Program: BE Electronics & Telecommunication Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester VI

Course Code: ECC603 and Course Name: Antenna and Radio Wave Propagation

Time: 1 hour Max. Marks: 50

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

Q1.	To avoid any grating lobe, the largest spacing between the elements should be
Option A:	less than one wavelength
Option B:	less than one half of the wavelength
Option C:	less than one fourth of the wavelength
Option D:	less than twice the wavelength
Q2.	For any given time, each ionospheric layer has a maximum frequency at which radio waves can be transmitted vertically and reflected back to earth. This frequency is known as
Option A:	Maximum usable frequency
Option B:	Critical frequency
Option C:	Cut-off frequency
Option D:	Minimum usable frequency
Q3.	The critical frequency of E layer which is observed at a particular time is 2.5 MHz. Calculate the maximum electron density of the layers.
Option A:	$8.711 \times 10^{11} per\ cubic\ metres$
Option B:	$0.7716 \times 10^{11} per\ cubic\ metres$
Option C:	$1.5432 \times 10^{11} per\ cubic\ metres$
Option D:	$4.3555 \times 10^{11} per\ cubic\ metres$
Q4.	Which among the following plays a primary role in generation of conduction current in an ionosphere due to presence of electric field?
Option A:	Ions
Option B:	Motion of electrons
Option C:	Neutral molecules
Option D:	Protons
Q5.	Which type of ground wave travels over the earth surface by acquiring direct path through air from transmitting to receiving antennas?
Option A:	Surface wave
Option B:	Space wave

Option C:	EM wave
Option D:	Sky wave
Q6.	By which name/s is an ionospheric propagation, also known as?
Option A:	Reflection or Scattering
Option B:	Refraction
Option C:	Diffraction
Option D:	Scattering
Q7.	For RMSA With decrease in εr , L_____ and W _____
Option A:	increases, increases
Option B:	increases, decreases
Option C:	decreases, decreases
Option D:	decreases, increases
Q8.	When width of RMSA is increased, BW of antenna will _____and gain of antenna will_____
Option A:	increase, decrease
Option B:	decrease, decrease
Option C:	increase, increase
Option D:	decrease, increase
Q9.	How does the length of the reflector element of a parasitic element beam antenna compare with that of the driven element?
Option A:	It is about 5% longer
Option B:	It is about 5% shorter
Option C:	It is twice as long
Option D:	It is one-half as long
Q10.	_____ is known as a single directive antenna.
Option A:	Corner director
Option B:	Corner dipole
Option C:	Corner reflector
Option D:	Yagi antenna
Q11.	Directors and reflectors are used to
Option A:	reduce the impedance
Option B:	increase the impedance
Option C:	increase the gain
Option D:	form an array
Q12.	_____ in YAGI-Uda antenna is directly fed
Option A:	director
Option B:	reflector
Option C:	driven element
Option D:	parasitic element

Q13.	Yagi-Uda antenna can have one_____and one or more_____
Option A:	reflector, driven elements
Option B:	reflector, active elements
Option C:	active element, reflectors
Option D:	reflector, directors
Q14.	Bandwidth of dipole antenna can be increased by
Option A:	Increasing the diameter
Option B:	by using printed bow-tie configuration
Option C:	using bi-conical configuration
Option D:	All of the above
Q15.	Design dipole antenna at 0.7GHz of diameter 4mm. Its approximate length in cm is.
Option A:	10
Option B:	20
Option C:	30
Option D:	40
Q16.	Which of the software can not be used for EM simulation of antenna structure
Option A:	IE3D
Option B:	CST studio
Option C:	HFSS
Option D:	Microsoft excel
Q17.	HPBW of antenna in two orthogonal planes are 20° and 30°.Calculate approximate directivity.
Option A:	4.8
Option B:	19.9
Option C:	18.4
Option D:	22.4
Q18.	Antenna is a_____The size of the antenna is_____
Option A:	transducer , inversely proportional to frequency
Option B:	transducer, directly proportional to frequency
Option C:	regulator, independent of frequency
Option D:	amplifier, inversely proportional to the square to the frequency
Q19.	Antenna which radiates equally in all direction is called as_____it has directivity_____
Option A:	Rhombic,0
Option B:	Half-wave dipole,0.5
Option C:	Isotropic,1
Option D:	Isotropic,2

Q20.	For monopole antenna over infinite ground plane the directivity is _____and input impedance is _____as compared to half wavelength dipole
Option A:	twice,half
Option B:	half ,half
Option C:	twice,twice
Option D:	half,twice
Q21.	Primary objectives of log periodic antenna configuration is to achieve_____
Option A:	High bandwidth
Option B:	High gain
Option C:	High impedance
Option D:	High R_r
Q22.	Cassergrain feed is mainly used for
Option A:	High power transmission
Option B:	Low power transmission
Option C:	High efficiency transmission
Option D:	low efficiency transmission
Q23.	Which mechanism/s is/are likely to occur in mid-frequency operation corresponding to ionospheric region?
Option A:	Only Reflection
Option B:	Only Refraction
Option C:	Partial reflection & refraction
Option D:	Diffraction
Q24.	Which of the following is NOT a Maxwell's equation? (Bold letters indicate vectors)
Option A:	$\boldsymbol{\nabla \cdot B = 0}$
Option B:	$\boldsymbol{\nabla \cdot D = \rho_v}$
Option C:	$\boldsymbol{\nabla \times H = J + \frac{\partial D}{\partial t}}$
Option D:	$\boldsymbol{\nabla \times E = B}$
Q25.	The maximum electric field strength radiated by an antenna is 6 mV/m and measured at a distance of 40 km from the antenna. If the antenna radiates a total power of 100 kW, then the directivity of the antenna is
Option A:	-2.02 dB
Option B:	9.6 dB
Option C:	0.0096 dB
Option D:	-20.18 dB