University of Mumbai
Examination 2020

Program: BE Electronics and Telecommunication

Engineering Curriculum Scheme: Revised 2016

Examination: Third Year Semester V

Course Code: ECC503 and Course Name: ELECTROMAGNETIC ENGINEERING

Time: 1 hour Max. Marks: 50

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

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Q1.	The electric flux density is the
Option A:	Product of number of flux lines and permeability
Option B:	Product of number of flux lines and permittivity
Option C:	Product of permittivity and electric field intensity
Option D:	Product of permeability and electric field intensity
Q2.	Electric field intensity (E) at any point in an electric field is equal to
Option A:	(potential gradient) ½
Option B:	(potential gradient) ²
Option C:	potential gradient.
Option D:	(potential gradient) ⅓
Q3.	Identify the wrong statement in the following. Coulomb's law correctly describes the electric force that
Option A:	Binds the electrons of an atom to its nucleus.
Option B:	Binds the protons and neutrons in the the nucleus of an atom.
Option C:	Binds atoms together to form molecules.
Option D:	Binds atoms and molecules together to form solids.

Q4.	In electromagnetic waves, the electric field will be perpendicular to which of the following?
Option A:	Magnetic field intensity
Option B:	Wave propagation
Option C:	Both H and wave direction
Option D:	It propagates independently
Q5.	A parallel plate capacitor has the capacitance of 20 μ F where the distance between the plates is 16 cm. If the distance between the plates is reduced to 4 cm, its capacitance will be
Option A:	20 μF
Option B:	5 μF
Option C:	60 μF
Option D:	28 μF
Q6.	Which component of the electric field intensity is always continuous at the boundary?
Option A:	Tangential
Option B:	Normal
Option C:	Horizontal
Option D:	Vertical
Q7.	The Poisson equation in free space will act as a
Option A:	Maxwells equation
Option B:	Amperes equation
Option C:	Steady-state equation
Option D:	Laplace equation
Q8.	Identify a good dielectric.
Option A:	Iron
Option B:	Ceramics
Option C:	Plastic
Option D:	Magnesium
Q9.	If a long hollow copper pipe carries a direct current, the magnetic field associated

	with the current will be
Option A:	Inside the pipe only
Option B:	Outside the pipe only
Option C:	Neither inside nor outside the pipe
Option D:	Both inside and outside the pipe
Q10.	The unit of relative permeability is
Option A:	Henry/meter
Option B:	Henry
Option C:	Dimensionless
Option D:	Henry/meter^2
Q11.	As per Biot-Savart's law magnitude of the magnetic field, the intensity is _____proportional to the square of the distance from the filament to point of interest.
Option A:	directly
Option B:	inversely
Option C:	no proportional
Option D:	exactly five times
Q12.	The concept of displacement current was a significant contribution by
Option A:	Faraday
Option B:	Lenz
Option C:	Maxwell
Option D:	Lorentz
Q13.	For the retarded magnetic vector potential at time t and at distance R from the source current density, which of the following statement is correct?
Option A:	Current density at time (t- R/v) is used
Option B:	Current density at time (t-Δt) is used
Option C:	Current density at time (t+R/v) is used
Option D:	Current density at time (t+Δt) is used
Q14.	The range of standing wave ratio is
Option A:	zero to infinity
Option B:	zero to one

Option C:	one to infinity
Option D:	one to ten
Q15.	For a certain medium, if relative permittivity = 78 and relative permeability =1, the intrinsic the impedance of the medium is:
Option A:	0.0128 Ω
Option B:	0.113 Ω
Option C:	42.66 Ω
Option D:	377 Ω
Q16.	Which of the following is a major factor to decide whether a given medium is free-space, lossless dielectric, lossy dielectric or a good conductor?
Option A:	Loss Tangent
Option B:	Attenuation Constant
Option C:	Constitutive Parameters (σ, ε, μ)
Option D:	Reflection Coefficient
Q17.	The ratio of amplitudes of an electric field to the magnetic field of the waves in either direction is called of the material in which the wave is traveling.
Option A:	Characteristic impedance
Option B:	Intrinsic impedance
Option C:	Surface impedance
Option D:	Surge impedance
Q18.	The velocity and phase constant relation is given by
Option A:	$V = \omega/\beta$
Option B:	$V = \omega\beta$
Option C:	$V = \beta/\omega$
Option D:	$V\omega\beta = 1$
Q19.	The best definition of polarisation is
Option A:	Orientation of dipoles in random direction
Option B:	Change in polarity of every dipole
Option C:	Orientation of dipole moments
Option D:	Electric dipole moment per unit volume
Q20.	Identify the secondary parameter from the options given

Option A:	Resistance
Option B:	Conductance
Option C:	Phase constant
Option D:	Capacitance
Q21.	Which transmission line is called one to one transformer?
Option A:	$L = \lambda$
Option B:	$L = \lambda/2$
Option C:	$L = \lambda/4$
Option D:	$L = \lambda/8$
Q22.	For a matched line, the input impedance will be equal to
Option A:	Load impedance
Option B:	Characteristic impedance
Option C:	Output impedance
Option D:	0
Q23.	Which of the following is the 3rd stage of the electrostatic discharge event?
Option A:	Charge transfer
Option B:	Device failure
Option C:	Device response
Option D:	Charge generation
Q24.	In the electrostatic discharge protective devices _____
Option A:	the resistance is very low
Option B:	the resistance is very high
Option C:	it should not be grounded
Option D:	voltage should be high
Q25.	What distinguishes MEMS devices from traditional integrated circuits ?
Option A:	significantly higher gain for amplifiers
Option B:	radiation hardening for space environments
Option C:	less expensive to produce
Option D:	physical displacement of internal components