higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

RADIO AND TELEVISION THEORY N3

4 August 2021

This marking guideline consists of 7 pages.

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QUESTION 1

1.1 B
1.2 B
1.3 D
1.4 D
1.5 D

(5 × 1) **[5]**

QUESTION 2

2.1 True
2.2 True
2.3 True
2.4 False
2.5 True

(5 × 1) **[5]**

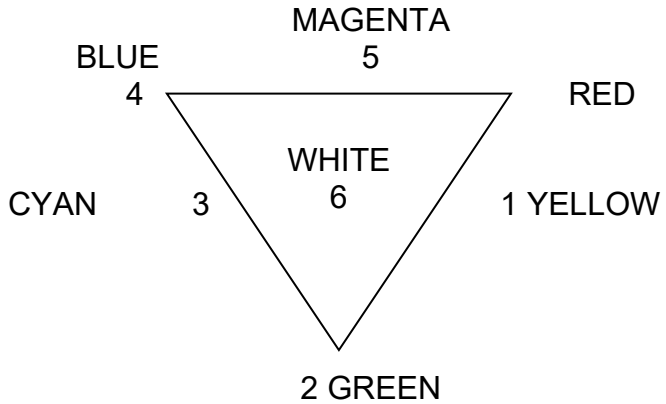
QUESTION 3

3.1 K
3.2 H
3.3 G
3.4 F
3.5 E
3.6 J
3.7 D
3.8 C
3.9 A
3.10 B

(10 × 1) **[10]**

QUESTION 4

4.1



(6)

4.2 Blue is 0,11 V
Green is 0,59 V
Red is 0,3 V

(3 × 2) (6)
[12]

QUESTION 5

5.1 High-power transistor amplifiers are used to drive control grids of three colours in circuit.

5.2 Reduces subcarrier level response around 4,43M Hz, preventing extreme amplitude of subcarrier from increasing conduction of colour guns in a tube.

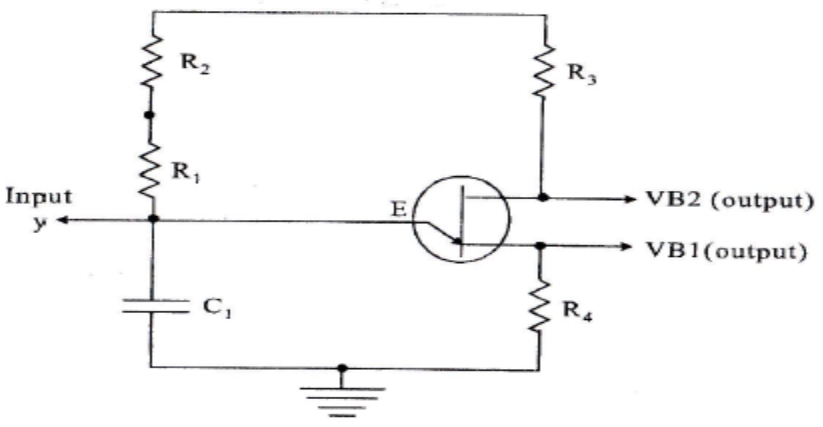
5.3 Delays luminance signal and allows chrominance signal to reach cathode simultaneously with luminance signal

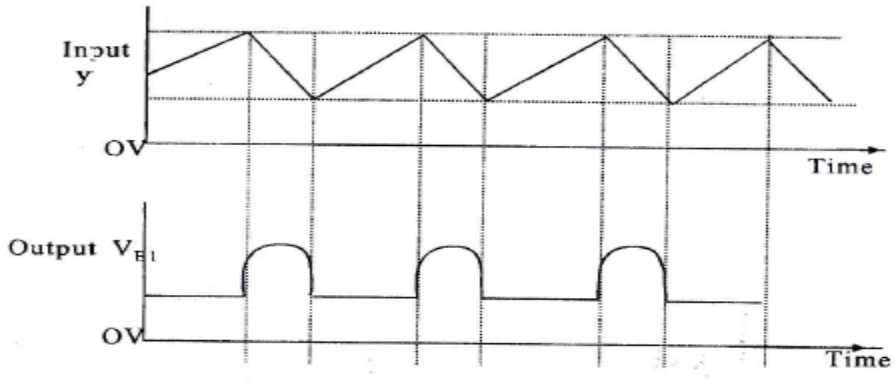
5.4 Clipped to constant value thereby effectively eliminating noise which produces unwanted amplitude modulation in carrier

5.5 Amplifies audio signal to level sufficient to drive ordinary loudspeaker

(5 × 2) **[10]**

QUESTION 6





(4 marks for waveforms + 6 marks for circuit) **[10]**

QUESTION 7

7.1 If luminance delay line goes open circuit, ✓ it stops high frequencies of signal, leaving only chrominance on screen. ✓ Oscilloscope can be used in fault finding, observing waveforms. ✓

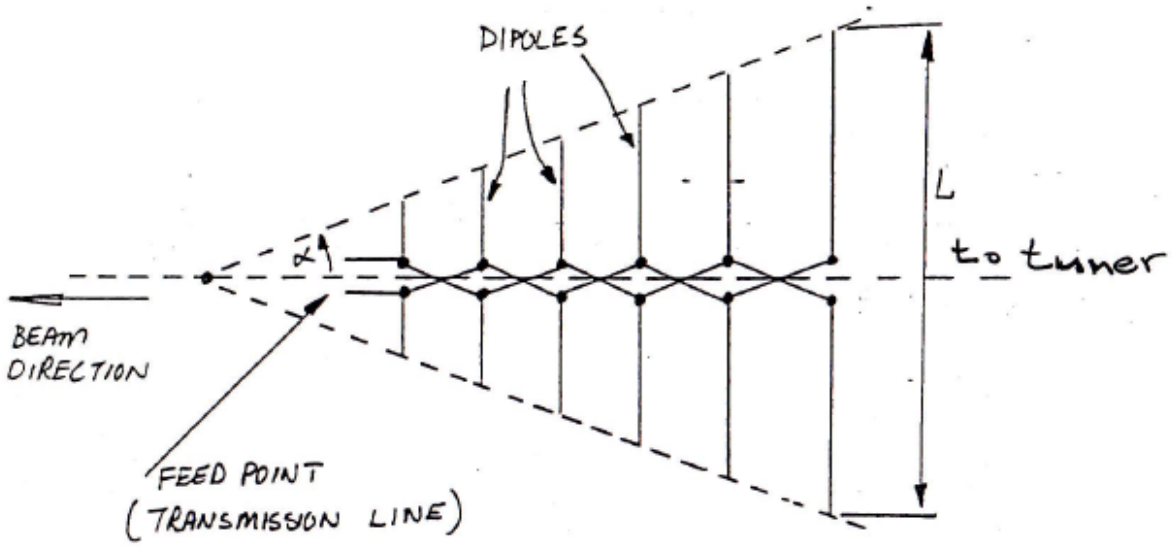
7.2 Difficult to remove by tuning, attenuator normally required.✓Results from where the received signal is excessive and cross modulation occurs in RF stages of tuner producing chrominance-sound beat.✓✓

7.3 In receiver using RGB drivers partial failure or total failure of one of output stages causes picture on overall cast.✓✓ DC voltage check normally isolates faulty stage.✓

(3 × 3) **[9]**

QUESTION 8

8.1



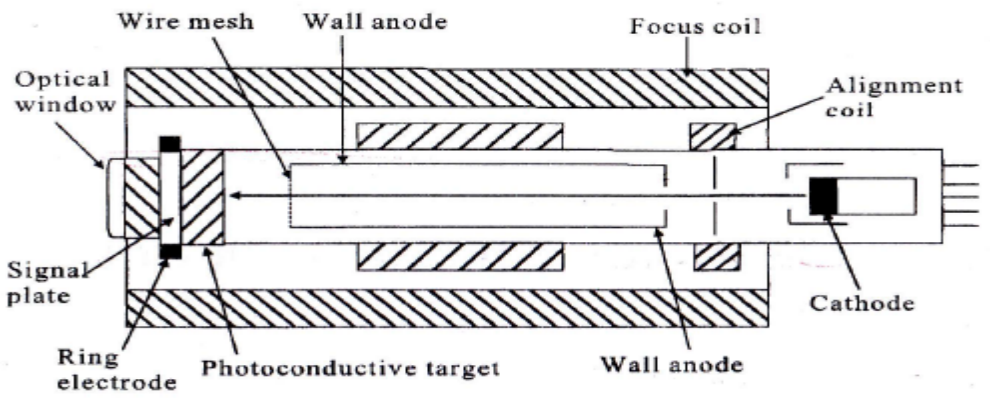
(1 mark per correct label)(4 × 1) (4)

8.2
- Wide bandwidth
- Medium gain
- Strong construction
- Directional
- Ghosting eliminated

(Any relevant 4 × 1) (4)
[8]

QUESTION 9

9.1



THE VIDICON TUBE

(10 marks for correct labels and 2 marks for correct drawing) (12)

9.2 Scans surface with focused beam of electrons. Very sensitive. (2)
[14]

QUESTION 10

10.1
- If necessary, a magnifying glass or convergence microscope can be used to make sure that the beams are striking the phosphor dots of a single triad. ✓
- Use a cross-hatch pattern or dot display. ✓
- Switch off the blue gun. ✓
- Adjust the red and green radial magnets until the red and green rasters coincide at the centre of the screen to produce a yellow dot or cross-hatch. ✓
- Switch on the blue gun and adjust the blue radial and blue lateral magnets until blue coincides with yellow at the centre of the screen to produce a white dot or white cross-hatch. ✓ (5)

10.2 The main objective of static convergence is to prevent outlines of objects from appearing with coloured fringes particularly on monochrome programmes. (2)
[7]

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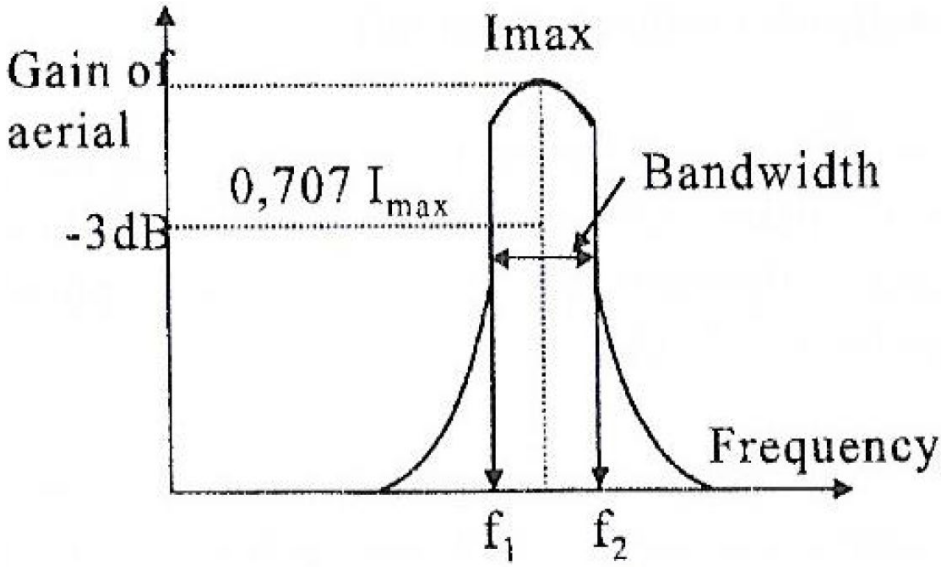
QUESTION 11

11.1 11.1.1 Angle from which power radiates.✓ Measured by taking distance between two points where power is less than half of maximum.✓ (2)

11.1.2 Ratio of power induced in antenna as compared to power induced in simple dipole by electro-magnetic wave of same field strength.✓✓ (2)

11.2



(Any 5 correct labels + 1 mark for correct sketch) (6)
[10]

TOTAL: 100