

These are sample MCQs to indicate pattern, may or may not appear in examination

## 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

Q1.	The Gaussian surface for a point charge will be
Option A:	Cube
Option B:	Cylinder
Option C:	Sphere
Option D:	Cuboid
Q2.	Electric field intensity (E) at any point in an electric field is equal to
Option A:	(potential gradient) $\frac{1}{2}$
Option B:	(potential gradient) $^2$
Option C:	potential gradient.
Option D:	(potential gradient) $\frac{1}{3}$
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 $20 \mu F$ 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:	$20 \mu F$
Option B:	$5 \mu F$
Option C:	$60 \mu F$
Option D:	$28 \mu F$
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.	The unit of scalar magnetic potential is
Option A:	Ampere
Option B:	Volt
Option C:	Ampere/m
Option D:	Volt/m
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 <sup>2</sup>
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 $\Omega$
Option B:	0.113 $\Omega$
Option C:	42.66 $\Omega$
Option D:	377 $\Omega$
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 ( $\sigma$ , $\epsilon$ , $\mu$ )
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 velocity of the wave in the air medium is
Option A:	$1 \times 10^8$
Option B:	$3 \times 10^8$
Option C:	$1.5 \times 10^8$
Option D:	$2 \times 10^8$
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