

University of Mumbai

Examination 2020 under cluster 4 (PCE)

Program: BE Electronic and Telecommunication

Curriculum Scheme: Rev2016

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.	What is the nature of radiation pattern of an isotropic antenna?
Option A:	Spherical
Option B:	Dough-nut
Option C:	Elliptical
Option D:	Hyperbolic
Q2.	Power radiated from an antenna per unit solid angle is called ?
Option A:	Electric field intensity
Option B:	Flux intensity
Option C:	Radiation intensity
Option D:	Magnetic field intensity
Q3.	According to the geometry, how many steradians are present in a full sphere?
Option A:	$\pi/2$
Option B:	π
Option C:	2π
Option D:	4π
Q4.	At which angles does the front to back ratio specify an antenna gain?
Option A:	0° & 180°
Option B:	90° & 180°
Option C:	180° & 270°
Option D:	180° & 350°
Q5.	How are the infinitesimal dipoles represented in terms of antenna length and signal wavelength?
Option A:	$l \leq (\lambda /50)$
Option B:	$(\lambda/50) < l \leq (\lambda /10)$
Option C:	$l = \lambda/2$
Option D:	$l = \lambda/4$
Q6.	The input resistance Z_{in} of a 2-fold half wavelength dipole antenna approximately in ohms is
Option A:	68

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Option B:	136
Option C:	272
Option D:	1088
Q7.	In array antenna, the conductors that are not connected to the transmission line, called as,
Option A:	Driven element
Option B:	Parasitic elements
Option C:	Extra elements
Option D:	Folded elements
Q8.	Which among the following is regarded as a condition of an ordinary endfire array
Option A:	$\alpha < \beta d$
Option B:	$\alpha > \beta d$
Option C:	$\alpha = \pm \beta d$
Option D:	$\alpha \neq \pm \beta d$
Q9.	The directivity of an antenna array can be increased by adding more antenna elements, as larger number of elements
Option A:	Improves the radiation efficiency
Option B:	Increases the effective area of the antenna
Option C:	Results in better impedance matching
Option D:	More power to be transmitted by antenna
Q10.	_____ antennas consist of a regular arrangement of antenna elements with a feed network
Option A:	Aperture antennas
Option B:	Array antennas
Option C:	Printed antennas
Option D:	Wire antennas
Q11.	Horn antennas are suitable to operate at _____.
Option A:	Low Frequency
Option B:	High Frequency
Option C:	Medium Frequency
Option D:	Frequencies above the cutoff frequency of the waveguide
Q12.	In a probe fed rectangular microstrip antenna (RMSA), the approximate feed position is,
Option A:	$\lambda/2$
Option B:	$\lambda/4$
Option C:	$\lambda/6$
Option D:	$\lambda/12$

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Q13.	For avoiding ground losses, better is the surface conductivity, less is the _____
Option A:	attenuation
Option B:	phase velocity
Option C:	propagation constant
Option D:	tilt angle
Q14.	Which pattern is generated due to plotting of square of amplitude of an electric field?
Option A:	Voltage pattern
Option B:	Current pattern
Option C:	Field pattern
Option D:	Power pattern
Q15.	In electrically small loops, the overall length of the loop is _____ one-tenth of a wavelength.
Option A:	Less than
Option B:	Equal to
Option C:	Greater than
Option D:	Not related to wavelength
Q16.	The far field of an antenna varies with distance r as
Option A:	$1/r$
Option B:	$1/r^2$
Option C:	$1/r^3$
Option D:	$1/r^4$
Q17.	Pitch angle α for helical antenna ranges between,
Option A:	12° & 15°
Option B:	5° & 8°
Option C:	18° & 21°
Option D:	1° & 3°
Q18.	The layer that reflects very low frequency waves and absorbs medium frequency waves is _____ layer.
Option A:	D
Option B:	E
Option C:	F1
Option D:	F2
Q19.	Two identical transmitting and receiving antennas are located at a distance of 2 km. If power transmitted is 25 dBm at 10 GHz and received power is -65 dBm, the approximate gain of each antenna in dBi is

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Option A:	7.1
Option B:	14.2
Option C:	17.5
Option D:	21.3
Q20.	In solution evaluation process of inhomogeneous vector potential wave equation, if points are completely removed from the source, then by which factor does the time varying field & static solution differ?
Option A:	e^{-jkr}
Option B:	e^{jkr}
Option C:	$e^{-jk/r}$
Option D:	$e^{(jk+r)}$
Q21.	The concept of magnetic vector potential finds its major application in deriving expression of magnetic field intensity especially for _____
Option A:	Real fields
Option B:	Imaginary fields
Option C:	Complex fields
Option D:	Near field
Q22.	If a linear uniform array consists of 10 isotropic elements separated by $\lambda/4$, what would be the directivity of a end fire array in dB is,
Option A:	8.55
Option B:	9.02
Option C:	10
Option D:	12.2
Q23.	What is the gain of four identically polarized antennas stacked one above the other fed in phase?
Option A:	4 dB over the gain of one antenna
Option B:	10 dB over the gain of one antenna
Option C:	3 dB over the gain of one antenna
Option D:	6 dB over the gain of one antenna
Q24.	Parasitic element that is typically about 5 percent longer than the half-wave dipole driven- element is called,
Option A:	Array element
Option B:	Director element
Option C:	Reflector element
Option D:	Driven element
Q25.	The MUF for the given radio path is the,

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Option A:	mean of the maximum and minimum usable frequencies
Option B:	maximum usable frequency
Option C:	minimum usable frequency
Option D:	mandatory usable frequency

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Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	A
Q2.	C
Q3.	D
Q4	A
Q5	A
Q6	C
Q7	B
Q8.	C
Q9.	B
Q10.	B
Q11.	D
Q12.	D
Q13.	A
Q14.	D
Q15.	A
Q16.	A
Q17.	A
Q18.	A
Q19.	B
Q20.	A
Q21.	C
Q22.	C

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Q23.	D
Q24.	C
Q25.	B