



COLLEGE OF ENGINEERING SCIENCE & TECHNOLOGY

SCHOOL OF ELECTRICAL & ELECTRONICS ENGINEERING

FINAL EXAMINATION-TRIMESTER 1-2017

CERTIFICATE IV IN E ELECTRONIC ENGINEERING STAGE 3

EEE422 TELEVISION SYSTEMS

DAY/TIME : TIME : DURATION : 2 Hours

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. There are 8 questions worth a total of 115 MARKS.
6. Attempt all questions

SECTION A -Complete each statement by filling the blank with the correct word or number ? 1 mark per blank 25m

1	The difference between the maximum frequency and the minimum frequency of a television channel is called its _____
2	In each television channel there two carriers, one for video and the other one is for _____
3	The two types of modulations carried out in each television channel are amplitude modulation and _____
4	Scanning in a television system is the _____ of electron beam in a CRT
5	The purpose of interlaced scanning in a television system is to _____ flicker
6	In NTSC TV system there are _____ frames transmitted per second
7	In PAL TV system there are _____ frames transmitted per second
8	Each frame is made up of 525 individual scan lines in the _____ system
9	Each frame is made up of 625 individual scan lines in the _____ system
10	Luminance signal is also called _____ signal
11	Vertical scanning frequency is _____ from horizontal scanning frequency
12	Safety is necessary to watch in TV servicing due to the presence of high voltage which is as high as _____ volts
13	In colour CRT TV three _____ beams are used
14	Colour in television is obtained by _____ red, green and blue colours
15	Green and blue colours produce _____
16	Red and blue colours produce _____
17	Red and green colours produce _____
18	Red, green and blue colours produce _____
19	Soon after opening a TV set the CRT must first be _____
20	Connecting an _____ transformer to a TV set while working on it reduces shock hazards.
21	Soon after closing the cover of a TV set after working on it the _____ test must be applied before returning to the client.
22	The three types of electron guns in CRT are trinitron, in-line and _____
23	The ADG circuit is usually operated by a voltage of _____
24	Deflection yoke is usually located on the _____ of the CRT
25	Deflection yoke consists of a _____ and a horizontal coil

SECTION B –

1. Draw the diagram which represents the spectrum of a broadcast TV signal ?

5 m

2. The television channel 2 has the minimum frequency of 82 MHz . Using the above diagram, determine ;

(i) the channel bandwidth ?

(ii) the picture carrier frequency ?

(iii) the sound carrier frequency ?

(iv) the intercarrier frequency ?

(v) the maximum frequency ?

5m

SECTION C - Place the letter T if the statement is true and the letter F if its false beside the question number on your answer sheet. 1 mark each 20 MARKS

1	Liquid crystals can transmit and change polarized light.
2	The structure of liquid crystals can be changed by electric current.
3	There are transparent substances that can conduct electricity
4	Light can be polarized and based on this LCD TV came into existence
5	If we apply an electric charge to liquid crystal molecules, they untwist
6	LED TV and LCD TV are both technically LCD TV
7	There is only one type of backlighting used in LED TV
8	There is only one type of backlighting used in LCD TV
9	Full Array is a type of backlighting used in LCD TV
10	Edge Lighting is used in LED TV
11	A horizontal filter is used in a LCD TV
12	A vertical filter is used in a Plasma TV
13	Projection TV types are Front Projection and Rear Projection
14	The plasma TV uses a type of inert gas called neon
15	LED TV consumes more power than LCD TV
16	CFL backlighting is used in LED TV
17	LED backlighting is used in LCD display hence called LED TV
18	Edge backlighting is used to make the flat TV slim
19	LED TV has better contrast ratio and picture quality
20	Plasmas are considered a distinct "fourth state of matter."
	20 marks ₅₅

SECTION D – Briefly give answers to the following questions ? 3 marks each

1. What is a flat panel display ?
2. What is plasma panels?
3. What is a plasma TV screen?
4. How many hours does a plasma TV last?
5. What is an LCD TV?
6. What is Edge LED TV?
7. What is a full array LED TV?
8. What do you mean by LED TV?
9. How does a LED TV screen work?
10. How does a plasma television work?

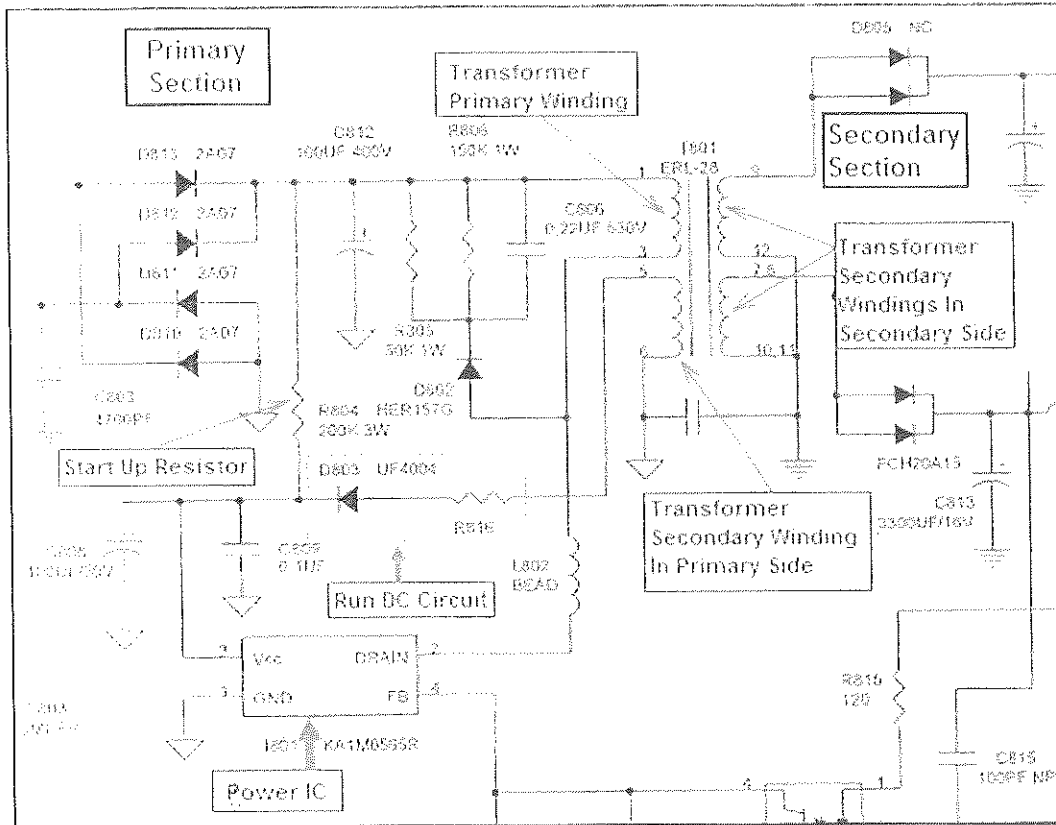
30 MARKS₈₅

SECTION E –Match each term on the LHS to its meaning in the RHS. Write the letter representing the meaning on RHS beside the number of term on RHS ?

10 MARKS

	LHS	ANS	RHS	
1	Varicap		Cct to keep the required frequency from drifting	A
2	IF conversion		Broken lines in a TV schematic diagram	B
3	AFC		Power supply with smaller size components	C
4	SAW		Make use of (VCO) voltage control oscillator	D
5	TFT		Use in envelope demodulator	E
6	Digital Tuning		Filter that operates on piezo- electric effect	F
7	SMPS		Form pixel in LCD	G
8	Diode		Cct to convert audio signal in digital TV	H
9	ADC		Has made remote tuning possible	I
10	Variable Tuning Capacitor		Reducing input signal to intermediate frequency	J
			10 marks₉₅	

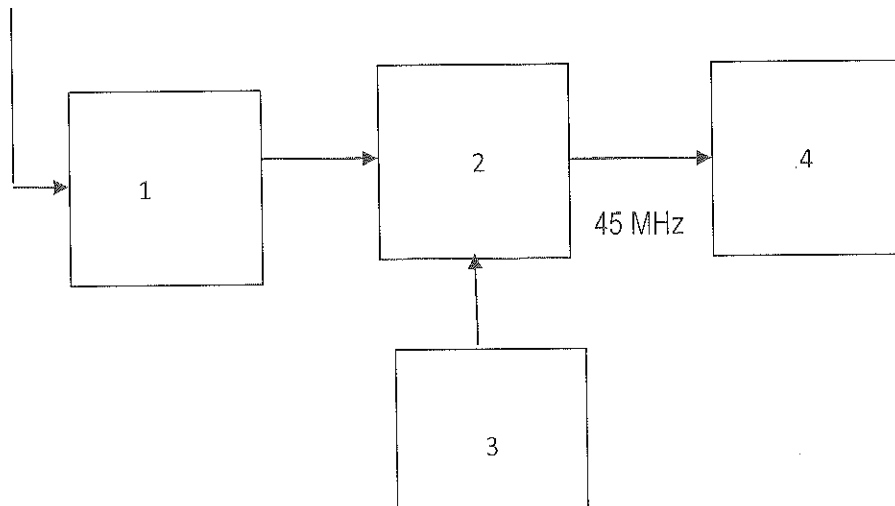
Section F-Refer to the diagram below and answer the questions that follow;



- (i) Identify the above circuit ? 1m
- (ii) Which type of equipment this circuit would be located ? 1m
- (iii) How many windings in the primary side of the transformer ? 2m
- (iv) Identify the terminals of all the windings of the secondary windings ? 2m
- (v) Estimate the voltage that should be present in pin 3 of the power IC? 2m
- (vi) Explain how you have to confirm that the transformer is faulty or not ? 2m

10 marks₁₀₅

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



1	What is the combined name of these blocks of a television receiver?	2m
2	State the name and function of the block numbered 1 ?	1m
3	State the name and function of the block numbered 2 ?	1m
4	State the name and function of the block numbered 3 ?	1m
5	State the name and function of the block numbered 4 ?	1m
6	How is the frequency in block 3 related to the frequency in block 1 ?	2m
7	How is the 45 MHz obtained if channel 2 is received ?	2m
10 marks <small>115</small>		

TOTAL MARKS = 115

THE END