## Total No. of Printed Pages: 2

## SUBJECT CODE NO: - Y-2018 FACULTY OF SCIENCE AND TECHNOLOGY

## B.Sc. T.Y (Sem-V)

## Examination March / April - 2023 Physics Paper- XVI (Electrodynamics)

[Time	: 1:30	Hours] [Max. Mark	s: 5
		Please check whether you have got the right question paper.	
N. B		1) All questions are compulsory.	
		2) Use of logarithmic table and electronic pocket calculator is allowed.	A CO
Q1		State Gauss law and derive the equation for the electric field intensity due to uniformly charged cylinder.	10
	b) [	Derive two Maxwell's equation	10
	\S?	$\operatorname{div} D = \varrho \text{ and } \operatorname{div} B = 0$	
		OR OR OF STATE OF STA	
	(a) S	State the characteristics of electromagnetic wave.	10
		Derive the boundary condition for H i.e. the tangential component is continuous across the surface separating two dielectrics.	10
Q2	(a) 1	Define divergence of E and curl of E.	05
<b>~</b> _		State uniqueness theory.	05
		Prove that electromagnetic wave is plane polarized.	05
		State Poynting's theory.	05
	6	OR	
	a) l	Define self-induction and mutual induction.	05
The state of the s		The current in the coil flows at the rate of 10 A/sec and e.m.f. induced is 1.5V. Calculate the self-inductance of the coil.	05
	c) S	State the kinetic and dynamic properties of reflection and retraction of Em wave	05
	3' '	The refractive indices of two medium are $1.5$ and $1.55$ respectively of incident and transmitted medium. If the angle of incidence is $30^{0}$ , find the angle of transmission.	05
2			10
Q3 c		the correct answer	10
		The EM wave obeys law in case of refraction.	
		a) Poynting law b) Avogadro's law c) Snell's law d) Faraday's law	
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2)	The electric field intensity due to uniformly charged sphere at an internal point is
	proportional to
	a) Area of sphere b) Circumference of sphere
	c) Volume of sphere d) distance (r) of the point from the centre.
3)	Maxwell's first equation is derived from
	a) Gauss theory in electrostatic
	b) Gauss theory in magnetostatics
	c) Faraday's law
	d) Lenz law
4)	is the equation of continuity.
ŕ	
	$\frac{\partial t}{\partial t} = \frac{\partial t}{\partial t} + \frac{\partial t}{\partial t} = $
	a) $curl H = J + \frac{\partial D}{\partial t}$ b) $curl B = J + \frac{\delta D}{\delta t}$ c) $curl E = J + \frac{\partial D}{\partial t}$ d) $curl m = J + \frac{\partial D}{\partial t}$
5)	Electromagnetic waves are
	a) Longitudinal wave b) Transverse wave
	c) sinusoidal wave d) square wave
6)	property of an electromagnetic wave depends on the medium in which it
	is travelling.
	a) Wavelength b) Time period c) Frequency d) Velocity
7)	In Maxwell's fourth equation, the term $\frac{\delta D}{\delta t}$ is called as
.,	a) displacement current density b) current density
8)	c) displacement current d) displacement density
0)	Electromagnetic waves are produced where as
	a) Electric charges are retarded b) Electric abarges are accelerated
	<ul><li>b) Electric charges are accelerated</li><li>c) Magnetic charges are retarded</li></ul>
0)	d) Magnetic charges are accelerated  EM wave travel in vaccum with a velocity
9)	a) $3 \times 10^8$ m/s b) velocity of light
10	
10,	The equation $\nabla^2 U = 0$ is known as
	a) Laplace equation b) Poisson's equation
	c) Gauss law d) Differential form of Gauss law