



RADIO ELECTRONICS & TELEVISION SERVICING
EXAMINATION-PENSTER 4-2013
EEE 332 COLOUR TELEVISION & VCR SERVICING
DATE:,2013. TIME -

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 105 MARKS for 2 HOURS

**Section A- Fill each blank with the correct word or number to complete the statement
 ? Clearly write the question number in your answer sheet and the answer beside it
 ?DO IT RIGHT THE FIRST TIME? [1 mark per blank]**

1	In a television system there are two carriers in one channel. One carrier is for the _____ and the other one is for _____
2	A television system could be identified by the number of lines scanned in a frame of picture; and for NTSC system there are _____ lines and for the PAL system there are _____ lines.
3	Intercarrier frequency is the difference between the _____ carrier frequency and the _____ carrier frequency.
4	A simple television system usually consists of two sub-systems namely the _____ and the _____
5	A transducer is an electronic device that _____ a form of energy from one form to another form.
6	In a television transmitter system there are three transducers used; namely _____, _____, and _____
7	In a television receiver system the transducers used are the _____, the _____, and the _____
8	The input into the television receiver is the _____ and the input device is the _____
9	One output of the television receiver is the picture and its output device is the _____
10	One output of the television receiver is the sound and its output device is the _____
11	The function of the television transmitting antenna is to convert _____ energy into _____ energy.
12	The function of the television receiving antenna is to convert _____ energy into _____ energy.
13	The two types of modulation used in a television transmission are _____ and _____
14	The front end of a television receiver usually consists of _____, _____, and _____
15	The function of the mixer is to _____ the signal received to _____
30 marks	

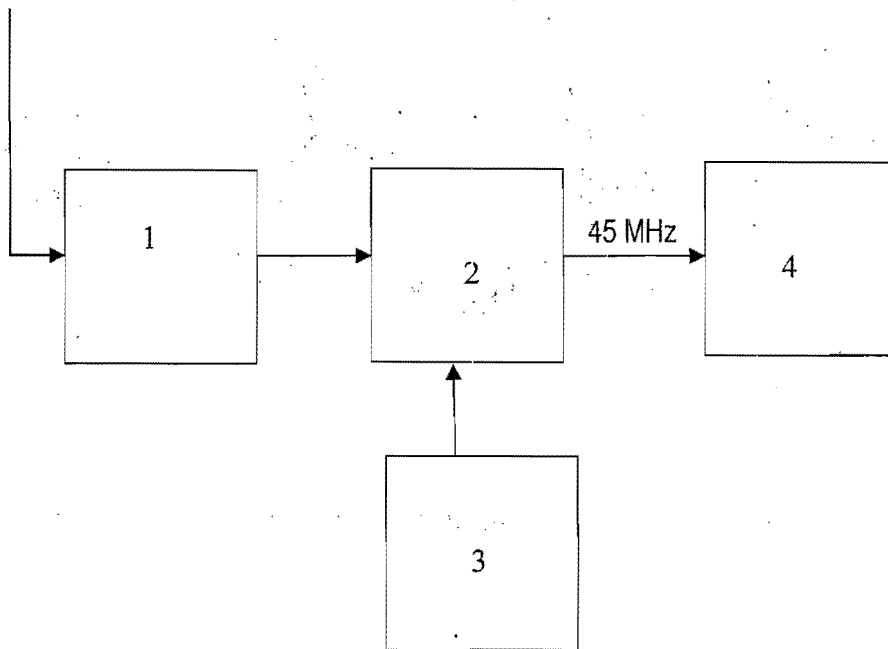
Section B – Select the best answer from the terms below that matches the statement. Place the selected term on the ANSWER column. Clearly write the question number in your answer sheet and the answer beside it? [1 mark each]

	STATEMENT	ANSWER
1	The television system used in Fiji	
2	The television system used in North America	
3	The bandwidth of the television system use in Fiji	
4	Usually located on the neck of the CRT	
5	Movement of electron beam from left to right of the screen	
6	Movement of the electron beam from the end of the 625 th line to the starting point	
7	A type of electron gun used in a CRT of a television receiver	
8	A component to control the flow of current in a ADG	
9	A circuit that that operates only on the moment of switching the power on in a television receiver	
10	The part that when heated up produces electrons	
11	The impedance of the rf input of the television receiver	
12	Transformer that matches the antenna impedance to the coaxial cable	
13	Causes the beam to deflect horizontally	
14	Frequency difference between the maximum and minimum frequency of a television channel	
15	Causes the electron beam to accelerate to the phosphor dots	
16	Commonly known as luminance signal which causes brightness	
17	Commonly called colour signal for colour information or chroma	
18	Make invisible the retraces required in scanning	
19	Scanning in the camera and that of the CRT to move in step of each other	
20	Each group of odd or even lines	
T E R M S	ADG, Balun, Blanking pulses, C signal, Cathode, Delta, Deflection Yoke, Deflection coil, Field, High voltage, NTSC, Posistor, PAL, Sync pulses, Trace, Vertical retrace, 6 MHz, Y signal, 6 MHz, 75 ohm,	
	20 marks	

Section C–Briefly explain the answer to each of the following questions ?Clearly write the question number in your answer sheet and the answer beside it ?

1	Differentiate between a colour and monochrome television ?	3 marks
2	Describe how the colour is obtained in television receiver?	3 marks
3	Describe how the colour CYAN is produced in a television receiver ?	1 mark
4	Describe how the colour YELLOW is produced in a television receiver ?	1 mark
5	Describe how the colour MAGENTA is produced in a television receiver ?	1 mark
6	Describe how WHITE is produced in a television receiver ?	1 mark
7	Describe the formula which is used to calculate the length of an efficient antenna ?	3 marks
8	Calculate the length of a dipole to receive the TV signal sent by Fiji One channel, the frequency of which is 200 MHz ?	5 marks
9	Briefly explain the term "bidirectional" in relation to antenna ?	1 mark
10	Briefly explain the term "omnidirectional" in relation to antenna ?	1 mark
11	Briefly explain the term "directivity" in relation to antenna?	1 mark
12	Briefly explain the term "polarization" in relation to antenna ?	1 mark
13	Describe the cause of ghost image in television reception ?	2 marks
14	What is " Line Of Sight" in television transmission ?	1 mark
15	In antenna polarization briefly explain vertical polarization ?	2 marks
16	Briefly explain horizontal polarization ?	2 marks
17	Briefly explain circular polarization ?	1 mark
30 marks₈₀		

Section D –Refer to the block diagram below and answer the questions that follow ?

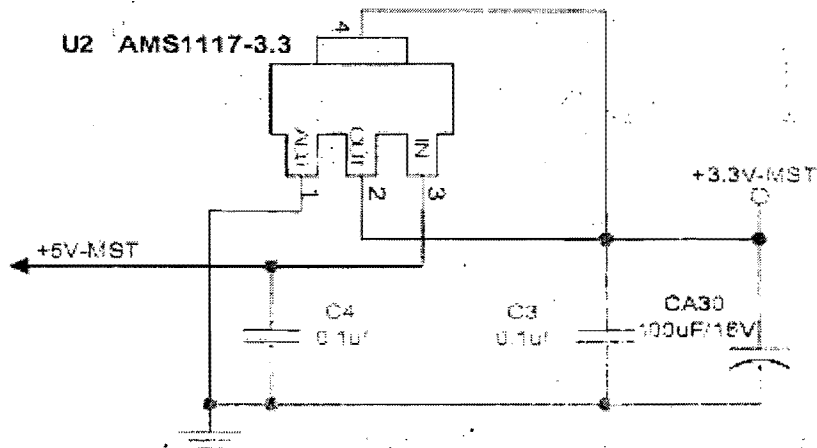


1	What is the combine name of these blocksof a television receiver?	2m
2	State the nameof the block numbered 1 ?	1m
3	State the name of the block numbered 2 ?	1m
4	State the name of the block numbered 3 ?	1m
5	State the name of the block numbered 4 ?	1m
6	How is the frequency in block 3 related to the frequency in block 1 ?	2m
7	State the function of block 2 ?	2m
10 marks₉₀		

Section E–Match the probable cause of the symptom of the following machine failures ?Write the number against the letter ?

	SYMPTOMS	ANS	CAUSES	
1	Vertical line on the screen		Vertical deflection oscillator above 60 Hz	A
2	Picture rolls upward		Voltages become too low	B
3	Horizontal line on across the screen		Low voltage on G2	C
4	Picture rolls downward		No horizontal output	D
5	Low resolution		Cathode to grid short	E
6	High resolution		Faulty picture tube /low or no anode voltage/no screen voltage	F
7	No picture but sound is present		Faulty power capacitors	G
8	A gassy picture tube		Tab at the back of tape missing	H
9	No picture, no raster, no sound		Open horizontal winding	I
10	Inability to control brightness		Vertical sweep circuit failed	J
11	Main failure in the flat screen TV		High voltage on G2	K
12	Cannot record in a VCR tape		Slipping belt	L
13	Squeaking sound in VCR		Absence of filament voltage	M
14	No glow in the filament		CRT board to be checked	N
15	No red colour present in the screen		Vertical deflection oscillator below 60 Hz	O
		15m		

Section F – Analyse the following circuit and answer the question that follow:-



1. State the difference between C4 and C3 ? **2 marks**
2. State the difference between C3 and CA30 ? **3 marks**
3. State the point where the voltmeter leads are to be placed if you are to measure the +3.3V-MST ? **3 marks**
4. What would be an indication by voltmeter that U2 is not functioning ? **2 marks**

10 marks