_b$$
- [10]

**QUESTION 2**

Draw a labelled sketch that will illustrate gamma correction as applied in television studios. [5]

**QUESTION 3**

Explain each of the following camera tube terms:

- 3.1 Photocathode
- 3.2 Secondary electrons
- 3.3 Wire mesh
- 3.4 Signal current
- 3.5 Aspect ratio
- 3.6 Signal plate
- (6 × 2) [12]

**QUESTION 4**

- 4.1 Describe the process of *static convergence* in detail. (5)
- 4.2 Draw a neat labelled sketch of a grey-scale tracking graph showing cut-off of primary colours. (5)
- [10]

**QUESTION 5**

- 5.1 Explain the TWO methods to generate EHT in a receiver. (4)
- 5.2 Make a neat labelled sketch of a basic extra-high tension tripler circuit. (8)
- [12]

**QUESTION 6**

List NINE factors that influence the choice of an antenna for a specific application. **[9]**

**QUESTION 7**

Explain the following chrominance circuit terms:

- |     |               |     |
|-----|---------------|-----|
| 7.1 | Pal decoder   | (5) |
| 7.2 | Notch filter  | (3) |
| 7.3 | Colour killer | (3) |
- [11]**

**QUESTION 8**

Name SIX types of test equipment used in a television repair workshop and give ONE application for each. **[12]**

**QUESTION 9**

- |     |   |     |
|-----|---|-----|
| 9.1 | Define the term of <i>degaussing</i> of television receiver tubes.                                | (2) |
| 9.2 | Name TWO different methods of degaussing a television receiver tube.                              | (2) |
| 9.3 | Draw a neat labelled circuit diagram that will eliminate magnetism in a television receiver tube. | (6) |
| 9.4 | Name TWO applications of LED's in a colour TV receiver  | (2) |
- [12]**

**QUESTION 10**

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

**TOTAL: 100**