University of Mumbai

Examination 2020 under cluster 4 (PCE)

Program: BE Electronics & Telecommunication Engineering
Curriculum Scheme: Rev2012
Examination: Third Year Semester V
Course Code: ETC504 and Course Name: RF Modeling and Antennas
Time: 1 hour Max. Marks: 50
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Note to the students: - All the Questions are compulsory and carry equal marks.

Q1.	In a conductor, at skin depth the value of current decreases to _____ of its value at the surface.
Option A:	20%
Option B:	37%
Option C:	50%
Option D:	90%
Q2.	Which of the following is not a type of attenuation profile for practical filter?
Option A:	Hyperbolic
Option B:	Butterworth
Option C:	Chebyshev
Option D:	Elliptic
Q3.	The ideal Insertion Loss of filter in passband is
Option A:	0Db
Option B:	Infinite
Option C:	60dB
Option D:	3Db
Q4.	The lengths of transmission lines used in Richard's transformation to replace inductors and capacitors are
Option A:	λ/2
Option B:	λ
Option C:	λ/8
Option D:	3λ/2
Q5.	Which of the following filter design method is used to achieve completely specified frequency response?
Option A:	Constant k-section
Option B:	m-derived
Option C:	Composite
Option D:	Insertion Loss
Q6.	Which equations are regarded as wave equations in frequency domain for lossless media?
Option A:	Maxwell's
Option B:	Lorentz

Option C:	Helmholtz
Option D:	Poisson's
Q7.	What is the functioning role of an antenna in receiving mode?
Option A:	Radiator
Option B:	Converter
Option C:	Sensor
Option D:	Inverter
Q8.	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° & 360°
Q9.	Which mode of propagation is adopted in HF antennas?
Option A:	Ground wave & Tropospheric
Option B:	Ionospheric
Option C:	Ground wave
Option D:	Tropospheric
Q10.	Which type of wire antennas are also known as dipoles?
Option A:	Linear
Option B:	Loop
Option C:	Helical
Option D:	Loop & Linear
Q11.	A helical antenna produces radiation which is ?
Option A:	Omni directional
Option B:	Circularly polarized
Option C:	Elliptically polarized
Option D:	Horizontally polarized
Q12.	Antenna that does not belong to the horn antenna family among the following are:
Option A:	Pyramidal horn
Option B:	Conical horn
Option C:	Bi-conical horn
Option D:	Microstrip Antenna
Q13.	Patch antennas are the antennas of small size and are made of:
Option A:	Strip line
Option B:	Microstrip lines

Option C:	Coaxial cables
Option D:	Rectangular waveguide
Q14.	Intrinsic impedance of free space is
Option A:	300Ω
Option B:	377 Ω
Option C:	477 Ω
Option D:	500 Ω
Q15.	For Band pass filter design with Insertion loss method, inductor in low pass prototype is replaced with _____ in Bandpass filter.
Option A:	Series inductor
Option B:	Series capacitor
Option C:	Combination of series inductor and capacitor
Option D:	Combination of shunt inductor and capacitor.
Q16.	Sterdian is a measurement unit of _____
Option A:	Point angle
Option B:	Linear angle
Option C:	Plane angle
Option D:	Solid angle
Q17.	Power density is basically termed as _____ power per unit area
Option A:	Reflected
Option B:	Refracted
Option C:	Radiated
Option D:	Diffracted
Q18.	The construction and operation of a log-periodic antenna is similar to
Option A:	Helical antenna
Option B:	Yagi-Uda antenna
Option C:	Coaxial cable
Option D:	Monopole antenna
Q19.	The pattern of the reflector in a reflector antenna is called:
Option A:	Primary pattern
Option B:	Secondary pattern
Option C:	Reflector pattern
Option D:	Regular pattern
Q20.	If the elements of a binomial array are separated by λ/4, how many shape patterns are generated with no minor lobes?
Option A:	2
Option B:	4

Option C:	8
Option D:	16
Q21.	Kuroda's identities are not used to
Option A:	Physically separate the stubs
Option B:	Transform series stub into shunt stub and vice cersa
Option C:	Change impractical characteristic impedances into realizable impedances
Option D:	Convert actual inductors and capacitors into stubs
Q22.	If the power input to an antenna is 100 mW and if the radiated power is measured to be 90 mW, then the efficiency of the antenna is:
Option A:	75%
Option B:	80%
Option C:	90%
Option D:	Insufficient data
Q23.	How are the infinitesimal dipoles represented in terms of antenna length and signal wavelength?
Option A:	$l = \lambda/2$
Option B:	$l = \lambda/90$
Option C:	$l = 50\lambda$
Option D:	$l \leq (\lambda/50)$
Q24.	In radio communication link, what is the shape/nature of waves generated by transmitting antenna
Option A:	Spherical
Option B:	Elliptical
Option C:	Plane
Option D:	Rectangular
Q25.	Rectangular and circular microstrip patch antennas are commonly used because of their
Option A:	Attractive radiation characteristics
Option B:	Easy fabrication
Option C:	Light weight
Option D:	Power handling capacity

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Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	B
Q2.	A
Q3.	A
Q4	C
Q5	D
Q6	C
Q7	C
Q8.	A
Q9.	B
Q10.	B
Q11.	B
Q12.	D
Q13.	B
Q14.	B
Q15.	C
Q16.	D
Q17.	C
Q18.	B
Q19.	B
Q20.	C
Q21.	D
Q22.	C
Q23.	D
Q24.	A
Q25.	A