Program: BE Electronics and Telecommunication Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VII

Course Code: EXTC704 and Course Name: Microwave and radar Engineering

Time: 1 hour Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	The dominant mode in waveguide is the mode which has
Option A:	highest frequency.
Option B:	highest wavelength.
Option C:	lowest phase constant.
Option D:	highest attenuation.
Q2.	In a 4 port Directional coupler if $S_{11} = 0.05 \angle 30°$, $S_{13} = 0.1 \angle 90°$, $S_{14} = 0.05 \angle 90°$ then Directivity and coupling factor of the coupler respectively are
Option A:	6 dB and 26 dB
Option B:	20 dB and 6 dB
Option C:	6 dB and 20 dB
Option D:	10 dB and 16 dB
Q3.	If the input power is divided in the ratio of 2:1 in a T- junction coupler and the characteristic impedance of the 2 output lines is 150 Ω and 75 Ω, then the impedance of the input line is:
Option A:	100 Ω
Option B:	50 Ω
Option C:	150 Ω
Option D:	125 Ω
Q4.	The modes of rectangular waveguide are denoted by TEmn and TMmn when m and n are Eigen numbers along the larger and smaller dimensions of the waveguide, respectively. Which one of the following statement is true.
Option A:	The TM_{10} mode of waveguide does not exist.
Option B:	The TE_{10} mode of waveguide does not exist.
Option C:	The TM_{10} and TE_{10} modes both exist and have same cut off frequency.
Option D:	The TM_{10} and TE_{10} modes both exist and have different cut off frequency
Q5.	Voltage standing wave pattern has maximum voltage of 4V and minimum voltage of 1V in a impedance 50Ω and a resistive load, the value of the load resistance is
Option A:	50Ω

Option B:	12.5Ω
Option C:	200Ω
Option D:	0Ω
Q6.	A uniform plane electromagnetic wave incident normally on a plane surface of a dielectric material is reflected with a VSWR of 3. What is the percentage of incident power that is reflected
Option A:	25%
Option B:	10%
Option C:	50%
Option D:	75%
Q7.	At higher frequencies a length of open or short-circuited line is used for matching, in either a single-stub or double stub configuration to,
Option A:	Minimize dissipation losses.
Option B:	Minimize reflection coefficient.
Option C:	Minimize attenuation constant.
Option D:	Minimize Propogation
Q8.	One end of a lossless transmission line having the characteristic impedance of 75 and length of 1 cm is short circuited. At 3 GHz, the input impedance at the other end of the transmission line is
Option A:	zero
Option B:	resistive
Option C:	capacitive
Option D:	inductive
Q9.	In a reflex klystron oscillator, repeller electrode is connected at which voltage
Option A:	Low positive potential
Option B:	High positive potential
Option C:	Negative potential
Option D:	Zero potential
Q10.	The transit time in the repeller space of a Reflex Klystron must be n+3/4 cycles to ensure that
Option A:	Returning electrons give energy to the gap oscillations
Option B:	Electrons are accelerated by the gap voltage on their return
Option C:	It is equal to the period of cavity oscillations
Option D:	The repeller is not damaged by the striking electrons
Q11.	In TWT if Vo = 3KV, Io = 30 mA, Zo = 10 ohms, N = 50, f = 10 GHz then what will be the value of traveling gain parameter [C]
Option A:	0.05
Option B:	0.029
Option C:	0
Option D:	0.067

Q12.	In Reflex Klystron which mode offer more prominent bunching of electrons?
Option A:	$1\frac{3}{4}$
Option B:	$2\frac{3}{4}$
Option C:	$3\frac{3}{4}$
Option D:	$4\frac{3}{4}$
Q13.	In stable amplification mode, the product of doping times length is between
Option A:	$10^{12}/cm^2$ and $10^{13}/cm^2$
Option B:	$10^{10}/cm^2$ and $10^{11}/cm^2$
Option C:	$10^{11}/cm^2$ and $10^{12}/cm^2$
Option D:	$10^{8}/cm^2$ and $10^{9}/cm^2$
Q14.	The number of semiconductor layers in abrupt p-n junction IMPATT diode are
Option A:	Five
Option B:	Four
Option C:	Two
Option D:	Three
Q15.	In TUNNEL diode impurity concentration is of the order of
Option A:	10^{19} to 10^{20} atoms/cm^3
Option B:	10^{12} to 10^{13} atoms/cm^3
Option C:	10^{17} to 10^{18} atoms/cm^3
Option D:	10^{29} to 10^{30} atoms/cm^3
Q16.	In GUNN diode, the electrons in the lower valley must have
Option A:	High mobility and high effective mass
Option B:	High mobility and small effective mass
Option C:	Less mobility and small effective mass
Option D:	Less mobility and high effective mass
Q17.	In equivalent circuit of GUNN diode
Option A:	Package inductance is in parallel with diode resistance
Option B:	Package inductance is in parallel with diode capacitance
Option C:	Diode resistance and diode capacitance are in parallel
Option D:	Diode resistance and diode capacitance are in series
Q18.	How many Servomotors are used in conical scanning system
Option A:	2
Option B:	*3*
Option C:	*4*
Option D:	*5*

Q19.	Two additional switching positions are needed to obtain the angular error in the ,
Option A:	plane
Option B:	changing coordinate
Option C:	same coordinate
Option D:	orthogonal coordinate.
Q20.	In the low-angle tracking system, if radar antenna height is 3m, target height is 100m, and range to the target is 100km, the range-resolution required to separate the direct from the ground-reflected signal is
Option A:	*0.6m*
Option B:	*0.3m*
Option C:	*0.2m*
Option D:	*0.1m*
Q21.	In a monopulse radar the feeds might be used with a
Option A:	Dipole antenna
Option B:	Monopole antenna
Option C:	parabolic reflector antenna
Option D:	Compact microstrip antenna
Q22.	40 GHz to 300 GHz band is used in
Option A:	Satellites
Option B:	Radar experiments
Option C:	Police Radios
Option D:	Televisions
Q23.	Define Radiometry.
Option A:	Method of sending radio signal
Option B:	Method of measuring distance of object
Option C:	Method of measuring area
Option D:	Method of detecting the radiation of matter
Q24.	Microwave radiometer emits at a wavelength of
Option A:	Millimeter to Centimeter
Option B:	Micrometers
Option C:	Kilometer
Option D:	Meters
Q25.	A radio navigation system which provides aircraft with __________guidance just before and during landing and, at certain fixed points, indicates the distance to the reference point of landing.

Option A:	Horizontal only
Option B:	Vertical only
Option C:	Horizontal and vertical
Option D:	Elliptical