University of Mumbai
Examination 2020 under cluster 3 (FCRIT)

Program: BE Electronics and Telecommunication Engineering

Curriculum Scheme: Revised **2016**

Examination: Third Year Semester **V**

Course Code and Course Name: **ECC503 Electromagnetic Engineering**

Time: **1 hour** Max. Marks: **50**

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

Q1.	The electric flux density **D** is the product of
Option A:	permittivity and flux lines
Option B:	permittivity and electric field intensity
Option C:	flux lines and electric field intensity
Option D:	permeability and electric field intensity
Q2.	Using Gauss's law as reference we can derive
Option A:	Coulomb's law
Option B:	Faraday's law
Option C:	Ohm's Law
Option D:	Ampere law
Q3.	Which is an example of convection current?
Option A:	Electric current flowing in a copper wire
Option B:	An electron beam in a television tube
Option C:	Electric current flowing in a coaxial cable
Option D:	Current flowing through conducting sheet
Q4.	Electric field in the ideal conducting medium is
Option A:	Infinite
Option B:	Zero
Option C:	Non linear
Option D:	linear
Q5.	The point form of Ampere law is given by
Option A:	Curl(**B**) = I
Option B:	Curl(**D**) = J
Option C:	Curl(V) = I
Option D:	Curl(**H**) = J
Q6.	The value of ∫ **H**.dL will be
Option A:	J
Option B:	I

Option C:	**B**
Option D:	**H**
Q7.	The characteristic impedance of free space is
Option A:	489
Option B:	265
Option C:	192
Option D:	377
Q8.	For a dielectric, the condition to be satisfied is
Option A:	$\sigma/\omega\varepsilon > 1$
Option B:	$\sigma/\omega\varepsilon < 1$
Option C:	$\sigma = \omega\varepsilon$
Option D:	$\omega\varepsilon = 1$
Q9.	According to Smith diagram, where should be the position of reflection coefficient value for a unity circle with unity radius?
Option A:	On or inside the circle
Option B:	Outside the circle
Option C:	At the origin
Option D:	At Infinity
Q10.	The open wire transmission line consists of
Option A:	Conductor and Dielectric
Option B:	Piezoelectric material
Option C:	Paramagnetic material
Option D:	Ferromagnetic material
Q11.	For a transmission line with a propagation constant 0.650 + j2.55, what is the value of phase velocity for 1 kHz frequency
Option A:	1.18×10^3 km/sec
Option B:	1.5×10^3 km/sec
Option C:	2.46×10^3 km/sec
Option D:	4.58×10^3 km/sec
Q12.	Graphene is the name for
Option A:	Honeycomb sheet of carbon atoms
Option B:	Nanoscale cube of carbon atoms
Option C:	An invisible plastic membrane
Option D:	Scientific name for graphite in 6B pencil
Q13.	A dielectric material having _____ dielectric constant is favored for capacitor.
Option A:	low
Option B:	high
Option C:	zero

Option D:	negative
Q14.	If the radius of a sphere r is 1/(4π) m (one over four times pi) and the electric flux density **D** is 8π (eight times pi) units, the total flux is given by
Option A:	0 units
Option B:	1 units
Option C:	2 units
Option D:	4 units
Q15.	Electric flux density present on the surface of conductor-free space boundary is due to
Option A:	Free charge present in the free space
Option B:	Charge density on the interface
Option C:	Water particles in the free space
Option D:	Pressure in the free space
Q16.	The divergence of which quantity will be zero?
Option A:	**E**
Option B:	**D**
Option C:	**H**
Option D:	**B**
Q17.	The relation between energy transfer and the electric and magnetic fields specified by
Option A:	Poynting theorem
Option B:	Stoke's theorem
Option C:	Helmholtz theorem
Option D:	Lagrange's theorem
Q18.	Find the curl of E when B is given as 15t.
Option A:	15
Option B:	-15
Option C:	7.5
Option D:	-7.5
Q19.	Which transmission line is called as one to one transformer?
Option A:	λ
Option B:	λ /4
Option C:	λ /2
Option D:	λ /8
Q20.	What is the Standing wave ratio if a 75Ω antenna load is connected to a 50Ω transmission line?
Option A:	1
Option B:	2
Option C:	1.5

Option D:	1.43
Q21.	The flux density of line charge of radius 5m (five meters) with a Gaussian surface cylinder and line charge density of π (pi) units is given by
Option A:	0.1 units
Option B:	0.25 units
Option C:	0.5 units
Option D:	0.75 units
Q22.	A parallel-plate capacitor connected to a battery stores twice as much charge with a given dielectric as it does with air as dielectric, the susceptibility of the dielectric is
Option A:	0
Option B:	1
Option C:	2
Option D:	3
Q23.	When the conduction current density and displacement current density are same, the dissipation factor will be
Option A:	Zero
Option B:	Minimum
Option C:	Maximum
Option D:	Unity
Q24.	A plane wave is travelling in the positive X- direction in a lossless unbounded medium having permeability the same as the free space and a permittivity 9 times that of the free space, the phase velocity of the wave will be
Option A:	3×10^8 m/s
Option B:	10^8 m/s
Option C:	$(1/3) \times 10^8$ m/s
Option D:	$\sqrt{3} \times 10^8$ m/s
Q25.	The propagation constant of a transmission line with impedance and admittance 9 and 16 respectively is
Option A:	25
Option B:	144
Option C:	12
Option D:	7