



COLLEGE OF ENGINEERING SCIENCE & TECHNOLOGY

SCHOOL OF ELECTRICAL & ELECTRONICS ENGINEERING

FINAL EXAMINATION-PENSTER 2-2017

RADIO ELECTRONICS & TELEVISION SERVICING CERTIFICATE

EEE282 RADIO & TELEVISION SERVICING

DAY/TIME : To be determined. **TIME** : To be determined

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 6 questions (A,B,C,D,E, F) worth a total of 120 MARKS.
6. Attempt all questions

QUESTION A – Select the correct term on the RHS that complete the statement on the LHS. Write the letter representing the term on the RHS, beside the question number on your answer script ?

1 mark each **20 MARKS**

	ANS	LHS	RHS	
1		One of the requirements of a good power supply is to keep its output voltage constant, which is produced by its stage called _____	1	A
2		The most important electronic component in a rectifier circuit is called _____	Cathode	B
3		The number of diode used in a Full Wave Rectifier that uses center-tapped transformer is _____	Reversed or negatively	C
4		The number of diode used in a Half Wave Rectifier is _____	Capacitance	D
5		The number of diode used in a Bridged Rectifier is _____	Isolation	E
6		When the positive side of the voltage source is connected to the anode of the zener diode, it is said to be _____ biased.	C/Collector, & C/Base	F
7		In a diode when the positive terminal of the voltage source is connected to the cathode the diode is said to be _____ biased	Input Voltage	G
8		The two terminals of the zener diode are the anode and the _____	Regulator	H
9		If the number of turns of a power transformer is more in the primary than the secondary then the function is to step _____ the voltage.	Diode	I
10		If the number of turns of a power transformer is less in the primary than the secondary then the function is to step _____ the voltage.	Filter	J
11		The main sections or stages of a power supply are transformer, rectifier, filter and _____	Inductive reactance	K
12		The filter circuit of a power supply usually consists of components including inductance and _____	Generate	L
13		The type of transformer used to reduce shock hazard is called _____ the primary/secondary turns ration is usually one	Capacitive reactance	M
14		The three basic transistor amplifiers are usually called common emitter, _____ and _____	4	N
15		Gain of an amplifier = Ratio of Output voltage & _____	Down	O
16		Cut-off frequency is found in High Pass _____	Forward	P
17		Low Pass Filter is a circuit that allow all frequencies below _____	Regulator	Q
18		An oscillator is to _____ any repetitive or sinusoidal signal	Up	R
19		Resistance to flow of AC current by capacitor is called _____	2	S
20		Resistance to flow of AC current by inductor is called _____	Cut off freq	T

QUESTION B If the statement is true write the letter T beside the question number on the answer sheet and letter F if its false? 1 mark each 25 MARKS

1	A zener diode can be used both when it is forward biased or reversed biased	T	F
2	In radio the intelligence which is the modulating signal fall between the frequency range of 20Hz to 20KHz	T	F
3	The two input circuits of a differential amplifier are usually very different in nature	T	F
4	The input impedance of an ideal op-amp is infinite	T	F
5	The output impedance of an ideal op-amp is zero	T	F
6	The current conduction angle of a Class C amplifier is less than 180 degrees	T	F
7	The current conduction angle of a Class A amplifier is more than 180 degrees	T	F
8	Class A amplifier is less efficient than Class B amplifier	T	F
9	Out of Class A, Class B and Class C amplifiers the most efficient is the Class C amplifier	T	F
10	In a half-wave rectifier circuits the centre-tapped transformer is used at the input	T	F
11	Positive feedback is a necessity of an oscillator circuit	T	F
12	In an oscillator the portion of the output is normally fed back to the input in order to oscillate	T	F
13	The resonant frequency of a tuned circuit can be calculated by the formula $f = 1/2LC$	T	F
14	A voltage divider is useful in calculating the bias voltage of a NPN transistor	T	F
15	The base emitter voltage of a PNP transistor determines the current flow through the emitter and collector	T	F
16	In a PNP transistor the current flows from the base	T	F
17	In a NPN transistor the current flows into the base	T	F
18	The distinguishing feature of the Hartley circuit is that the <u>feedback</u> needed for oscillation is taken from a tap on the coil, or the junction of two coils in series.	T	F
19	The distinguishing feature of the Colpitts circuit is that the <u>feedback</u> signal is taken from a <u>voltage divider</u> made by two <u>capacitors</u> in series.	T	F
20	The differential amplifier produces an output only when the two input signals are different	T	F
21	The radio system consists of two sub-systems in order to convey the intelligence through cable only	T	F
22	There are basically four transducers in a complete radio system namely, antenna, rectifier loudspeakers and microphone	T	F
23	Basically a television system consists of six transducers namely video camera, microphone, transmitting antenna, crt and loudspeakers	T	F
24	A LCD like a CRT are both display devices in a television system	T	F
25	A radio system is established so that it can carry to a distant place audio signals the frequencies of which fall within the range of 20 Hz to 20KHz	T	F

[20 marks]₄₅

QUESTION C – Briefly describe the function of these ; 3 marks each 30 MRAKS

- 1.- Transducer
- 2- Microphone in a radio system
- 3- Video Camera in a television system
- 4- Transmitting Antenna in Radio System
- 5- Loudspeaker in a Radio System
- 6-CRT in a Television System
- 7- Transmitting Antenna in a Television System
- 8- Receiving Antenna in a Radio System
- 9- Demodulator or detector in a Radio Receiver
- 10- Modulator in a Radio System

[20 marks]₇₅

QUESTION D - Refer to Figure 1 and Figure 2 and answer the following questions 15 MARKS

1. Name the circuit in Figure 1 and Figure 2 ? (2 m)
2. State the formula for the frequency of oscillation in Fig 1.? (1 m)
3. Name the two un-labeled capacitors of Figure 1? (2 m)
4. State the two functions of the two un-labeled capacitor of Figure 2? (2 m)
5. Explain the purpose of the tank circuit of Figure 1? (2 m)
6. Explain the purpose of the tune circuit of Figure 2? (2 m)
7. If in Figure 1 $C_1=2000\text{ pF}$, $C_2=2000\text{ pF}$, $L=10\text{mH}$, determine the resonant frequency ? (4 m)

Figure 1

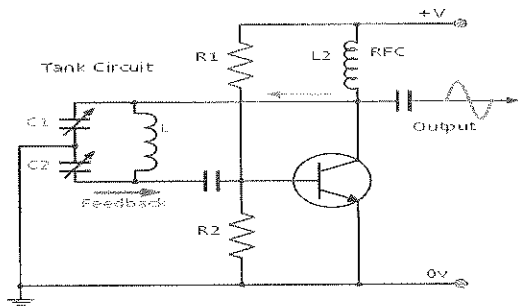
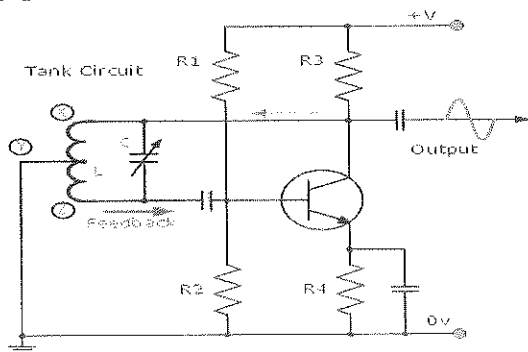


Figure 2

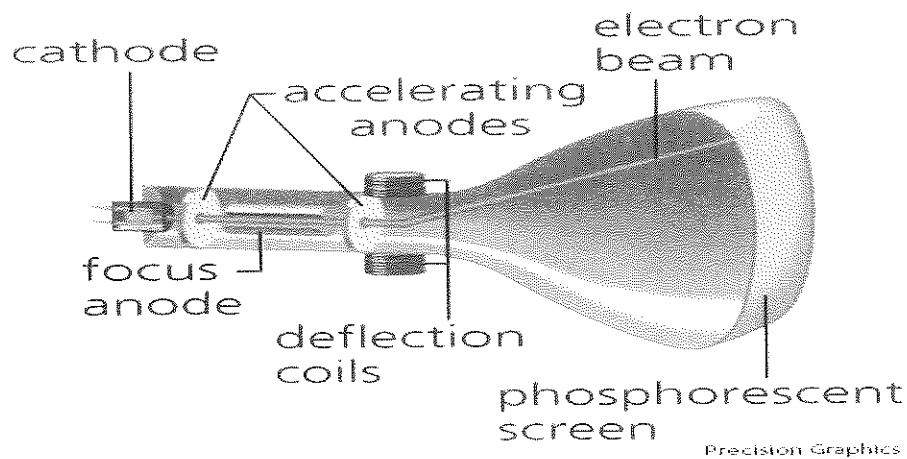


[15 marks]₉₀

QUESTION E -

15 MARKS

1. Name the device shown on the diagram below and comment on its use ? (1 mark each)
2. Write down the name of each part of the device on your answer sheet and explain its function? (1.5 marks each)
3. State the difference between the monochrome & Colour TV Receiver ? (2 marks).
4. State the purpose of degaussing the CRT TV ? (2 marks)
5. What is scanning in a television ? (1 mark)

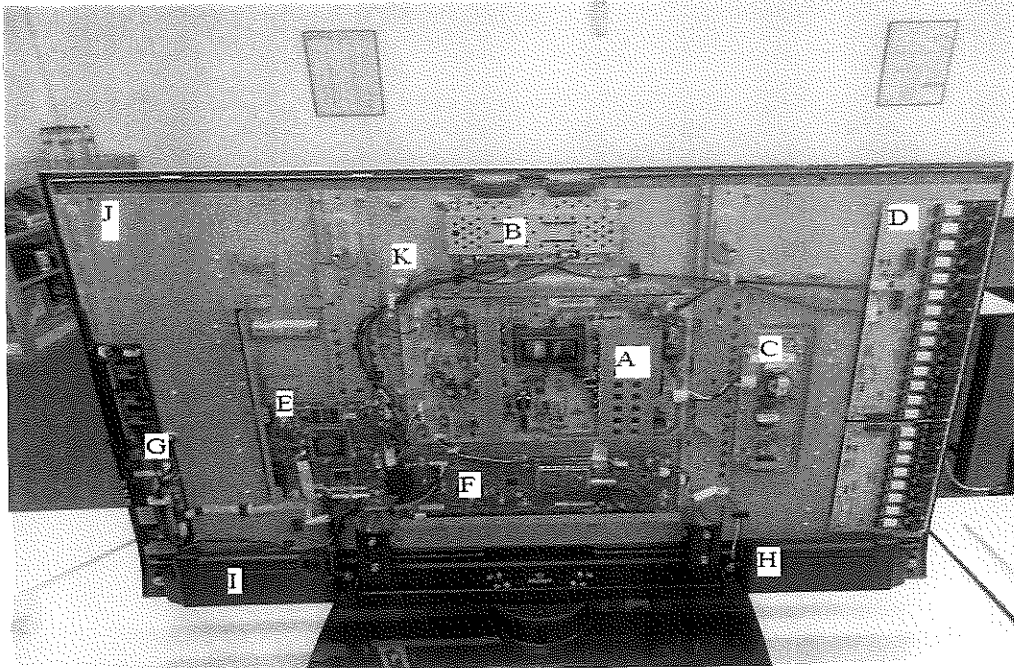


[10 marks]₁₀₅

QUESTION F

15 MARKS

1. List the main reasons why the CRT TV is different from the LCD TV? 3m
2. State the reason why in the CRT TV the high voltages more than 10,000 volts ? 3m
3. Give the main difference between LCD and LED TV? 3m
4. Name the board of the TV set below represented by the letter A, B, C, D, E & F 6m



5.

[15 marks]₁₂₀