Registration No : | | | | | | | | | | |

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

6th Semester Back Examination 2017-18
RADAR AND TV ENGINEERING
BRANCH : ECE, ETC
Time : 3 Hours
Max Marks : 70
Q.CODE : C498

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.
Answer all parts of a question at a place.

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

a) What is the pulse repetition frequency of radar to achieve a maximum unambiguous range of 85 nmi.
b) How the PRF is selected for particular radar.
c) What are the operating frequency ranges of radar?
d) How blind speed problem can be minimized in MTI radar.
e) What is the peak power of a radar whose average transmitted power is 100W, pulse width of 1μs and pulse repetition frequency of 2kHz.
f) Differentiate between Luminous intensity and Luminance.
g) Why Frequency modulation (FM) is used for audio signal in TV transmission.
h) What consideration sets the lower limit to the vertical scanning rate of a TV frame?
i) What is kill factor?
j) What is filterplexer in high level TV transmitter?

Q2 **a)** What is CW radar principle? How can range ambiguities be overcome in CW radar? **(5)**
b) Derive the radar range equation and discuss the factors affecting the choice of frequency of operation of radar system. **(5)**

Q3 **a)** What is the Doppler effect? Derive the formula for Doppler shifts. **(5)**
b) Draw the block diagram FMCW radar and enlist the various parameters measured by it. **(5)**

Q4 **a)** Give the block diagram of a MTI radar system and briefly explain the operation of its essential units. **(5)**
b) A VHF radar at 220 MHz has a maximum unambiguous range of 180nmi. i) What should be its first blind speed (in knots). ii) What should be its first blind speed (in knots) for X-band radar at 9375 MHz.iii) what would be the unambiguous range (nmi) of X band radar of part (ii) in order to give the same blind speed you find in part (i). **(5)**

Q5 **a)** How does interlaced scanning helps to reduce the bandwidth of video signal explain. **(5)**
b) Discuss the visual characteristics of human eye with neat sktech. **(5)**

Q6 **a)** What is VSB Transmission? Why it is used for transmission of TV picture signal? **(5)**

b) With the help of diagram explain the working of plumbicon camera tube. **(5)**

Q7 How omni-directional pattern is obtained in TV transmitting antenna using Turnstile antennas? How is the directivity in the vertical plane achieved? **(10)**

Q8 **Write short answer on any TWO :** **(5 x 2)**

a) Monopulse Tracking

b) Delay Line cancellers

c) Persistence of vision

d) Trinitron Picture Tube