

higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

NOVEMBER EXAMINATION

RADIO AND TELEVISION THEORY N1

27 NOVEMBER 2013

This marking guideline consists of 6 pages.

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QUESTION 1

1.1 No picture, a dim picture, bad focus and no brightness

1.2 No picture, no sound

1.3 Tv appears dead, no sound and no picture

1.4 No horizontal hold, poor line hold

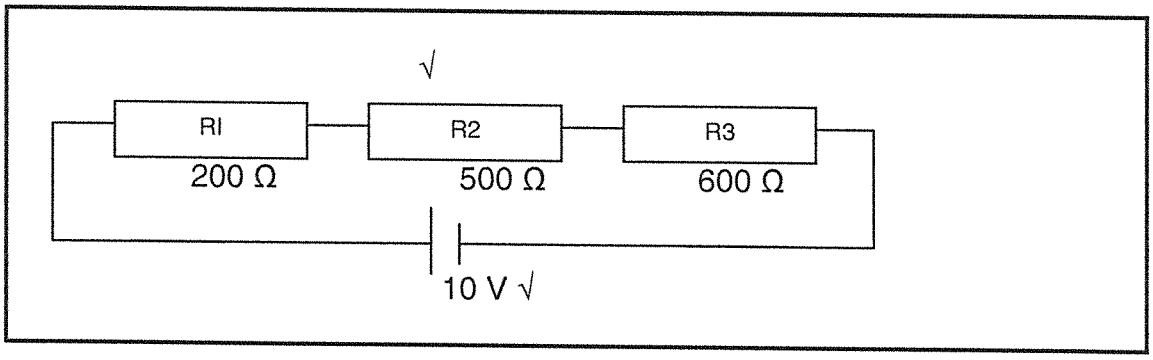
1.5 Picture rolls vertically and horizontally, poor line hold

1.6 White picture (raster) with flyback lines

(6 × 2) **[12]**

QUESTION 2

2.1



(2)

2.2 2.2.1 $R = R_1 + R_2 + R_3$ √

$= 200 + 500 + 600$

$= 1\,300\ \Omega$ √√

2.2.2 $I_T = \frac{V_T}{R_T}$

$= \frac{10}{1\,300}$ √

$= 0{,}008\ A$

2.2.3 $V_1 = I_T \times R_1$

$= 0{,}008 \times 200$ √

$= 1{,}6\ V$

2.2.4 $V_2 = I_T \times R_1$

$= 0{,}008 \times 500$ √

$= 4\ V$

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2.2.5 $P_D = V_T \times I_T$ √
$= 10 \times 0{,}008$ √
$= 0{,}08\,W$

(5 × 2) (10)
[12]

QUESTION 3

3.1 CRT cathode ray tube. Its purpose is to display a picture √√

3.2 Modulation process of superimposing or heterodyne two frequencies √√

3.3 Demodulation the process of recovering the audio frequency from the carrier waveform √√

3.4 Intermediate frequency is produced by the mixer and the local oscillator, the frequency produced is 455 khz for AM receiver. √√

3.5 Frequency modulation is the process which the frequency of the carrier wave is made to vary in accordance to instantaneous value of the modulating signal. √√

(5 × 2) **[10]**

QUESTION 4

- The cathode ray to display the picture √√
- The power supply to feed the circuit with voltage and current √√
- Signal processing circuits to produce the video, sound and sync pulses √√
- Scanning circuits to generate line and field waveforms √√
- The loudspeaker to generate sound √√ **[10]**

QUESTION 5

5.1
- Frequency √
- DC voltage √
- AC voltage √
- Time period √
- Phase difference √ (5)

5.2 5.2.1 R1/R2 voltage divider resistors for providing with base voltage to forward biase the transistor on. √√

5.2.2 Cb coupling capacitor for input signal. √√

5.2.3 Cc is a decoupling capacitor for out put signal.√√

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5.2.4 R4 emitter resistor for current limiting.√√

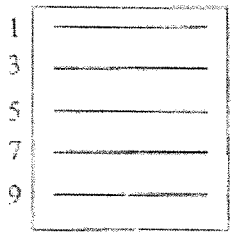
2.2.5 Ce prevents negative feedback. √√

(5 × 2) (10)
[15]

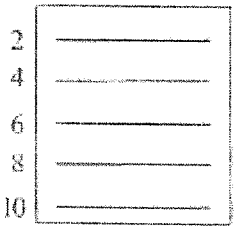
QUESTION 6

Tv being scanned in consecutive lines, the beam is made to scan all the odd numbered lines in the order 1, 3, 5, 7 etc down to the bottom line. It then scans all the even lines 2, 4, 6, 8 etc down to the end line of the raster. From there it goes back to the beginning of the line 1 and the process is repeated. √√√

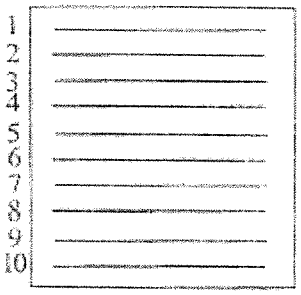
(6)



Field 1



Field 2



Field 3

(6)
[12]

QUESTION 7

7.1 Fuse



7.2 Variable resistor



7.3 Transformer



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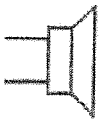
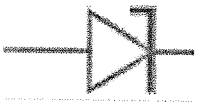
7.4 NPN Transistor



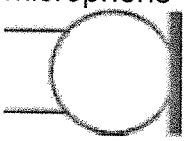
7.5 Zener diode



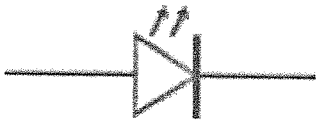
7.6 Lamp



7.7 Microphone



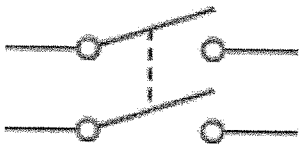
7.8 LED



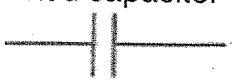
7.9 Diode



7.10 Double pole –Single throw switch



7.11 Fixed capacitor



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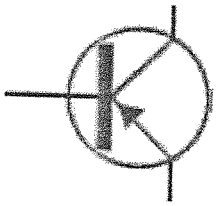
7.12 PNP Transistor



(12 × 1) **[12]**

QUESTION 8

- Very high sensitivity over the full range √√
- Autoranging facility provided √√
- More robust against mechanical shock √√
- Reading immediate – no interpolation of scale needed √√
- Overload indicated by lamp – no fusing √√
- No parallax error √√
- Reversal of leads compensated for √√

[14]

QUESTION 9

9.1 True

9.2 False

9.3 True

(3 × 1) **[3]**

TOTAL: 100

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