Roll No.....

Total no. Of pages- 02

Total no. Of questions:

B.TECH,SEM VI,2014
MICROWAVE AND RADAR
ENGINERRING
PAPER CODE:BTEC-601
PAPER ID:[A-2315]

Time: 3hrs

Maximum Marks:60

Instructions to candidates:

1.Section A is compulsory consisting of Ten Questions carrying two marks each

2.Section B contains five questions carrying five marks each and students has to attempt any four questions

3.Section C contains Three questions carrying ten marks each and students has to attempt any two questions.

Section –A

Q1)

a.Give the properties of S-Matrix

b. Give the applications of Backward wave Oscillator

c.Explain frequency pushing and pulling in magnetron

d.Give the applications of Varactor Diode

e.Give the theoretical and practical efficiency of reflex klystron

f.State the applications of GaAs MESFETs

g.Give the applications of Magic Tee

h.An IMPATT Diode has a drift length of 2 micrometer.Determine:

(i)Drift Time of the carrier

(ii)Operating frequency of the diode

i.Draw the diagram for Conical Scan System

j.Write short notes on:

(a)Duplexer (b)Monopulse Tracking

Section B

Q2.Mention how a TWT can be converted to an oscillator?Explain the operation of such a device in detail

Q3.Explain the dfferent modes of operation of Gunn Diode

Q4.Derive the expression of Free Space Radar Range Equation

Q5.Determine the [S] of a 3 port circulator given Insertion loss of 0.5db,isolation of 20db and VSWR of 2

Q6.A marine RADAR operating at 10GHz has a maximum range of 50km with an antenna gain of 4000.If the transmitter has a power of 250Kw and minimum detectable signal of 10^{-11}W. Determine the cross section of the target RADAR can sight

Section-C

Q7.(i)Draw the small signal equivalent circuit of MESFET at microwave frequencies and derive the expressions for drain current and transconductance

(ii) Compare the performance of Si MESFET and GaAs MESFET

Q8.A two cavity Klystron amplifier has the following characteristics:

Voltage Gain=15Decibel,Input Power=5Mw,R_{sh} of Input Cavity=30Kiloohm,

R_{sh} of Output Cavity=40Kiloohm,R_L=40Kiloohm.Determine:

Input rms Volatge,Output rms voltage,Power delivered to the load

Q9. What are the basic differences between search and tracking Radar?Discuss the various Scanning Techniques and tracking mechanisms in detail

END