higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

# MARKING GUIDELINE

## NATIONAL CERTIFICATE

## APRIL EXAMINATION

## RADIO AND TELEVISION THEORY N1

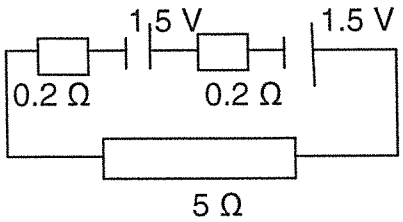
**16 April 2015**

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

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## QUESTION 1

1.1




(2)

1.2.1 Emf = 1,5 V × 2√

= 3 V√

1.2.2 Rin = 0,2 Ω × 2√

= 0,4 Ω√

1.2.3 $It = \frac{Emf}{R + Rin}$

$= \frac{3}{5 + 0,4}$√

= 0,556 A√

1.2.4 What is the voltage drop of the batttery.

Voltage drop = It × Rin

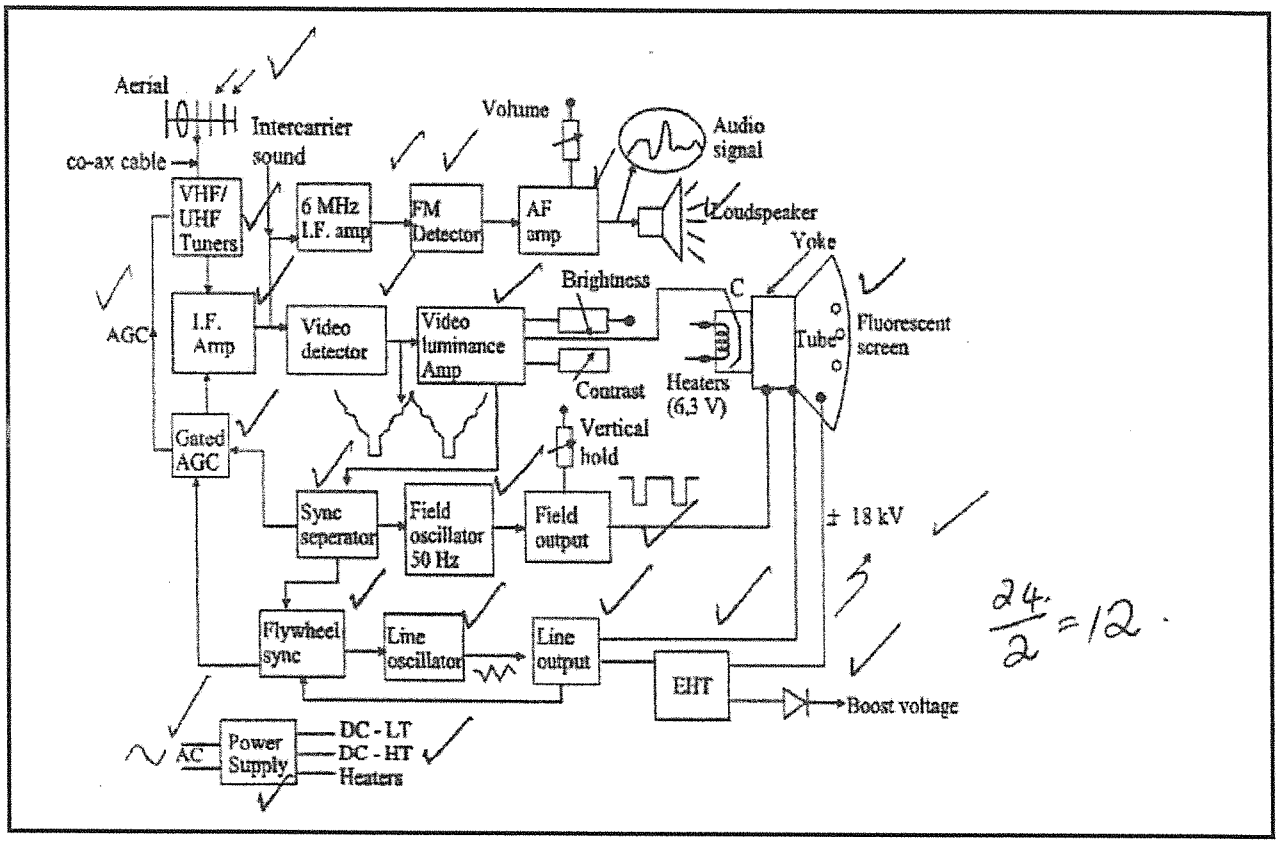
= 0,556 × 0,4√

= 0,222 V

(4 × 2) (8)
**[10]**

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## QUESTION 2




$\frac{24}{2} = 12$.

[12]

## QUESTION 3

3.1 R1/R2 are voltage divider resistors for providing base voltage to forward-bias the transistor.√√

3.2 Coupling capacitor for input signal.√√

3.3 Is a decoupling capacitor for output signal.√√

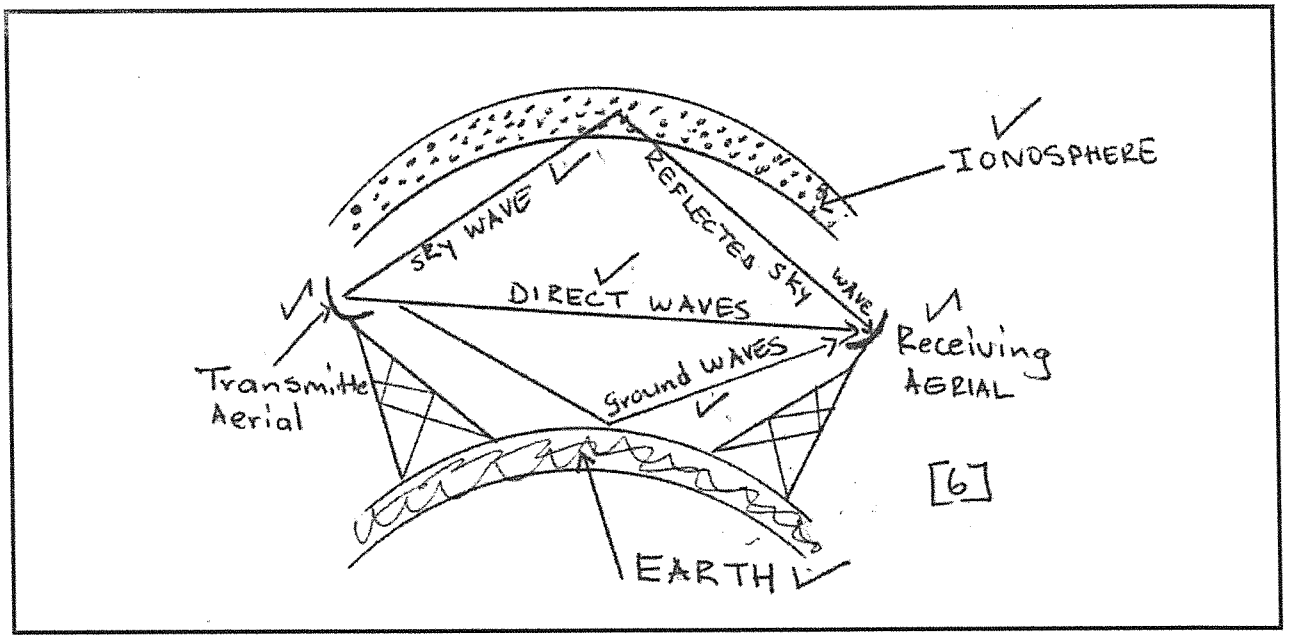
3.4 Emitter resistor for current limiting.√√

3.5 Prevents negative feedback.√√

(5 × 2) **[10]**

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## QUESTION 4




**[6]**

## QUESTION 5

5.1 LDR = light dependent resistor

5.2 VHF = very high frequency

5.3 UHF = ultra-high frequency

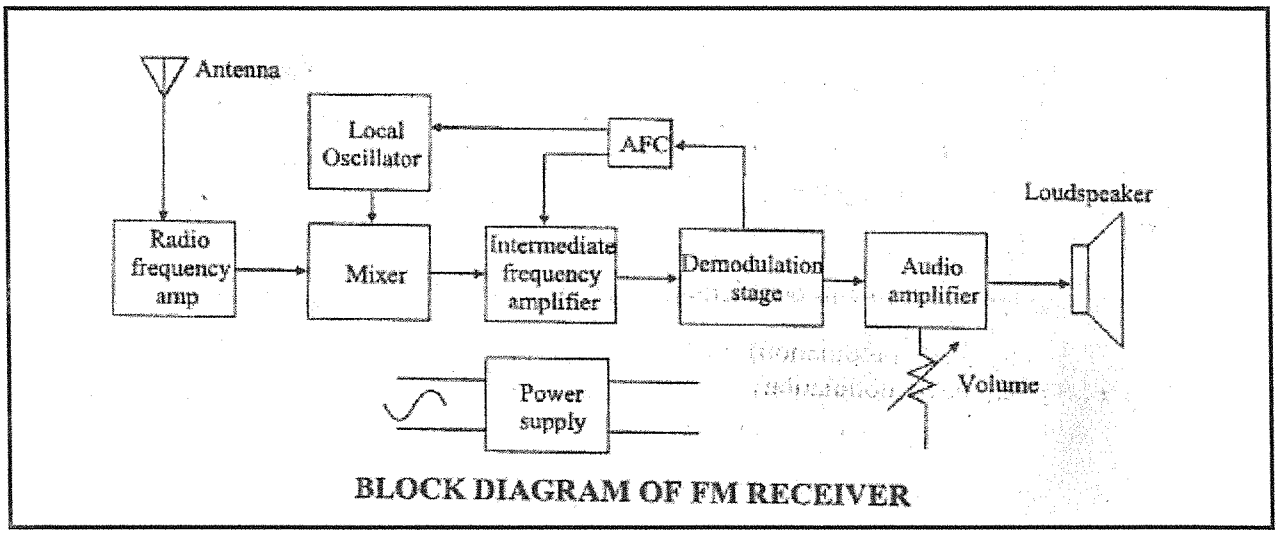
5.4 Hd = high definition

5.5 LCD = liquid crystal display

(5 × 1) **[5]**

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## QUESTION 6




BLOCK DIAGRAM OF FM RECEIVER

[7]

## QUESTION 7

- 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 and disseminate sound√√ (5 x 2) **[10]**

## QUESTION 8

8.1 No picture; a dim picture, bad focus and no brightness√√

8.2 No picture, no sound√√

(2 × 2) **[4]**

## QUESTION 9

9.1 AGC – This is meant to maintain a relatively constant picture quality under varying reception conditions.√√

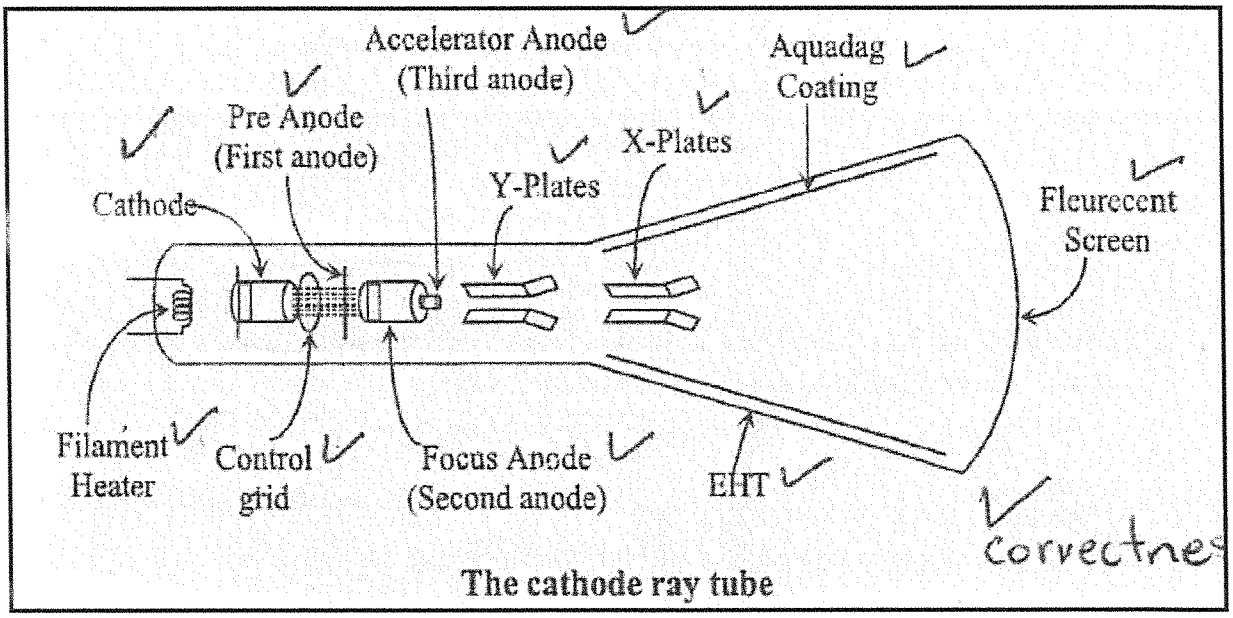
9.2 Video amp – This part is for raising the voltage of signal from 1 V peak to peak to 150 V. This is required to drive the cathode ray tube from black to peak white√√

9.3 Tuner (front-end) – This is used to select a signal received from the antenna.√√

9.4 Sync separator – This circuit provides synchronising pulses to the line and field oscillators.√√

9.5 The line oscillator – The purpose of this circuit is horizontal scanning of the screen with an electron beam.√√ (5 × 2) **[10]**

**QUESTION 10**




**[12]**

**QUESTION 11**

- 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 is compensated for√√ (7 × 2) **[14]**

**TOTAL: 100**

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