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higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

RADIO AND TELEVISION THEORY N1

23 November 2022

This marking guideline consists of 6 pages.

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SECTION A

QUESTION 1

1.1 A
1.2 B
1.3 B
1.4 B
1.5 A

(5 × 1) **[5]**

QUESTION 2

2.1 True
2.2 True
2.3 True
2.4 True
2.5 True

(5 × 1) **[5]**

QUESTION 3

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

(10 × 1) **[10]**

TOTAL SECTION A: 20

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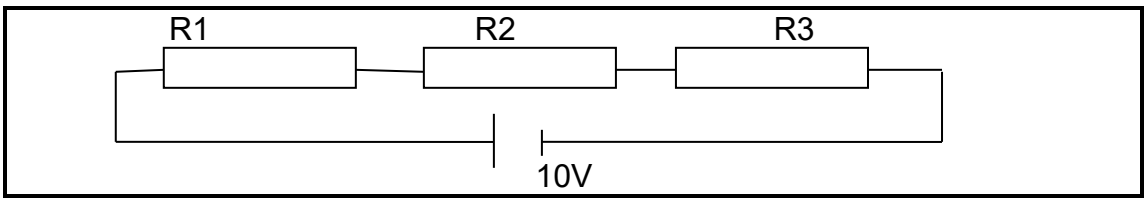
SECTION B

QUESTION 4

4.1



(2)

4.2 4.2.1 $R_T = R_1 + R_2 + R_3$

$= 10 + 20 + 60$✓

$= 90\ \Omega$✓

4.2.2 $I_T = \frac{V_T}{R_T}$

$= \frac{10}{90}$✓

$= 0{,}111\ A$✓

4.2.3 $V_{R_1} = I_T \times R_1$

$= 0{,}111 \times 10$✓

$= 1{,}11\ V$✓

4.2.4 $V_{R_2} = I_T \times R_2$

$= 0{,}111 \times 20$✓

$= 2{,}22\ V$✓

(4 × 2) (8)

[10]

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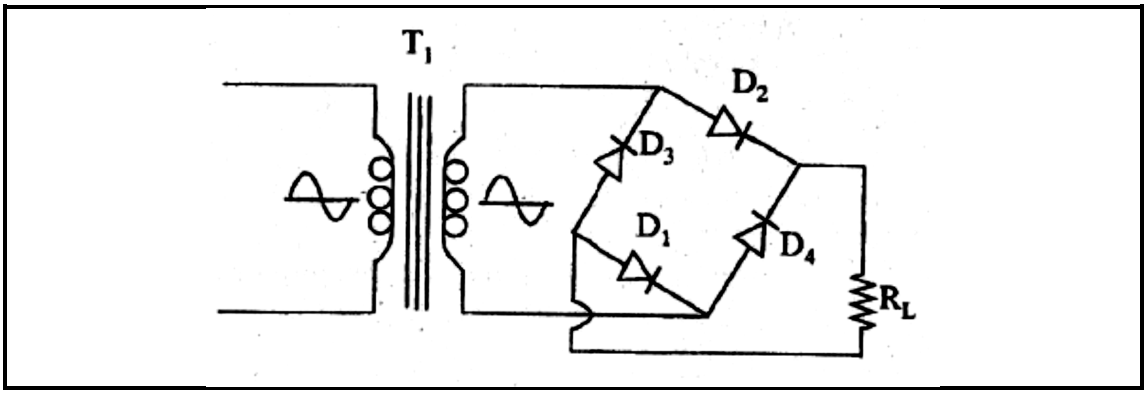
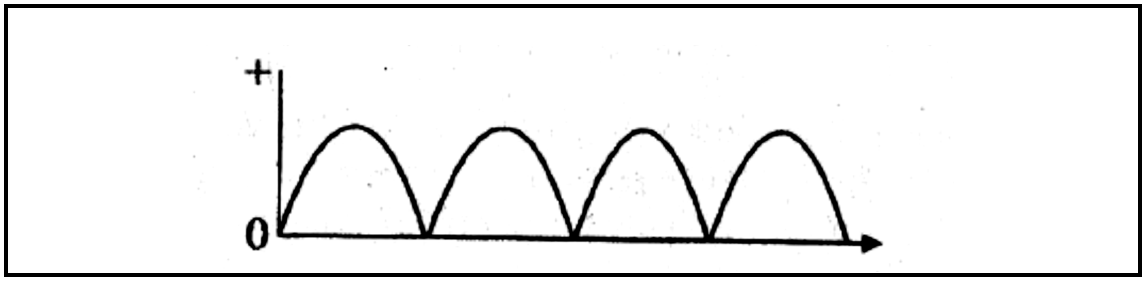
QUESTION 5

5.1



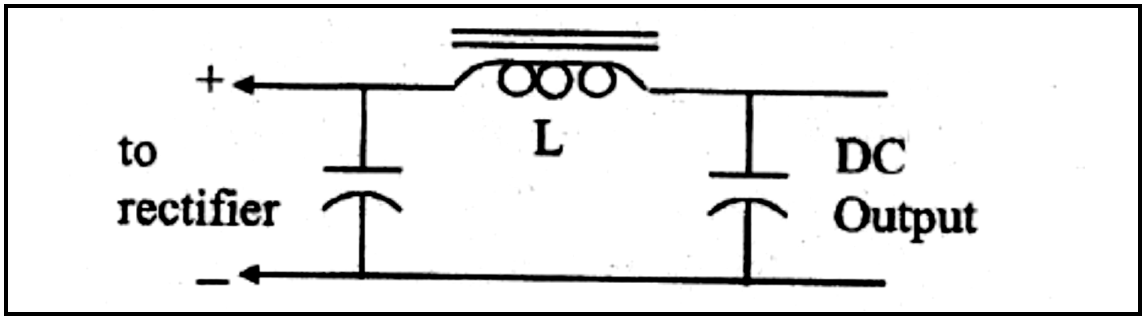
(5)

5.2



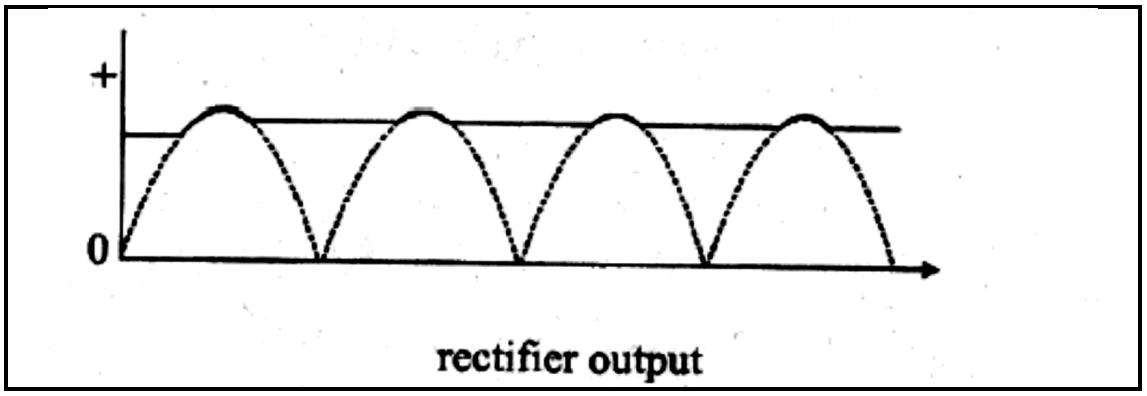
(4)

5.3



(5)

5.4



(2)

5.5
- The filter circuit smooths out the pulsation in amplitude (AC ripple) of the rectifier output voltage.
- Filter capacitors oppose any change in the voltage applied across them by storing up energy in an electric field. (2 × 2) (4)

[20]

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QUESTION 6

6.1 Its main purpose is to select the required frequency and amplification.

6.2 It is the process of heterodyning the modulation frequency and the carrier wave for transmission purposes.

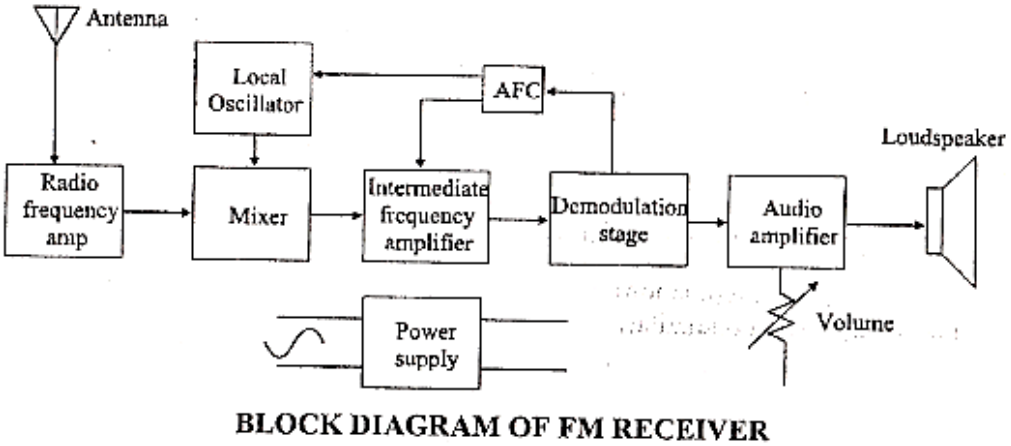
6.3 It is the process that produces the intermediate frequency (IF).

6.4 The amplitude of a radio-frequency carrier wave varies in accordance with the instantaneous value of the modulating frequency.

6.5 The frequency of a radio-frequency carrier wave varies in accordance with the instantaneous value of the modulating frequency.

(5 × 2) **[10]**

QUESTION 7

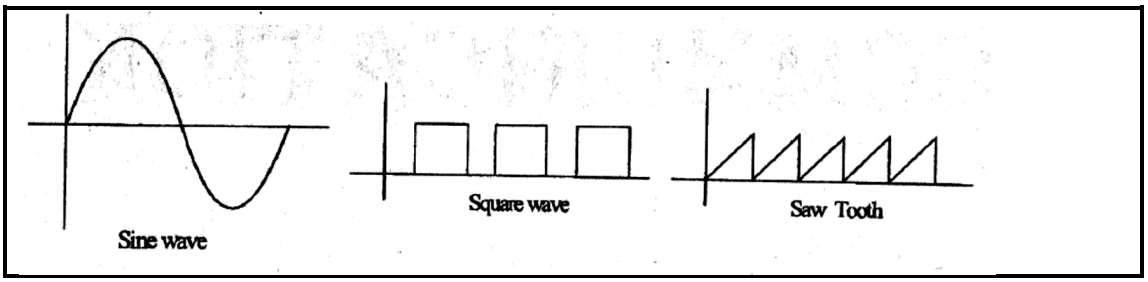


BLOCK DIAGRAM OF FM RECEIVER

[10]

QUESTION 8

8.1



(3 × 2) (6)

8.2 Sine waves are used for radio transmission on various transmitting bands or testing of electronics. Square waves are used in digital electronic switching pulses to switch circuits in computers. (2 + 2) (4)

[10]

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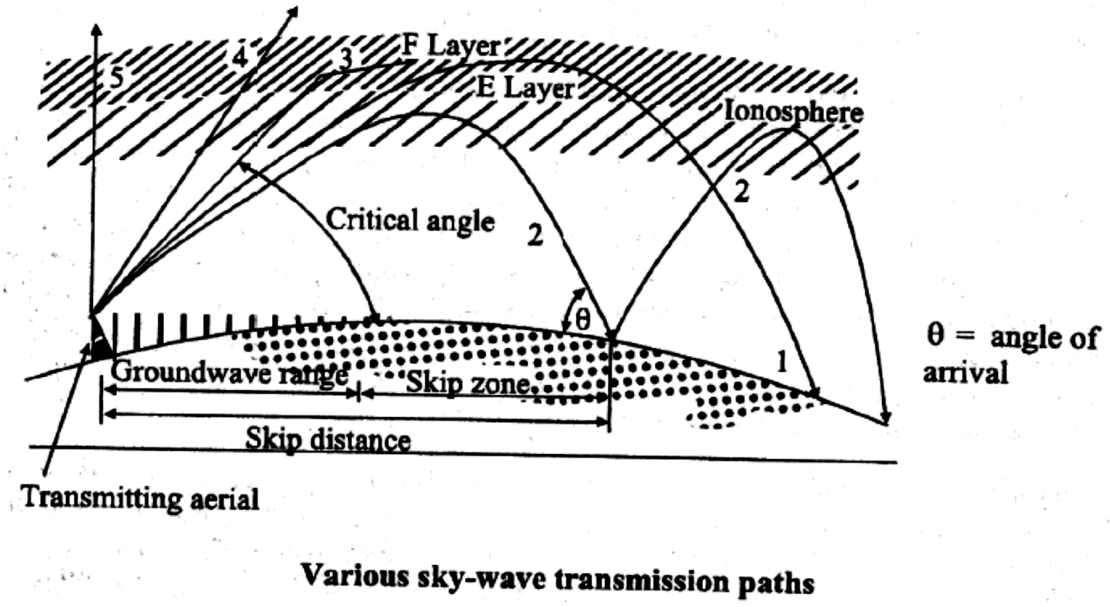
QUESTION 9



Various sky-wave transmission paths

(ONE mark for each layer and wave) **[10]**

QUESTION 10

10.1 Supplies extra high tension voltage of kilovolts in the CRT to accelerate the electron beams

10.2 Supplies voltage with electrical current to different circuits in the TV

10.3 Changes electromagnetic waves to electrical current signal

10.4 Amplifies the output IF from the mixer

10.5 Magnifies the output video IF to drive the cathodes of the CRT

(5 × 2) **[10]**

TOTAL SECTION B: 80
GRAND TOTAL: 100

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