



COLLEGE OF ENGINEERING SCIENCE & TECHNOLOGY
School of Electrical & Electronics Engineering

CERTIFICATE IV IN ELECTRONICS ENGINEERING

FINAL EXAMINATION TRIMESTER 3-2016

EEE 422 TELEVISION SYSTEMS

DATE: TBA . TIME - TBA

INSTRUCTIONS TO STUDENTS

1. You are allowed 10 minutes EXTRA time during which you are not to write.
2. Write your candidate number on the top of each sheet of the answer booklet.
3. Write all your answers in the ANSWER BOOKLET provided.
4. For all sheet of papers on which rough/draft work has been done, cross it through and attach these to your answer script.
5. Attempt ALL questions worth a total of 100 MARKS for 2 HOURS

SECTION A- Complete these statements by filling the blank with the correct word or number ?

25 marks

1	The bandwidth of any television channel in the UHF band is _____
2	The bandwidth of any television channel in the High VHF band is _____
3	The bandwidth of a television channel in the Low VHF band is _____
4	The two components of intelligence in a television system are _____ and _____
5	The three transducers in a television transmitting systems are _____, _____, and _____
6	The three transducers in a television receiving system in their sequence of operation are _____, _____ and _____
7	In a television channel the two carrier frequencies are for _____ and _____
8	The two types of modulation used in UHF band television channel are _____ modulation and _____ modulation.
9	The two types of modulation used in a Low VHF band television are _____ modulation and _____ modulation.
10	The main function of the video camera in television system is to convert pictures or _____ energy to _____ energy.
11	The main function of the microphone in a television system is to convert _____ energy to _____ energy.
12	The purpose of the highest voltage in a CRT television screen is to _____ the electron beam to hit the phosphor dot at high speed
13	The electrons in a electron gun is produced by heating the _____
14	Movements of electron beam across the CRT television screen and top to bottom and from bottom to top are known as _____
15	Movement of electron beam across the screen from left to right is called _____

SECTION B – Match each term or phrase on the left hand side (LHS) to its correct meaning on the right hand side (RHS). Write on your answer sheet beside the question number, the letter representing the correct meaning on the right hand side (RHS)

20 marks

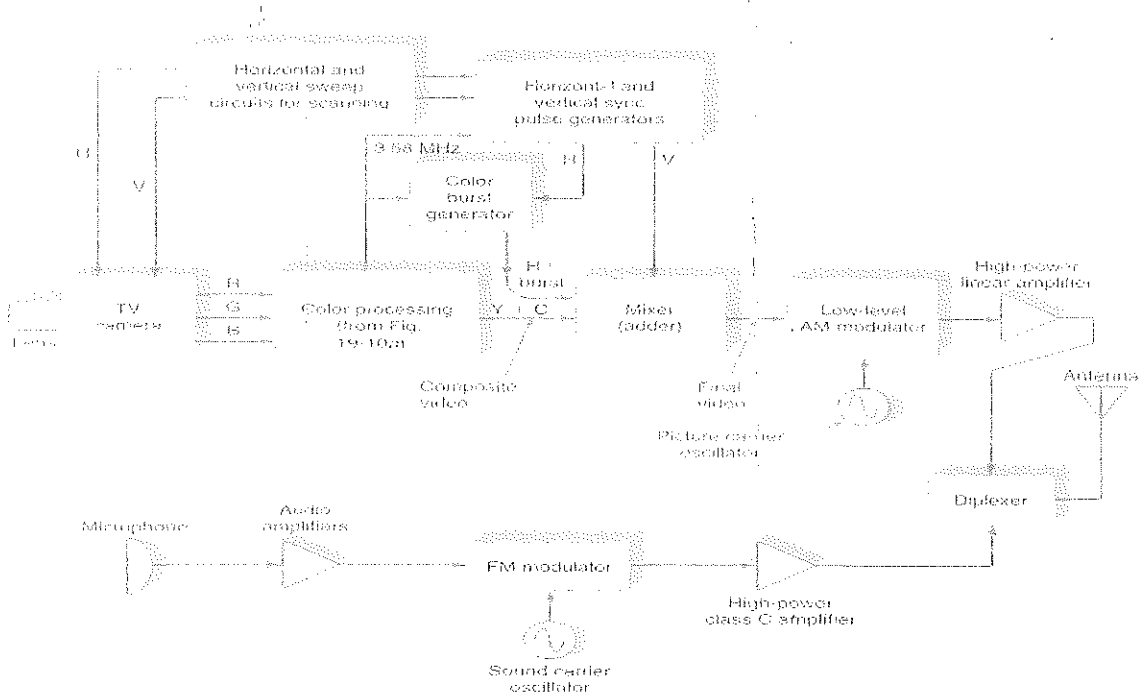
1	24Kv	The first safety procedure to apply after opening the cover of TV Rx	A
2	Leakage Test	A symptom that indicate low anode voltage in TV receiver	B
3	Cyan	Not included in a hot TV set with hot or live chassis	C
4	White	Mixing red and blue colours	D
5	Isolation transformer	Carried out by serviceman or technician for the TV owners safety after placing back the cover of the TV receiver	E
6	Yellow	Result of poor filtering in the DC output circuit of main power supply	F
7	Less brightness	Result of mixing red, green and blue colours	G
8	Picture interference	Result of mixing red and green colours	H
9	Magenta	Mixing blue and green colours	I
10	Discharging CRT	Highest voltage in a TV receiver hence safety procedure is necessary	J
11	Delta, In-line,	Components used in Switch mode power supply	K
12	Projection TV	Operate only when the TV set is switched on	L
13	LED TV	Uses less power than CRT TV	M
14	TV camera	Where sound is converted to electrical signal in a television system	N
15	Deflection Yoke	Two types of electron gun used in the CRT	O
16	LCD TV	A device that converts electrical signal to electromagnetic energy	P
17	ADG circuit	Uses less power consumption than LCD TV	Q
18	Microphone	Where video signal is mostly generated in a television system	R
19	Transmitting Antenna	A television set that uses a video projector to display its picture	S
20	Small and light	Located on the neck of the CRT and composed of coils for scanning	T
		Movement of electron beam from end of the last line to the start of 1 st line	U

SECTION C-Write the letter T if the statement is true and the letter F if its false in your answer sheet beside each question-number ? **15 marks**

1	RF-IF conversion is usually the process carried out in the television tuner by heterodyne effect. In order to increase the incoming frequency		
2	Ganged Tuning Capacitors are two capacitors connected to the same shaft to vary their values simultaneously		
3	Varactor diode has given us the ability to be able to remotely set the TV tuner for selection of the wanted carrier frequency.		
4	SAW filter is a type of filter used in modern television circuits that operate using piezo-electric effect		
5	A trap circuit present low impedance path to ground to a particular wave		
6	LCD television uses CCFL as backlight		
7	The tuner can be said to be the front end of a television receiver		
8	In TV television receiver IF for picture is standardized at 41.25 MHz		
9	The IF for sound in a television receiver is standardized at 455 MHz		
10	One of the purposes of RF-IF conversion is to equalise the incoming carrier frequency to the local oscillator frequency.		
11	Almost any colour can be produced by adding red, green and blue in different proportions.		
12	A balun transformer is usually used to match the audio amplifier impedance to the speaker in order to establish maximum power transfer		
13	A TFT used in a LCD television function as relay switch		
14	Out of all the flat television receivers the LED type is the most power saving set		
15	It has been found that 50% of faults in flat TV screens have been due to faulty capacitors		

SECTION D – Refer to the diagram below and answer the questions that follow;

15 marks



1. Name the above diagram ? **1 mark**
2. Briefly describe the function of the diplexer unit ? **2 marks**
3. List and describe the purpose of each transducer located in the diagram? **6 marks**
4. State the inputs and input-devices and output with output-devices seen in the diagram ? **6 marks**

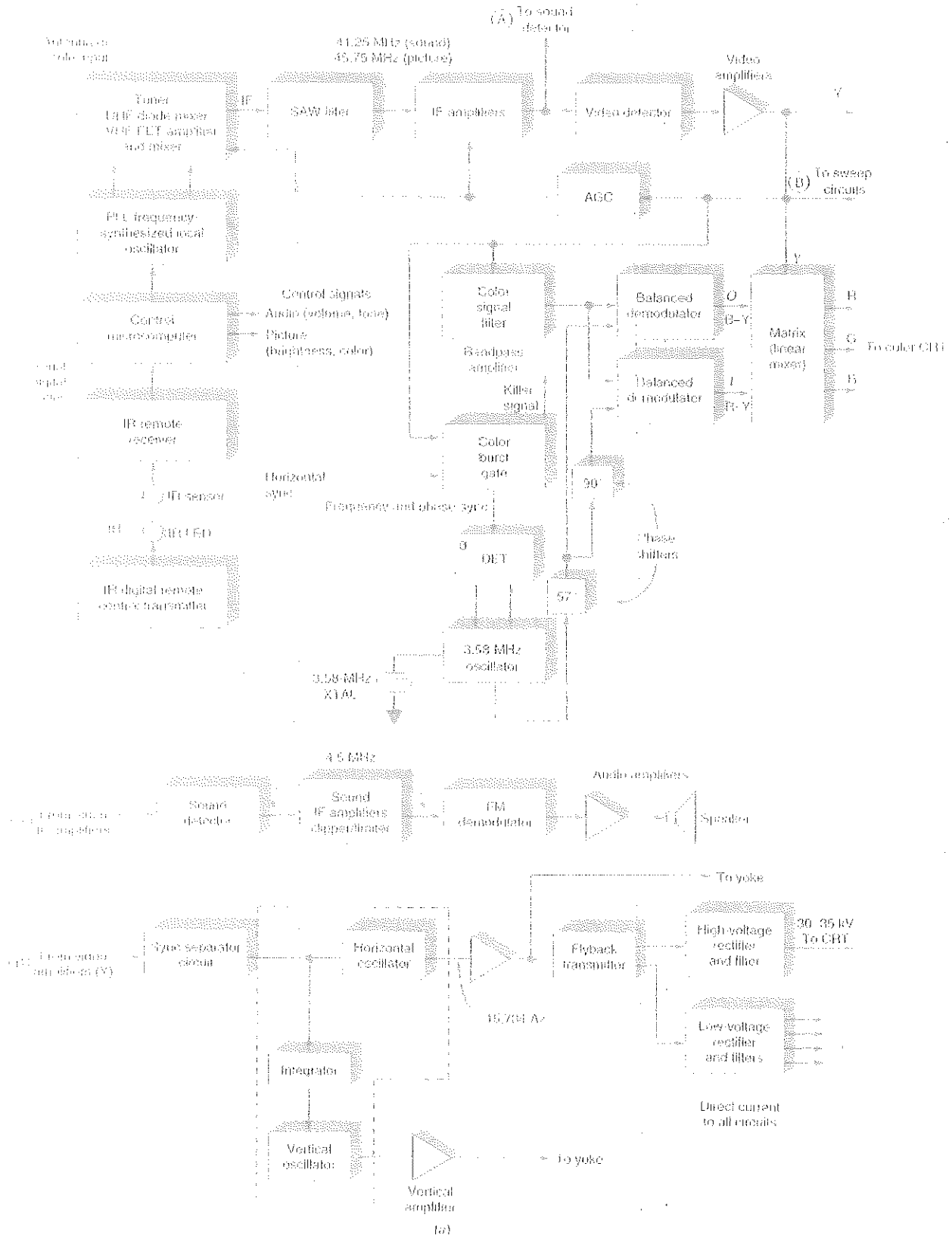
SECTION E- SHORT ANSWERS

15 marks

1.The television channel 2 occupies the frequencies between 82-88MHz.
Determine the following ;

- | | |
|---|------------|
| (a) the bandwidth of the channel ? | 1 m |
| (b) the sound carrier frequency ? | 1 m |
| (c) the picture carrier frequency ? | 1 m |
| (d) The intercarrier frequency ? | 1 m |
| 2.List 5 factors that help a LED TV to last longer ? | 5 m |
| 3.Describe the main difference between the LCD and LED TV? | 2 m |
| 4.Why is LED TV should really be called LCD TV ? | 3 m |
| 5.What are the types of gases used in the Plasma television ? | 1 m |

SECTION – Refer to the diagram below & answer the questions that follow; 10 marks



1. (i) Refer to the diagram above and determine the first transducer which will be encountered by the incoming signal ? 1 m
(ii) Briefly describe its function ? 1m
2. (i) Identify the last transducer that is used in the sound section ? 1m
(ii) Briefly describe its function ? 1m
3. If the equipment is switched on and the following problems or symptoms are being encountered;
 - (i) A horizontal line across the screen ? 2m
 - (ii) A vertical line across the screen ? 2m
 - (iii) No power on the screen, not even a led indicator on ?; 2mDescribe how you would tackle to determine the possible cause of each of the above problem ?