higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

NOVEMBER EXAMINATION

RADIO AND TELEVISION THEORY N1

17 NOVEMBER 2016

This marking guideline consists of 7 pages.

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QUESTION 1

1.1 1.1.1 $R_T = \frac{5 \times 5}{5 + 5} + 20$√

= 22,5 Ω√

1.1.2 $I_T = \frac{V_T}{R_T}$

$= \frac{10}{22,5}$√

= 0,444 A√

1.1.3 $V_R = I_T \times R_{20}$

= 0,444×20√

= 8,88 V√

1.1.4 $V_L = V_T - V_R$

=10−8,88√

= 1,12 V√

1.1.5 $I_L = \frac{V_L}{R_L}$

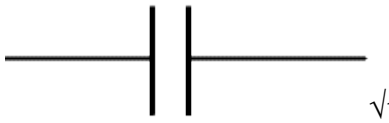
$= \frac{1,12}{5}$√

= 0,224 A√

(5 × 2) **[10]**

QUESTION 2

2.1 2.1.1



√√

2.1.2



√√

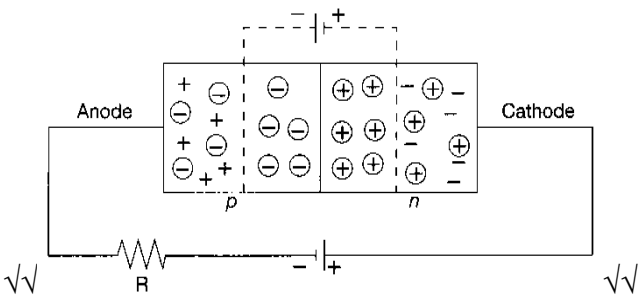
2.1.3



√√

(3 × 2) (6)

2.2



√√ √√ (4)
[10]

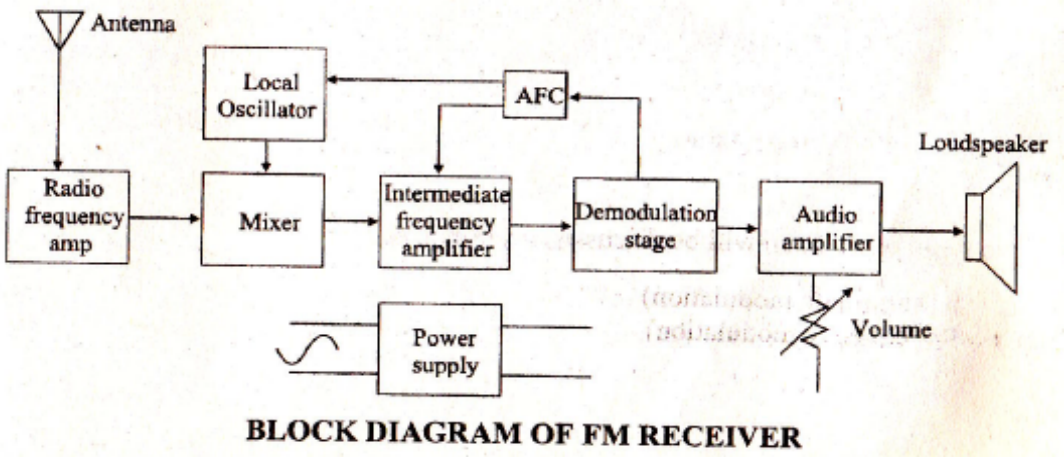
QUESTION 3

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

(10 × 1) **[10]**

QUESTION 4

4.1 √√√ √√√√ √√√



BLOCK DIAGRAM OF FM RECEIVER

(10)

4.2 4.2.1 Loudspeaker

4.2.2 Mixer

4.2.3 Audio amplifier

(3 × 2) (6)
[16]

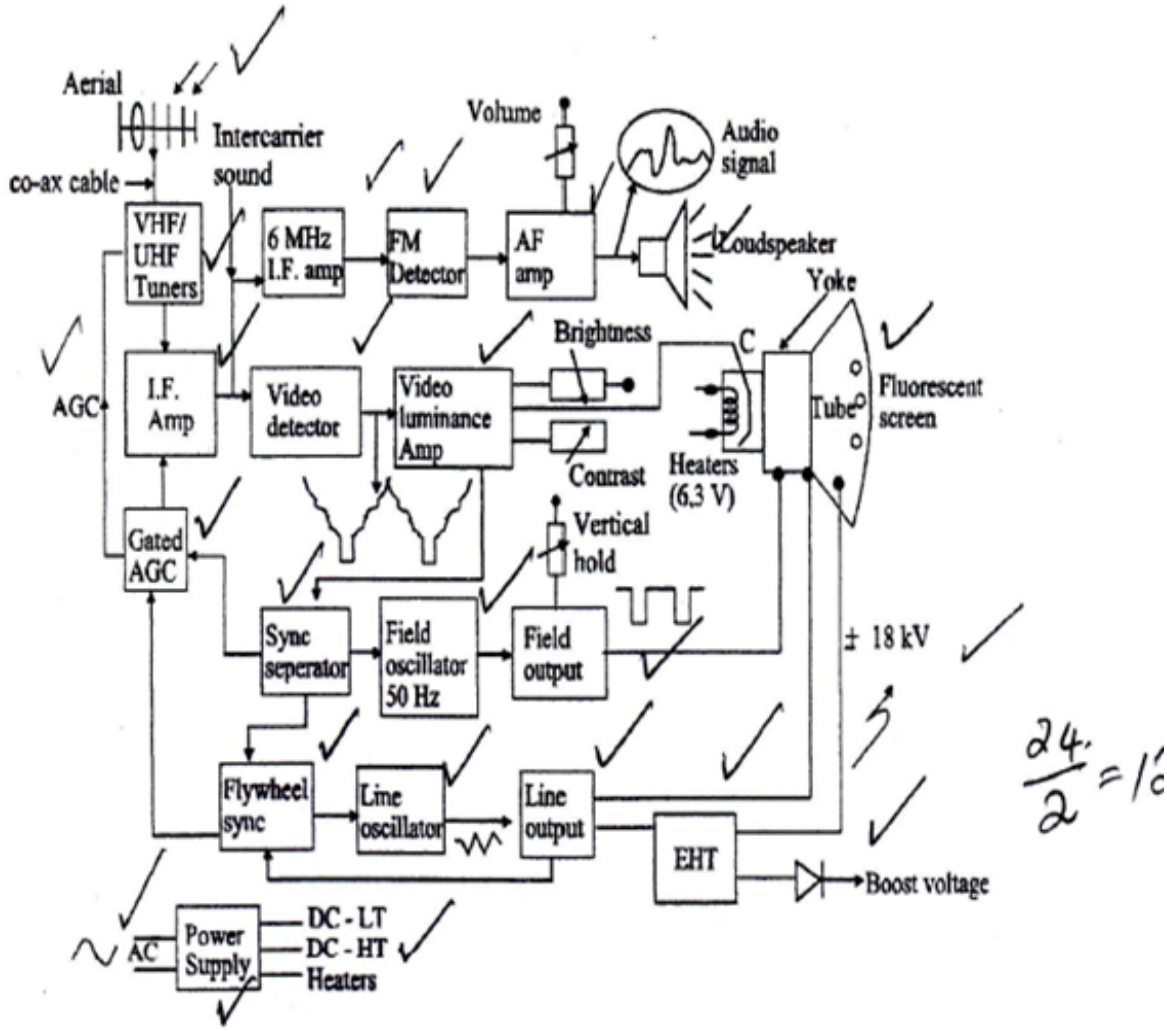
QUESTION 5

5.1 5.1.1 Faraday's law states that when a conductor moves through a magnetic field, a voltage and a current will be induced in the conductor.

5.1.2 Lenz's law states that the direction of the induced current is such that its own magnetic field opposes the action that produced the induced current, that is the reason why a coil offers resistance against AC.

(2 × 3) **[6]**

QUESTION 6



[12]

QUESTION 7

7.1 Polarisation is when the electric field of an aerial is parallel to the length of the aerial and the magnetic field is at a right angle to it. √√

7.2 A ground-reflected wave travels from the transmitting aerial to earth and is then reflected to the receiving aerial. It follows the curvature of the earth. √√

7.3 A direct-reflected wave travels directly in an almost straight line from the transmitter to the receiver. √√ **[6]**

QUESTION 8

8.1 Peak white is obtained when all three inputs (red, green, and blue) are driven to their maximum output.

8.2 Phosphor is specific dots or stripes on the inside of the tube that illuminate when striking by an electron beam occurs.

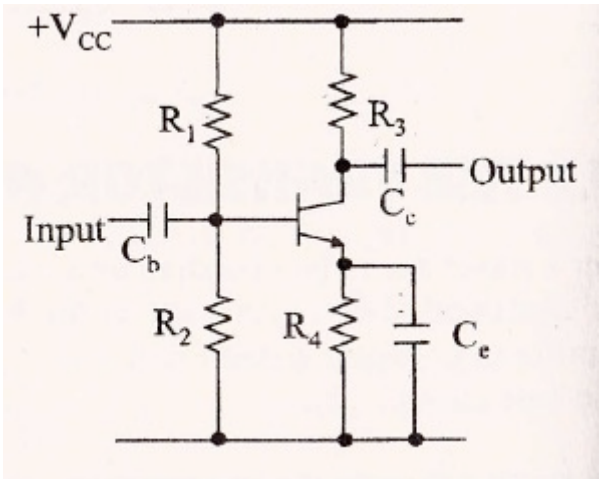
8.3 Shadow mask is a perforated steel plate mounted inside the tube and just in front of the screen. It acts as a masking plate where only the beam of one particular colour may strike its own phosphor dot.

8.4 Critical angle is the angle at which frequency is refracted back to earth.

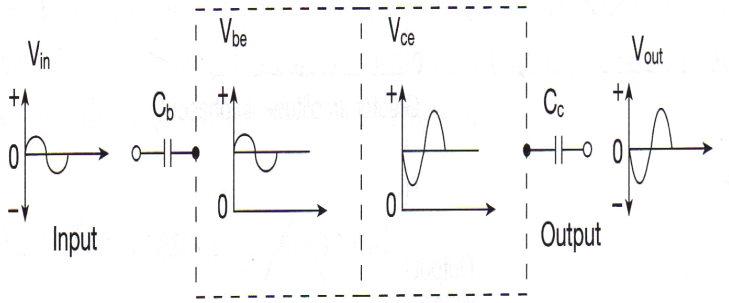
8.5 Line of sight is the direct free-space path that exists between two points.

(5 × 2) **[10]**

QUESTION 9



(6 marks for components)



(1 mark input and output wave) **[7]**

QUESTION 10

10.1 Automatic gain control

10.2 Root mean square

10.3 Direct current

10.4 Audio frequency

10.5 Intermediate frequency

10.6 Radio frequency

10.7 Very low frequency

10.8 Very high frequency

10.9 Low frequency

10.10 Ultra-high frequency

(10 × 1) **[10]**

QUESTION 11

11.1 True

11.2 False

11.3 True

(3 × 1) **[3]**

TOTAL: 100

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