Registration no: | | | | | | | | | | |

Total Number of Pages: 02 **B.TECH**
PEEC5303

6th Semester Regular / Back Examination 2015-16
RADAR AND TV ENGINEERING
BRANCH: ECE,ETC
Time: 3 Hours
Max Marks: 70
Q.CODE: W548

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1 Answer the following questions: **(2 x 10)**

a) What is Flicker? Write the relationship between Flicker and Brightness?

b) A Radar is have a maximum range of 300KM.What is the maximum allowable Pulse Repetition Frequency for unambiguous reception.

c) In TV Transmission why audio signal is frequency modulated (FM) where as Picture is amplitude Modulated (AM).

d) Define the term luminance, Hue and saturation of a Colour Signal.

e) What is Scanning? Why Interlaced scanning is desired for TV Transmission?

f) A Radar System transmits Pulses Duration of 2 μs and repetition rate of 1 KHz. Find the Maximum and Minimum range of radar.

g) Draw chromaticity diagram and explain what information can be obtained from it.

h) In TV system used in India, the total number of scanning lines per frame is 625 and the line lost per field is 20. Calculate vertical and horizontal resolutions. Kell factor=0.7,Aspect Ratio 4:3

i) What is hits per scan? How it is related with antenna beamwidth and pulse repetition frequency.

j) What is the difference between Search and Tracking Radars?

Q2 **a)** With the help of neat diagram explain the operation of amplitude comparison Monopulse Radar. **(5)**

b) What's the necessity of delay line canceler (DLC)? Derive the frequency response of a single delay line canceler used in MTI Radar. **(5)**

Q3	**a)**	Derive the Basic Radar Range Equation and Discuss the parameters on which maximum range depends.	**(5)**
	b)	A marine radar operate at 10 GHz has a maximum range of 50Km with an antenna gain of 4000.If the transmitter has a power of 250 KW and minimum detectable signal of 10^{-11} W. Determine the Cross Section of target the Radar can Sight.	**(5)**
Q4		Draw the block diagram of Pulse RADAR and Explain each block in detail.	**(10)**
Q5	**a)**	Draw the block diagram of NTSC Colour TV Encoder and Describe each block.	**(5)**
	b)	What is Composite video signal (CVS)? Draw and explain the different levels of negative polarity Composite Video Signal.	**(5)**
Q6	**a)**	Calculate vertical resolution, horizontal resolution and bandwidth of the TV system with the following specification Scanning lines per frame =625,Lines lost per field=25 Kell Factor=0.75,Trace time=52µs,Aspect ratio=4:3	**(5)**
	b)	Draw the block diagram of FMCW Radar and explain its application in measurement of Range.	**(5)**
Q7	**a)**	Describe in brief the various losses that affect the characteristics of Radar	**(5)**
	b)	In Radar system what is false alarm and probability of detection?	**(5)**
Q8		Write short notes on any two:	**(5 x 2)**
	a)	Radar Display	
	b)	Digital colour TV Receiver	
	c)	Charge Coupled Device(CCD)	
	d)	Doppler Filter Banks	