higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

# MARKING GUIDELINE

## NATIONAL CERTIFICATE

## RADIO AND TELEVISION THEORY N1

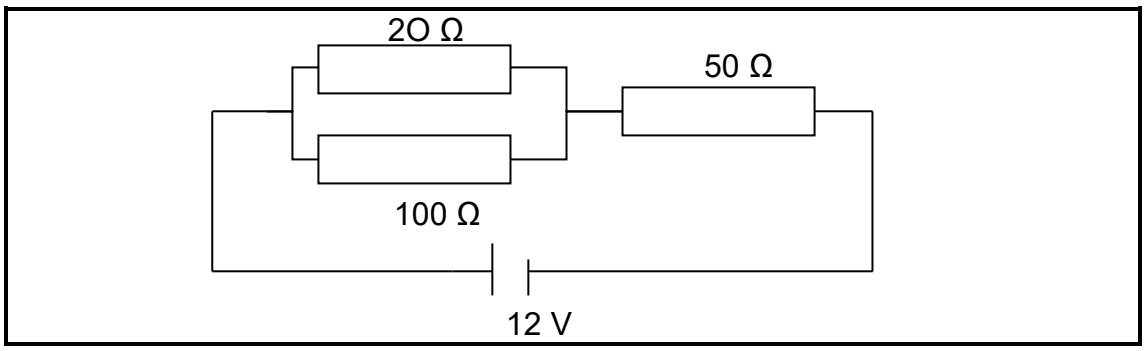
## 5 APRIL 2018

**This marking guideline consists of 6 pages.**

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## QUESTION 1

1.1




(2)

1.2 1.2.1 $R_T = \frac{20\times100}{20+100} + 50$✓
= 66,67 Ω✓

1.2.2 $I_T = \frac{V_T}{R_T}$
$= \frac{12}{66,67}$ ✓
= 0,18 A ✓

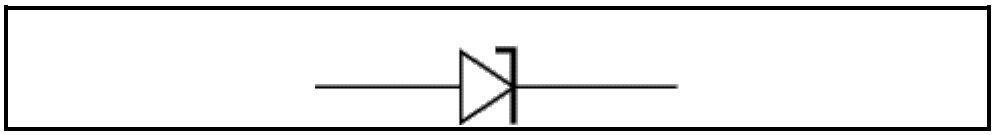
1.2.3 $V_T = I_T \times 50$
= 0,18 × 50✓
= 9 V ✓

1.2.4 P = $V_T \times R_T$✓
= 12 × 0,18
= 2,16 W ✓

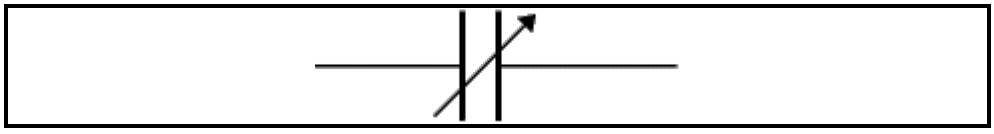
(4 × 2) (8)
**[10]**

## QUESTION 2

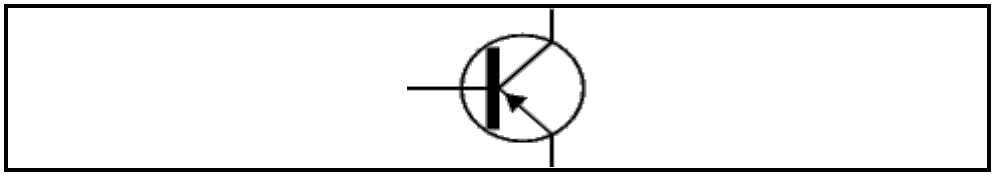
2.1 2.1.1



2.1.2

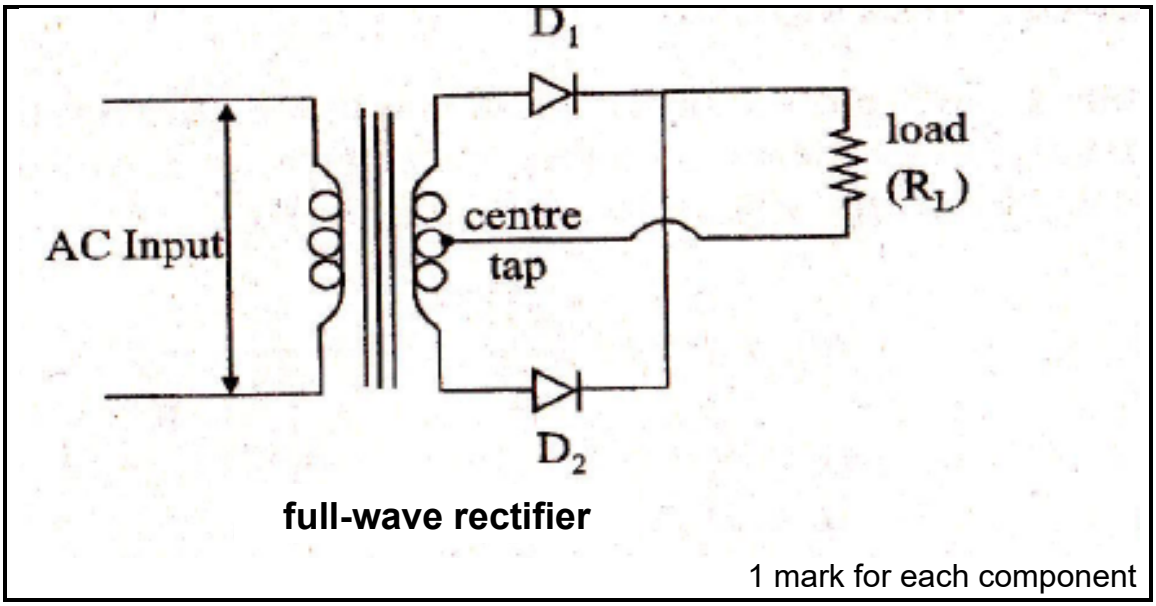


2.1.3



(3 × 2) (6)

2.2



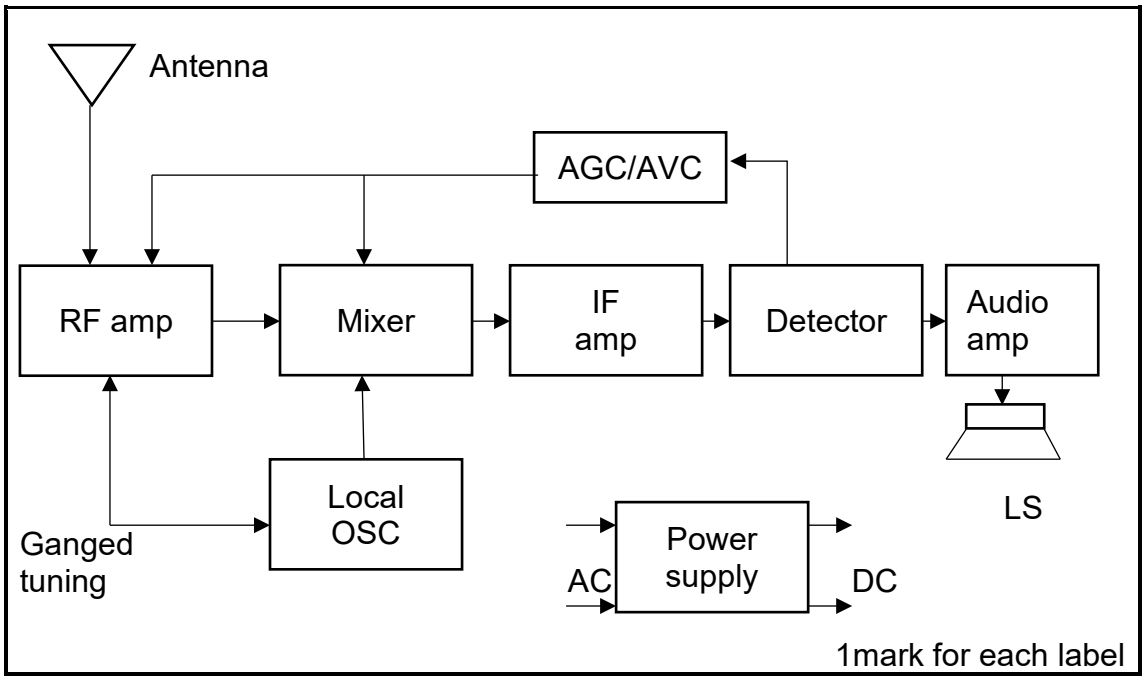

**full-wave rectifier**

1 mark for each component (4)

**[10]**

**QUESTION 3**

3.1




1mark for each label (10)

3.2 3.2.1 Antenna

3.2.2 Detector

3.2.3 Loudspeaker

(3 × 2) (6)

**[16]**

## QUESTION 4

4.1 Used to demodulate the video, sync and blanking signals

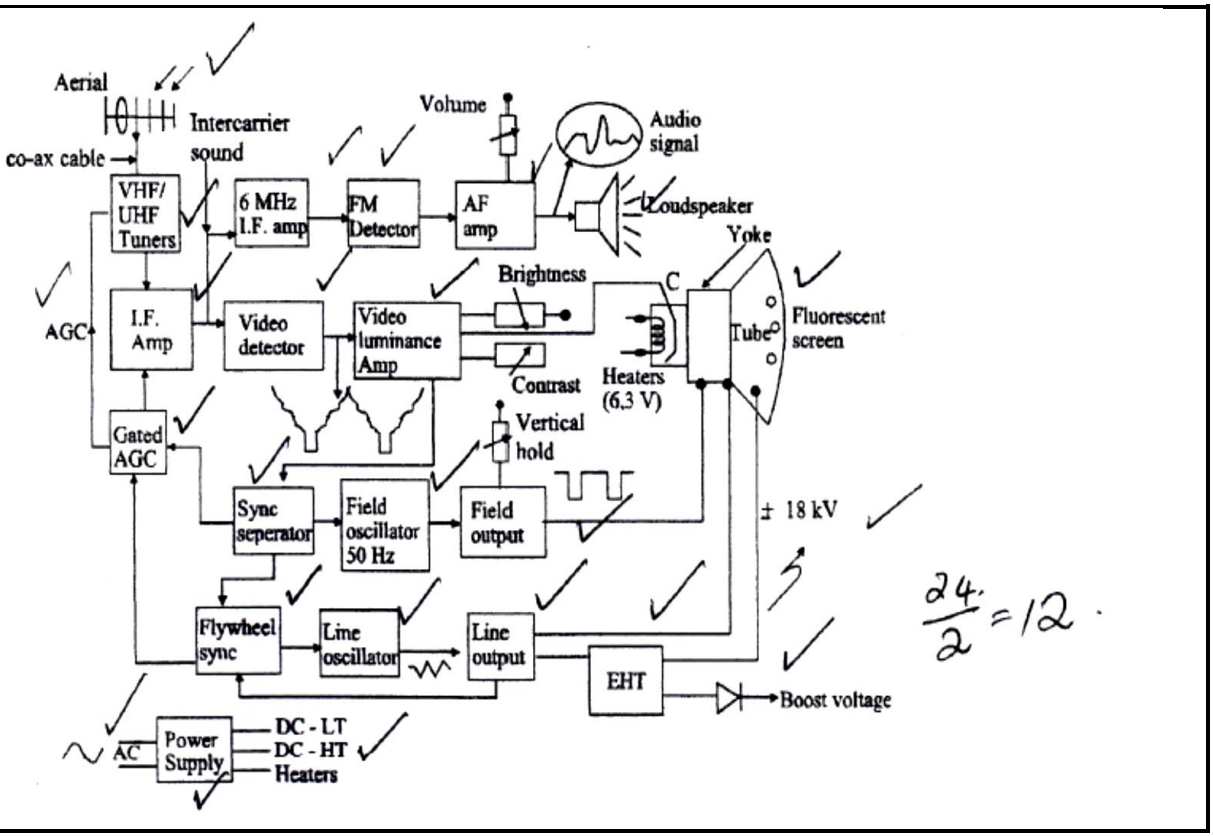
4.2 Separates the line and field pulses to synchronise the vertical and horizontal scan circuits

4.3 Maintains a constant level of picture characteristics despite a difference in received signal levels

4.4 Selects and converts the RF to an intermediate frequency

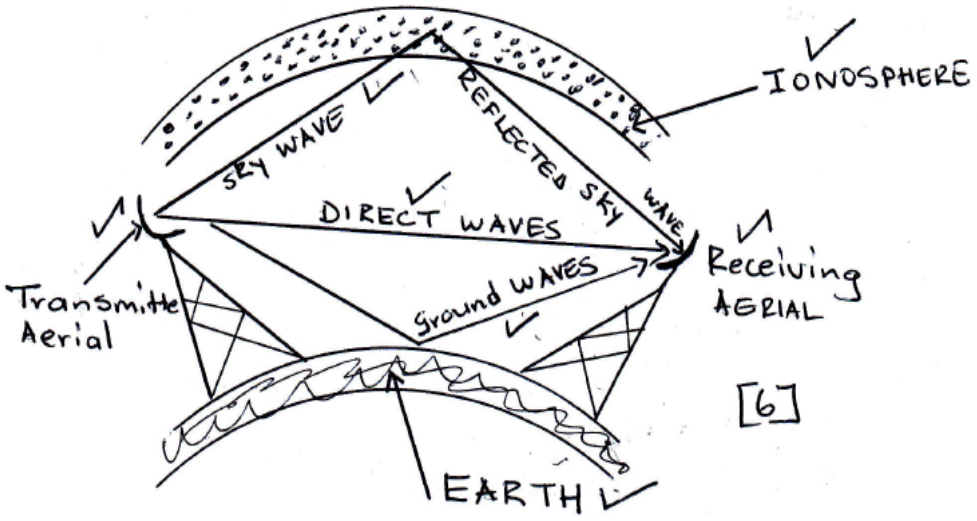
(4 × 2) **[8]**

## QUESTION 5




**[12]**

**QUESTION 6**




2 marks for correct labelling and drawing **[8]**

**QUESTION 7**

7.1 Removes noise spikes and amplitude variations

7.2 Process of combining the carrier wave and the modulation signal

7.3 Process of separating the modulation signal from the carrier wave

7.4 Passes only a certain band of frequencies

7.5 Process of combining the RF and oscillator's frequencies to produce the IF

(5 × 2) **[10]**

## QUESTION 8

8.1 Time = time/div × no of divisions✓
= 30 ms × 4 ✓
= 120 ms/div✓

8.2 $F = \frac{1}{t}$✓
$= \frac{1}{120 \times 10^{-3}}$✓
= 8,33Hz ✓

8.3 Vrms = 0,707 × Vmax✓
= 0,707 × 4 × $10^{-3}$✓
= 2,828 mV✓

8.4 Vave = 0,637 × Vmax✓
= 0,637 × 4 × $10^{-3}$✓
= 2,548 mV✓

(4 × 3) **[12]**

## QUESTION 9

9.1
- Determines frequency
- Measures DC voltage
- Measures time periods
- Measures AC voltage
- Measures phase difference (5)

9.2
- Electron gun to emit a beam
- Focussing and accelerating unit to speed up the beam and focus it
- Scanning or deflecting system
- Phosphor screen
- Evacuated glass envelope (Any 3 × 2) (6)

**[11]**

## QUESTION 10

10.1 False (1)
10.2 False (1)
10.3 False (1)
**[3]**

**TOTAL: 100**

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