Program: BE Electrical Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester V

Course Code: EEC 503 and Course Name: Electromagnetic Fields and Waves

Time: 1 hour Max. Marks: 50

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

Q1.	Magnitude of unit vector along z direction is ___
Option A:	It has no magnitude
Option B:	Zero
Option C:	Constant but not zero
Option D:	1
Q2.	Determine the curl of $\bar{A}$= 2a$\bar{x}$
Option A:	0
Option B:	1
Option C:	2
Option D:	-2
Q3.	Find the potential of the function V = 20sin θ/r at the point P(1, 30, 25).
Option A:	20
Option B:	10
Option C:	30
Option D:	60
Q4.	The coulomb's force between the 2 point charges -10μC and -5μC placed at a distance of 0.00150km is
Option A:	0.2 N
Option B:	0.5 N
Option C:	2 N
Option D:	10 N
Q5.	Electric field intensity due to infinite sheet of charge σ is
Option A:	Zero
Option B:	Unity
Option C:	σ/ε
Option D:	σ/2ε
Q6.	Flux is a _____ quantity.
Option A:	Unitless

Option B:	Scalar
Option C:	Vector
Option D:	Non zero
Q7.	A non magnetic source of magnetostatic fields
Option A:	d.c. current
Option B:	a rotating charged disc
Option C:	stationary charge
Option D:	changing electric field
Q8.	Magnetic element in electromagnetism is measured in_____
Option A:	Ampere-meter squared
Option B:	Coulomb
Option C:	Ampere
Option D:	Ampere-meter
Q9.	Static magnetic field is_____
Option A:	solenoidal
Option B:	conservative
Option C:	always open
Option D:	neither sinks nor sources
Q10.	The magnetic field dB due to a small current element dl at a distance r carrying a current I is
Option A:	dB= $\frac{\mu oI}{4\pi}(\frac{dl\times r}{r})$
Option B:	dB= $\frac{\mu oI^2}{4\pi}(\frac{dl\times r}{r^2})$
Option C:	dB= $\frac{\mu oI^2}{4\pi}(\frac{dl\times r}{r})$
Option D:	dB= $\frac{\mu oI}{4\pi}(\frac{dl\times r}{r^3})$
Q11.	Ampere law in differential form is
Option A:	$\vec{\nabla} \times J = H$
Option B:	$\vec{\nabla} \times H = J$
Option C:	$\vec{\nabla} \times H = 0$
Option D:	$\vec{\nabla} \times J = 0$
Q12.	Choose the Magnetic field intensity due to infinite long straight conductor

	expression
Option A:	$H = \frac{Ir}{\pi\rho}\widehat{a_\varphi}$
Option B:	$H = \frac{Ir}{2\pi\rho}\widehat{a_\varphi}$
Option C:	$H = \frac{I}{2\pi\rho}\widehat{a_\varphi}$
Option D:	$H = \frac{B}{4\pi\rho}\widehat{a_\varphi}$
Q13.	Application of magnetic field is_____
Option A:	Mobile
Option B:	Camera
Option C:	Call Bell
Option D:	Television
Q14.	Any magnetic field at a point has _____ number of directions.
Option A:	1
Option B:	2
Option C:	Many
Option D:	0
Q15.	Energy density is _____ form of energy.
Option A:	Point
Option B:	Integral
Option C:	Macroscopic
Option D:	Longitudinal
Q16.	A discharge capacitor has _____.
Option A:	dielectric medium
Option B:	no medium
Option C:	no dimensions
Option D:	no size
Q17.	Kirchhoff's current law is the special case of _____ equation.
Option A:	Gauss's
Option B:	Ampere's
Option C:	Continuity
Option D:	Biot Savart's
Q18.	Inductance opposes instantaneous change in _____.
Option A:	voltage
Option B:	current
Option C:	power
Option D:	energy

Q19.	There are _____ number of boundary condition in electromagnetic fields.
Option A:	1
Option B:	2
Option C:	3
Option D:	4
Q20.	Boundary condition is based on _____ phenomenon of light.
Option A:	Reflection
Option B:	Refraction
Option C:	Diffraction
Option D:	Dispersion
Q21.	Maxwell's second equation in integral form gives
Option A:	$\nabla . D = \rho v$
Option B:	$\int Dds$ = ∫(∇. D)dv
Option C:	$\int Hdl$ = ∫(∇XH)ds
Option D:	∇XH = Jc + Jd
Q22.	Conductivity of practical metals is_____
Option A:	0
Option B:	1
Option C:	Infinity
Option D:	High
Q23.	The expression for velocity of a wave in the conductor is
Option A:	V = √(2ω/μσ)
Option B:	V = √(2ωμσ)
Option C:	V = (2ω/μσ)
Option D:	V = (2ωμσ)
Q24.	Conductors satisfies _____ condition.
Option A:	σ/ωε > 1
Option B:	σωε > 1
Option C:	σ/ωε < 1
Option D:	σωε < 1
Q25.	Maxwell's fourth equation in differential form gives
Option A:	$\nabla . B = 0$
Option B:	$\int B.ds = 0$
Option C:	$\int H.dl$ = ∫(∇XH).ds
Option D:	∇XE = − ∂B/ ∂t

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Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	D
Q2.	A
Q3.	B
Q4	A
Q5	D
Q6	D
Q7	C
Q8.	D
Q9.	B
Q10.	D
Q11.	B

Q12.	C
Q13.	C
Q14.	A
Q15.	A
Q16.	A
Q17.	C
Q18.	B
Q19.	C
Q20.	B
Q21.	D
Q22.	D
Q23.	B
Q24.	B
Q25.	A